## 1. Cartilage in trachea ?

a) Hyaline

b) Elastic

c) Articular

d) Fibro

Correct Answer - A
Ans. is 'a' i.e., Hyaline

**2.** **Stem cells in skin are found in all, EXCEPT:**

a) Sebaceous glands

b) Sweat glands

c) Hair follicle

d) None of the above

Correct Answer - B

Stem cells are located in three different areas of the epidermis: the hair follicle bulge, interfollicular areas of the surface epidermis, and sebaceous glands.

**Ref:** Robbins 8th edition Chapter 3.

## 3. Which of the following is multipennate muscle ?

a) FPL

b) EPL

c) Deltoid

d) FHL

Correct Answer - C

**Fascicular architecture of skeletal muscle**

The major types of arrangement of muscle fibers or fasciculi are :-

1) Parallel fasciculi

The muscle fibers or fasciculi are parallel to line of muscle pull. These muscles contract over a great distance *(have maximum range of movement)* and have good endurance.

**Convergent fasciculi**

- The muscle fibers or fasciculi converge at the insertion point to maximize contraction. Examples are *:?*

*i) Triangular :* Adductor longus

*ii) Fan-shaped :* Temporalis

3) **Spiral or twisted fasciculi**

- Muscle fibers are twisted or spiraled, e.g. trapezius, latissimus dorsi, pectoralis major, supinator.

4) **Cruciate muscle**

- Muscle fibers or fasciculi are arranged in superficial and deep planes and crossed 'X', e.g. sternocleidomastoid, masseter, adductor magnus.

5) **Sphincter fasciculi**

- Muscle fibers or fasciculi surround an opening or orifice, e.g. orbicularis oculi, orbicularis oris.

6) **Pennate fasciculi**

- Fibers run obliquely to the line of pull, so that muscle looks like the **feather .**

## 4. Cell lining of small intestine ?

a) Simple squamous

b) Stratified squamous

c) Simple columnar

d) Stratified columnar

Correct Answer - C
**Simple columnar epithelium :** It is made up of tall columnar cells. Simple columnar cells may be :
***i)*** *Simple columnar epithelium (without cilia and microvilli) :* Lining of stomach, large intestine, **collecting duct** and **cervical canal.**
*ii) Columnar epithelium with striated border (regularly arranged microvilli) :* Lining of small intestine.
*iii) Columnar epithelium with brush border (irregularly placed microvilli) :* **Lining of gall bladder.**
*iv) Ciliated columnar epithelium (presence of cilia) :* Lining of **uterus, fallopion tube,** eustachian tube, tympanic cavity and *central canal of spinal cord and ventricles.*

## 5. Cell lining of common bile duct is ?

a) Stritified Columnar

b) Stratified squamous

c) Simple cuboidal

d) Simple columnar

Correct Answer - D
Ans. is 'd' i.e., Simple columnar
Gall bladder and common bile ducts are lined by simple columnar epithelium.

## 6. Brunners glands are seen in ?

a) Jejunum

b) Upper duodenum

c) Lower duodenum

d) Appendix

Correct Answer - B
Upper duodenum
The presence of mucous duodenal (Brunner's) glands in the submucosa is *indicative of upper duodenum.* These submucosal glands are absent in the jejunum, ileum and the entire large intestine.

## 7. Which of the following is present in cartilage but not in bone tissue ?

a) Type 1 collagen

b) Blood

c) Nerves

d) Chondroitin sulfate

Correct Answer - D
Ans. is 'd' i.e., Chondroitin sulfate

## 8. Space of Disse contains all except ?

a) Microvilli

b) Blood plasma

c) Kupffer's cell

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Kupffer's cell
The space of Disse (Perisinusoidal space) is a space between hepatocytes and hepatic sinusoids.
The exchange of substance between hepatocytes and blood takes place in the space of Disse.
*Microvilli of hepatocytes extend into this space,* increasing surface area for absorption.
Major constituent of space of Disse is blood plasma.

## 9. Sweat glands are which types of gland ?

a) Simple tubular

b) Simple coiled tubular

c) Compound tubular

d) Compound acinar

Correct Answer - B
Ans. is 'b' i.e., Simple coiled tubular

**10. 1st carpometacarpal joint is?**

a) Pivot

b) Hinge

c) Ball and Socket

d) Saddle

Correct Answer - D
Saddle

**11.**

## Secretory part of kidney develops from ?

a) Ureteric bud

b) Mesonephros

c) Blastema

d) Paramesonephric duct

Correct Answer - C
**Ans. is 'c' i.e., Blastema**
**Development of kidney**
Ureteric bud (mesonephros) arise from mesonephric duct and gives rise to *collecting system* of kidney (renal pelvis, major and minor calyces, *collecting tubule)* and *ureter.*
Metanephric mesoderm (blastema or metanephors) arise from *nephrogenic cord* which in turn is derived from intermediate mesoderm. It gives rise to *excretory unit (nephron),* i.e. glomeruli, PCT, Loop of henle and DCT.

## 12. Median umbilical ligament is derived from ?

a) Proximal part of umbilical artery

b) Distal part of umbilical artery

c) Urachus

d) Umbilical vein

Correct Answer - C
Ans. is 'c' i.e., Urachus

| **Ligament** | **Derived from** |
|---|---|
| Median umbilical ligament | Remnant of urachus |
| Ligamentum teres | Umbilical vein |
| Superior vesical ligament | Proximal part of umbilical artery |
| Medial (not median) umbilical ligament | Distal part of umbilical artery |

## 13. Stomach is derived from ?

a) Foregut

b) Midgut

c) Hindgut

d) Allantois

Correct Answer - A
Foregut

**14. Which of the following is a derivative of ventral mesogastrium ?**

a) Greater omentum

b) Gastrosplenic ligament

c) Linorenal ligament

d) Lesser omentum

Correct Answer - D
Ans. is 'd' i.e., Lesser omentum

## 15. Spleen is derived from ?

a) Ventral mesogastrium

b) Dorsal mesogastrium

c) Septum transversorium

d) Allantois

Correct Answer - B
Dorsal mesogastrium

## 16. Mandible is derived from ?

a) Meckle's cartilage

b) Ritchers cartilage

c) $4^{th}$ Pharyngeal pouch

d) $6^{th}$ Pharyngeal pouch

Correct Answer - A
Ans. is 'a' i.e., Meckle's cartilage
Each half of the mandible ossifies from only one *centre* which appears at about the *$6^{th}$ week* of intrauterine life in the mesenchymal *sheath of Meckels cartilage* near the future mental foramen.
Meckle's cartilage is the skeletal element of first *pharyngeal arch.*

## 17. Dilator pupillae develops from ?

a) Neural ectoderm

b) Surface ectoderm

c) Mesoderm

d) Neural crest

Correct Answer - A
Ans. is 'a' i.e., Neural ectoderm

## 18. Crystalline lens develops from ?

a) Mesoderm

b) Endoderm

c) Surface ectoderm

d) Neuroectoderm

Correct Answer - C
Ans. is 'c' i.e., Surface ectoderm

**19. Primordial Germ cell of ovary are developed from ?**

a) Ectoder

b) Mesoderm

c) Endoderm

d) Coelomic epithelium

Correct Answer - C
Ans. is 'c' i.e., Endoderm

## 20. All are derived from neural crest except ?

a) Adrenal medulla

b) Pigment cell in skin

c) Corneal stroma

d) Retinal pigmented epithelium

Correct Answer - D
**Ans. is `d' i.e., Retinal pigmented epithelium**
**Derivatives of neuroectoderm**
*i) From neural tube :* CNS (brain, spinal cord), astrocytes, oligodendrocytes, ependymal cells, retina, pineal gland, neurohypophysis (posterior pituitary), all cranial and spinal motor nerves.
*ii) From neural crest :* Neural crest derivatives are :?
a) *Neural derivatives*

- Sensory neurons of 5th, 7th, 8th, 9th, 10th cranial nerve ganglia (trigeminal, geniculate, sphenopalatine, submandibular, cochlear, vestibular, otic and vagal parasympathetic ganglia).
- Sensory neurons of spinal dorsal root ganglia.
- Sympathetic chain ganglia and plexus (celiac/preaortic/renal ganglia, enteric plexus in GIT, i.e. Auerbachs and Meissner's)
- Parasympathetic ganglia and plexus of GIT.
- Schwann cells of peripheral nerves, satellite cells of all ganglia.
- Adrenal medulla, chromaffin cells, para follicular C-cells of thyroid gland.
- Melanocytes and melanoblasts.

## 21. Sympathetic ganglion develops from ?

a) Surface ectoderm

b) Mesoderm

c) Neural crest

d) Mesenchymal neuroectoderm

Correct Answer - C
Ans. is 'c' i.e., Neural crest

## 22. Neural crest cells give rise to all the dental structures except ?

a) Odontoblasts

b) Dentine

c) Enamel

d) Tooth pulp

Correct Answer - C
Ans. is 'c' i.e., Enamel
Teeth development
A) Neural crest derivaties (Derivatives of neuroectoderm)

- Mesenchymall cells (derived from neural crest) of dental papilla form *:?*
  *i) Odontoblasts* which form *Dentine*
  *ii) Tooth pulp*

B) Derivatives of surface ectoderm

- It gives rise to ameloblasts which form *enamel.*

## 23. Nucleus pulsosus is derived from ?

a) Sclerotome

b) Myotome

c) Notochord

d) None

Correct Answer - C

**Ans. is 'c' i.e., Notochord**

**Development of vertebral column**

- The human nervous system develops from *neuroectoderm.*
- During development, behind the neuroectoderm lies the *mesoderm (paraxial mesoderm)* that *encloses the notochord* (a derivative of endoderm).
- This paraxial mesoderm give rise to *somites.*
- Somites further differentrated into

i. *Dermatomyotome :-* Give rise to skeletal muscles and dermis.

i. *Sclerotomes :-* Give rise to vertebral column.
*Sclerotomes which surround notochord starts projecting posteriorly (dorsally) to surround neural tube and forms.*

- *Ventral sclerotomes :-* Give rise to *vertebral body* and *annulus fibrosus.*
- *Lateral sclerotomes :-* Give rise to *vertebral arch (pedicle and lamina).*
- *Dorsal sclerotomes :-* Give rise to spinous process.
- *The notochord forms the nucleus pulsosus.*

## 24. Axis artery of lower limb is derived from ?

a) Natal artery

b) 1st lumbar intersegmental artery

c) 5th lumbar intersegmental artery

d) Sacral artery

Correct Answer - C
Ans.C.5th lumbar intersegmental artery
Axis artery

- During fetal life (development), each limb is supplied by an axis artery that is derived from intersegmental arteries.
- The axis artery runs along the central axis of the limb.

Upper limb axis artery:

- Derived from: Seventh cervical intersegmental artery
- Derivatives: Axillary artery, branchial artery, Anterior interosseous artery & Deep palmer arch

Lower limb axis artery:

- Derived from: 5th lumbar intersegmental artery
- Derivatives: Inferior gluteal artery, Arteria nervi ischiadici, Popliteal artery above popliteus, Lower part of peroneal artery & Some parts of plantar arch

## 25. Middle piece of sperm contains ?

a) Golgi apparatus

b) Mitochondria

c) Lysosome

d) Ribosome

Correct Answer - B
Ans. is 'b' i.e., Mitochondria

**26. Which of the following is not a branch of external carotid artery ?**

a) Supraorbital

b) Posterior auricular

c) Superficial temporal

d) Occipital

Correct Answer - A
Supraorbital

## 27. True about vertebral artery ?

a) A branch of thyrocervical trunk

b) Enters skull through foramen magnum

c) Unite to form posterior cerebral artery

d) A small artery

Correct Answer - B

**Ans. is 'b' i.e., Enters skull through foramen magnum**

**Vertebral artery**

- It is the largest branch of subclavian artery.
- Vertebral artery traverses through *vertebral triangle, foramina transversaria of upper six cervical vertebrae,* suboccipital triangle, posterior atlanto-occipital membrane, vertebral canal, pierce duramater and arachnoid (Subarachnoid) and passes through foramen magnum to enter *posterior cranial fossa.* It gives following branches:-

1. *Cervical branches :-* Spinal branches, muscular branches (to suboccipital muscle).
2. *Cranial branches :-* Posterior inferior cerebellar artery, medullary artery, meningeal branches, anterior spinal artery, posterior spinal artery and both vertebral arteries unite to form basilar artery.

## 28. All of the following are branches of subclavian artery except :

a) Vertebral artery

b) Thyrocervical trunk

c) Subscapular artery

d) Internal thoracic artery

Correct Answer - C
C i.e. Subscapular artery
Subscapular artery is the *largest branch of* 3rd part of *axillary artery* ; vertebral artery is the first & largest branch of 1st part of *subcalvian artery.*

## 29. Which is not true of mandible ?

a) From second pharyngeal arch

b) Body and ramus are its two parts

c) Strongest bone of skull

d) Has 16 sockets for teeth

Correct Answer - A

The *mandible,* or the lower jaw, is the largest and the strongest bone of the face.

It develops from the *first pharyngeal arch.* It has a horseshoe-shaped body which lodges the teeth, and a *pair of rami* which project upwards from the posterior ends of the *body.*

The rami provide attachment to the muscles of mastication.

Upper (alveolar) border of body bears sockets for teeth (usually 16).

## 30. Chlamydia causes all except:

a) Urethritis

b) LGV

c) Trachoma

d) Typical pneumoniae

Correct Answer - D
Typical pneumoniae

## 31. True about Falx cerebri ?

a) Separates cerebellum from occipital lobe

b) Contains straight sinus

c) Separates two cerebellar hemispheres

d) Contains occipital sinus

Correct Answer - B
Dura mater is the *toughtest and thickest membrane* covering the brain. It is divisible into *outer endosteal layer or endocranium* (covering inner surface of skull bones) *and inner meningeal layer.* Inner meningeal layer is folded on itself at places dividing the cranial cavity into intercommunicating compartments which lodge different parts of brain :-
i) Falx cerebri : It is a large *sickle shaped* fold projecting into median longitudinal fissure between two cerebral hemisphere. It contains *superior saggital sinus* (along lower concave free margin), and *straight sinus* (along line of attachment of falx cerebri to tentorium cerebelli).
*ii)* Tentorium cerebelli
iii) Falx cerebelli
iv) Diaphragma sellae

## 32. Middle meningeal artery passes through ?

a) Foramen ovale

b) Foramen lacerum

c) Foramen rotundum

d) Foramen spinosum

Correct Answer - D
Foramen spinosum

## 33. Muscle of fascial expression, which is not supplied by facial nerve ?

a) Orbicularis oris

b) Orbicularis oculi

c) Frontalis

d) Levator palpebrae superioris

Correct Answer - D

**Ans. is 'd' i.e., Levator palpebrae superioris**

**Nerve supply of face**

- Each half of the face is supplied by *fourteen nerves,* one is motor and the rest are sensory.
- Motor supply is derived from *facial (7") nerve* which supplies all facial muscles except levator palpeprae sperioris, which is supplied by sympathetic fibers and 3$^{rd}$ cranial nerve.
- *Eleven sensosry* nerves are derived from branches of *trigeminal (5$^{th}$) nerve* and only *two sensory* are derived from *great auricular nerve* and *transverse (anterior) cutaneous nerve of neck.*

## 34. Not associated with damage during submandibular excision ?

a) Lingual

b) Hypoglossal

c) Gossopharyngeal

d) Mandibular branch of facial

Correct Answer - C
Ans. is 'c' i.e., Glossopharyngeal
Cervical branch of facial nerve is related to inferior surface of submandibular gland. Lingual nerve and hypoglossal nerve are related to submandibular gland. Thus, these nerve can be damaged during submandibular gland excision.

## 35. Rathke's pouch is related to the development of ?

a) Posterior pituitary

b) Neurohypophysis

c) Adenohypophysis

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Adenohypophysis**

**PITUITARY GLAND (HYPOPHYSIS CEREBRI)**

Pituitary gland lies within hypophyseal/pituitary fossa or sella turcica of sphenoid bone which is roofed by diaphragm sellae. It is suspended from tuber cinereum of hypothalamus by infundibulum (pituitary stalk). It is related anterosuperiorly to optic chiasma, laterally to cavernous sinus and inferiorly to sphenoid air sinuses in the body of sphenoid. Pituitary gland is oval in shape, measures 8 x12 mm, and weighs about 500 mg. Pituitary gland has two main subdivisions:- (i) *Adenohypophysis (anterior lobe),* and (ii) *Neurohypophysis (posterior lobe).*

Adenohypophysis (anterior lobe) include :- (i) pars anterior or pars distalis or pars glandularis or anterior lobe proper, (ii) pars intermedia (intermediate lobe); and (iii) tuberal lobe (pars tuberalis). It develops from an upward growth (Rathke's pouch) from the ectodermal roof of stomodeum.

Neurohypophysis (posterior lobe) include (i) pars posterior or pars nervosa or neural lobe or posterior lobe proper; (ii) infundibulum (infundibular stem); and (iii) median eminence. It develops from a downgrowth from the 3' ventricle/diencephalon (neuroectoderm) called infundibulum.

Anterior lobe contains many hormone secreting cells: chromophils (acidophils, basophils), chromophobes and follicullostellate cells. Posterior pituitary contain neuroglia like pituicytes which do not secrete any hormone. The posterior pituitary hormones (ADH and oxytocin) are synthesized in hypothalamus and transported to posterior lobe by hypothalamohypophyseal nerve fiber tract and stored in the axon terminals of neurohypophysis in Herring bodies before their release.

## 36. Lower border of pharynx is at the level of (Extent of pharynx is upto) ?

a) C2

b) C3

c) C4

d) C6

Correct Answer - D
Ans. is 'd' i.e., C6
Pharynx is a musculomembranous tube that extands from the *base of skull to the level of the sixth cervical vertebra,* where it is continuous with esophagus. Pharynx is subdivided into :?
I) Nasopharynx :- Part of the pharynx above the soft palate, i.e. from the base of skull to the soft palate?
2) Oropharynx :- Extends from the soft palate superiorly to the level of hyoid inferiorly.
3) Hypopharynx :- The hypopharynx includes that portion of the pharynx below the level of the hyoid.

## 37. Direction of nasolacrimal duct is ?

a) Downwards, backwards and medially

b) Downwards, backwards and laterally

c) Downwards, forwards and medially

d) Downwards, forwards and laterally

Correct Answer - B
Ans. is 'b' i.e., Downwards, backwards and laterally
Nasolacrimal duct : It is a membranous passage which begins at the lower end of the lacrimal sac. It runs downwards, backwards and laterally and opens in the inferior meatus of the nose.

## 38. True about Schwann cells ?

a) Part of central nervous system

b) Present only in myelinated nerve fibres

c) Form myelin sheath

d) Derived from surface ectoderm

Correct Answer - C

**Ans. is 'c' i.e., Form myelin sheath**

**Shwann cells**

- In peripheral nervous system (PNS), Schwann cells provide structural support to all nerve fibres. *Schawann cells* form a sheath around the axon and form the outermost layer of a nerve fiber, called *neurilemma,* also known as *sheath of Schwann* or *neurolemma.* Schwann cells is surrounded by a basal lamina (or external lamina).
- In some fibres, Schwann cells additionally form myelin sheath; these fibres are called *myelinated nerve fibres.* Those nerve fibres in which myelin sheath is not formed, that is Schwann cells only provide structural support, are *non-myelinated nerve fibres.*
- Schwann cells deposit concentric layers of myelin around the axon to form myelin sheath. In myelinated fibres, one Schwann cell covers only a short segment of the axon. The small part of the axon present in between two adjacent Schwann cells (the part that is devoid of myelin sheath) is called node of Ranvier.
- Myelin is a mixture of lipoproteins and acts as an insulator. Since myelin acts as an insulator, impulses are generated only at the nodes of Ranvier and this helps in faster conduction of the impulses. This is called *saltatory conduction.*
- Schwann cells are derived from neuroectoderm.

## 39. Trigone of urinary bladder develops from:

a) Mesoderm

b) Ectoderm

c) Endoderm of urachus

d) None of the above

Correct Answer - A

- With differential growth of the dorsal bladder wall, the ureters come to open through the lateral angles of the bladder, and the mesonephric ducts open close together in what will be the urethra.
- That part of the dorsal bladder wall marked off by the openings of these four ducts forms the trigone of the bladder.
- Thus, lining of the bladder over the trigone is mesodermal in origin;
- The smooth muscle of the bladder wall is derived from the splanchnopleuric mesoderm.
- The apex of the bladder is continuous with the allantois, which now becomes obliterated and forms a fibrous core, the urachus.
- The urachus persists throughout life as a ligament that runs from the apex of the bladder to the umbilicus and is called the median umbilical ligament

## 40. Uterus is derived from ?

a) Mesonephric duct

b) Urogenital sinus

c) Mesonephric tubule

d) Paramesonephric duct

Correct Answer - D
Paramesonephric duct

## 41. Appendix of testes is remnant of ?

a) Mesonephric duct

b) Paramesonephric duct

c) paramesonephric tubule

d) Mesonephric tubule

Correct Answer - B
Male's derivatives of paramesonephric duct (Mullerian duct) are :-
*i) Appendix of testis (Hydatid of morgagm).*
ii) Prostatic utricle.

## 42. Posterior relation of portal vein -

a) I' part of duodenum

b) Hepatic artery

c) Bile duct

d) IVC

Correct Answer - D
Ans. is 'd' i.e., IVC

- The portal vein is about 8 cm long. It is formed by the *union of the superior mesenteric veins and the splenic vein behind the neck* of the pancreas at the level of the second lumbar vertebra. The inferior mesenteric vein drains into the inferior mesenteric vein.

**Important facts about portal vein**

- 8 cm long
- The blood flow is slow
- *Stream line flow :-* Blood in superior mesentric vein drains, into right lobe of liver. Blood in splenic and inferior mesentric vein drains into left lobe.
- Relations
- Infraduodenal part

.. Anterior :- Neck of pancreas

?. Posterior :- IVC

- Retroduodenal part

.. Anterior :- Ppart of duodenum, bile duct, gastroduodenal artery

?. Poster*ior :-* IVC

- Supraduodenal part

.. Anterior :- Hepatic artery, bile duct.

?. Posterior :- IVC, separated by epiploic formen

- Development of Portal vein :

1. Infra-duodenal part - part of left vitelline vein distal to the dorsal ansatomosis
2. Retro-duodenal part - dorsal anastomosis between two vitelline veins
3. Supra-duodenal part - cranial part of right vitelline vein

- The portal vein receives the following veins :

1. Splenic vein
2. Superior mesenteric vein
3. Left gastric
4. Right gastric
5. Superior pancreatico-duodenal

- Cystic
- Paraumbilical veins

## 43. Boundries of foramen of Winslow is formed by all except ?

a) IVC

b) Liver

c) 2nd part of duodenum

d) Suprarenal gland

Correct Answer - C
Ans. is 'c' i.e., 2$^{nd}$ part of duodenum

## 44. Lesser sac of stomach is bounded by:

a) Posterior wall of stomach

b) Visceral surface of spleen

c) Under surface of liver

d) All

Correct Answer - A
A. i.e. Posterior wall of stomach
- Lesser sac/ Omental bursa is bounded anteriorly by *stomach, caudate lobe of liver, lesser omentum & greater omentum (ant.* 2 *layers);* and posteriorly by structures forming *stomach bed (i.e.* diaphragm, pancreas, spleen etc) & greater omentum (posterior 2 layers)
Lesser sac or omental bursa is the *site for abscess formation in posterior perforation of gastric ulcer* and *internal hernia through epiploic foramen*

## 45. Which of the following does not form portal triad in liver

a) Hepatic artery

b) Hepatic vein

c) Bile duct

d) Portal vein

Correct Answer - B

**Ans. is 'b' i.e., Hepatic vein**

**Histology of the Liver**

- Liver is covered by Glisson's capsule.
- Liver is divided into hexagonal lobules oriented around the terminal tributaries of the hepatic vein (Terminal hepatic veins), i.e. Terminal hepatic vein is in the centre of the lobule and area around the hepatic vein is called centrilobular zone.
- At periphery of lobule, lies the portal tract containing hepatic artery, bile duct and portal vein. Area around portal tract is called periportal zone.
- These three structures (portal vein, hapatic artery and bile duct) form portal triad.
- Area between periportal zone and centrilobular zone is called midzonal area.
- All around the central vein are the major parenchymal cells, i.e. hepatocytes.
- Lobule contains *sinusoid (sinusoidal capillaries)* which have fenestrated *endothelium* covering the subendothelial space of Disse. This space contains stellate cell processes and hepatocellular microvilli.
- Other important cells of liver are *Kupffer cells,* which belong to

*monocytic-macrophage* sytem and function as phagocytic cells.

## 46. Gastrospleenic ligament is due to peritoneal reflection of which artery ?

a) Splenic artery

b) Short gastric artery

c) Pancreatic artery

d) Common hepatic artery

Correct Answer - B
Ans. is 'b' i.e., Short gastric artery

## 47. Which is not a content of inguinal canal ?

a) Spermatic cord

b) Ilioinguinal nerve

c) Genital branch of genitofemoral nerve

d) Inferior epigastric artery

Correct Answer - D

**Ans. is 'd' i.e., Inferior epigastric artery**

**Contents of inguinal canal**

- Spermatic cord in male or round ligament of uterus in female.
- Ilioinguinal nerve : It enters through the interval between external and internal oblique muscles.
- Genital branch of genitofemoral nerve is a constituent of spermatic cord.

## 48. Superior gluteal nerve does not supply ?

a) Tensor fasciae latae

b) Gluteus medius

c) Gluteus minimus

d) Gluteus maximus

Correct Answer - D
**Ans. is 'd' i.e., Gluteus maximus**
**Nerve supplying muscles of gluteal region are :-**
*i) Inferior gluteal nerve :* Gluteus maximus.
*ii) Superior gluteal nerve :* Gluteus medius and minimus.
*iii) Nerve to piriformis :* Piriformis
*iv) Nerve to obturator internus :* Obturator internus, Gemellus superior.
*v) Nerve to quadratus femoris :* Quadratus femoris, Gemellus inferior.
Tensor fascia latae is supplied by superior gluteal nerve.

## 49. Submental lymph nodes drains from ?

a) Centre of lower lips

b) Posterior 1/3 of tongue

c) Anterior 2/3 of tongue

d) Angle of mouth

Correct Answer - A

**Submental lymph nodes**

These lymph nodes lie on the mylohyoid in the *submental triangle.* The receive afferents from superficial tissue below chin, central part of lower lip, adjoining gums, anterior part of the floor of the mouth and tip of the tongue. These nodes, themselves, drain into (efferent) into submandibular nodes.

## 50. Which of the following is wrong regarding ophthalmic artery

a) Present in dura along with optic nerve

b) Supplies anterior ethmoidal sinus

c) Artery to retina is end artery

d) Leaves orbit through inferior orbital fissure

Correct Answer - D

Ans. is 'd' i.e., Leaves orbit through inferior orbital fissure *[Ref BDC 6$^{th}$Ie Vol.3 p. 209]*

- Ophthalmic artery does not leave the orbit. It terminates near the medial angle of eye by dividing into supratrochlear and dorsal nasal branches.
- It lies along with optic nerve in a common dural sheath.
- It supplies anterior ethmoidal sinus by its anterior ethmoidal branch.
- Central artery to retina (branch of ophthalmic artery) is an end artery.

## 51. Hartman's pouch is seen in ?

a) Liver

b) Bile duct

c) Pancreas

d) Gall bladder

Correct Answer - D
Ans. is 'd' i.e., Gall bladder

- *Gall* bladder is a pear-shaped hollow viscus situated in a non-peritoneal fossa on the undersurface of right lobe of liver.
- It is *7-10 cm long, 3 cm broad and has a capacity of 30-50 ml.*
- Gall bladder is divided into (from below upwards) :- *fundus, body and neck.*
- Fundus projects beyond the inferior border of liver.
- Body lies in the fossa for gallbladder on the undersurface of right lobe of liver.
- Neck is *`S' shaped* and extends from the body to cystic duct, i.e. neck becomes continuous with cystic duct.
- From the neck, a small diverticulum known as *Hartman's pouch* projects downwards and backwards towards the duodenum.
- The wall of gall bladder is made up of mucous membrane, a fibromuscular coat and a serous layer that covers part of organ.
- The mucosa is noted for outpouchings extending into and through muscular fibers, called as Rokitansky-Aschoff sinuses.

## 52. During development spleen lobulation is related to ?

a) Lateral

b) Superior

c) Inferior

d) None

Correct Answer - B
Spleen develops as a collection of mesenchymal cells in the dorsal mesogastrium.
Initially the splenic tissue is arranges as a number of lobules which later join together to form a single spleen. The notches in the superior border of adult spleen are representatives of growth that separated the lobules during fetal period.

## 53. Fascia of Denonvilliers lies between

a) Vagina and rectum

b) Vagina and urinary bladder

c) Prostate and rectum

d) None of the above

Correct Answer - C
In males, rectovesicle pouch of peritoneum intervenes between rectum and urinary bladder.
Obliterated part of rectovesical pouch is called fascia of Denonviller's which separates posterior surface of prostate from rectum. In females rectouterine pouch (pouch of Douglas) lies between rectum (posteriorly) and uterus and posterior fornix of vagina (anteiorly).
In females vesicouterine pouch lies between urinary bladder (anteriorly) and uterus posteriorly.
*The rectovesical pouch (in males) and rectouterine pouch (in females) are the most dependent portions of peritoneal cavity in erect posture.*

## 54. The fascia from rectum to posterior pelvic wall is?

a) Fascia of waldeyer

b) Fascia of Denonviller

c) Scarpa's fascia

d) Colle's fascia

Correct Answer - A
Ans. is 'a' i.e., Fascia of Waldeyer
Posteriorly rectum is related to sacrum, Coccyx, sacral nerves, median sacral artery and sacral veins.

- A fascia, known as Waldeyer's fascia, Separates the rectum from these structures and contains the plexus of veins draining the rectum.
- It is also called as presacral fascia.

**About other options**

- Scarpa's fascia is deep membranous layer of superficial fascia of anterior abdominal wall.
- Colle's fascia is membranous layer of superficial fascia of perineum.
- Fascia of Denonviller separates rectum from prostate.

## 55. True about nervi erigentes are all except ?

a) An autonomic nerve

b) Parasympathetic outflow

c) Arise from ventral rami of S2S3S4

d) Joins superior hypogastric plexus

Correct Answer - D

**Pelvic splanchnic nerves (nervi erigentes)**

- The nervi erigentes represent the sacral outflow of parasympathetic system and arise from ventral rami of S2 S3 S4.
- They join the right and left hypogastric nerves to form the *inferior hypogastric plexus* and are distributed to pelvic organs.
- Thus distribution of pelvic splanchnic nerve is same as of inferior hypogastric plexus.

## 56. Stomach bed is formed by all except ?

a) Pancreas

b) Right kidney

c) Splenic artery

d) Diaphragm

Correct Answer - B

The posterior surface of stomach is related to structures forming the stomach bed, *all of which are separated from stomach by the cavity of the lesser sac.* These structures forming stomach bed are :-

i. *Diaphragm,*
i. *Pancreas (body)*
i. *Splenic artery*
*i*. *Left kidney*
*i*. *Transverse colon*
i. *Left suprarenal (adrenal) gland*
i. *Splenic flexure of colon*

- Sometimes spleen is also included in stomach bed, but it is separated from stomach by greater sac (not lesser sac).

## 57. Length of human intestine is about ?

a) 5 meter

b) 8 meter

c) 12 meter

d) 15 meter

Correct Answer - B
Ans. is 'b' i.e., 8 meter
Length of human intestine is 7·5 meter to 8·5 meter :-
Small intestine →6 to 7 meter
Large intestine → 1-5 meter

## 58. Difference between large and small intestine is that small intestine has ?

a) Appendices epiploicae

b) Sacculation

c) Taeniae coli

d) Intestinal vili

Correct Answer - D
Intestinal vili

**59.**

## Second part of duodenum not related posteriorly to?

a) IVC

b) Psoas major

c) Bile duct

d) Renal artery

Correct Answer - C
Ans. is 'c' i.e., Bile duct

**60.**

# All are true about 1st part of duodenum, except ?

a) 5 cm long

b) Is superior part

c) Develops from foregut

d) Supplied by superior mesenteric artery

Correct Answer - D
Ans. is 'd' i.e., Supplied by superior mesenteric artery
**Duodenum**

- Duodenum is **'C'** *shaped,* shortest, widest and most fixed part of small intestine. It is 25 cm long. It is devoid of mesentery. *Most of the duodenum is retroperitoneal and fixed,* except at its two ends where it is suspended by folds of peritoneum, and is therefore mobile. Duodenum lies opposite Ll, L2 and L3 vertebrae.
- Duodenum is C-shaped curve which encloses the head of pancreas and is subdivided into four parts :
  1. First part (Superior part) : It is *5 cm (2 inches)* long. It begins at the pylorus and meet the second part at superior duodenal flexure. This part appears as duodenal cap on barium studies.
  2. Second part (Descending part) : It is about 7·5 cm (3 inches) long. It is vertical part which begins at superior duodenal flexure and meet the third part at inferior duodenal flexure. The interior of second part of duodenum shows following features :
  *i) Major duodenal papilla :* It is present 8-10 cm distal to the pylorus. The hepatopancreatic ampulla or ampulla of Vater (joint part of bile duct and pancreatic duct) opens here.
  *ii) Minor duodenal papilla :* It is present 6-8 cm distal to the pylorus. **Accessory pancreatic duct opens here.**

3. Third part (Horizonal part) : It is 10 cm (4 inches) long. It begins at inferior duodenal flexure and passes towards the left in front of IVC behind superior mesenteric vessels and root of mesentery to meet $4^{th}$ part of duodenum.

- Fourth part : It is 2-5 cm (1 inches) long and runs upward immediately to the left of aorta. It ends at duodenojejunal flexure by joining the jejunum.

**Arterial supply**

- The part of duodenum before the opening of bile duct (major duodenal papilla) develops from foregut and therefore is supplied *by coeliac trunk* through superior pancreaticoduodenal artery, a branch of gastroduodenal artery, which in trun is a branch of common hepatic artery. Part of duodenum distal to opening of bile duct is developed from midgut and therefore is supplied by *superior mesenteric artery* through inferior pancreaticoduodenal artery. First part of duodenum receives additional supply from *right gastric artery, supraduodenal artery (a* branch of common hapatic artery), retroduodenal branch of gastrodudenal artery and right gastropiploic artery.

## 61. Angle of anteversion of uterus is between ?

a) Long axis of uterus and cervix

b) Long axis of cervix and vagina

c) Long axis of uterus and vagina

d) None of the above

Correct Answer - C
Long axis of uterus and vagina
The normal position of the uterus is one of the *anteflexion* and *anteversion,* i.e. the fundus and upper part of the body bent forward in relation to the long axis of the cervix *(angle of anteflexion: normal 1251,* while the organ thus leans forward as a whole from the vagina *(angle of anteversion: normal 90").*

## 62. Triangular space between clitoris and hymen ?

a) Fourchette

b) Fossa navicularis

c) Vestibule

d) Labia minora

Correct Answer - C

**Ans. is 'c' i.e., Vestibule**

***Female* genitals :?**

- The labia mojora are the two elongated folds of skin projecting downwards and backwards from the mons veneris.
- The *labia minora* are two thin folds of skin just within labia majora.
- The lower portions of labia called fourchette.
- The depression between fourchette and the vaginal orifice is called fossa navicularis.
- The Vestibule is the triangular surface which *extends from clitoris (above) to hymen (below)* and labia minora (laterally).
- Urethral opening is 2·5 cm behind the clitoris, and immediately in front of vaginal opening.
- Vulva includes mons veneris, clitoris, labia majora, labia minora, vestibule, hymen and urethral opening.

## 63. Posterior border of ovary is ?

a) Attached to suspensory ligament

b) Attached to broad ligament

c) Attached to infundibulopelvic ligament

d) Free of ligament attachment

Correct Answer - D

**Ans. is 'd' i.e., Free of ligament attachment**

**OVARY**

The ovaries are *female gonads.* Each ovary lies in the ovarian fossa on the lateral pelvic wall which is bound *anteriorly* by obliterated umblical artery and *posteriorly by ureter and internal iliac artery.*

Each ovary has two poles (upper and lower), two borders (anterior and posterior) and two surfaces (medial and lateral).

Upper pole (tubal end) is related to ovarian fimbria of fallopian tube and external iliac artery. *Suspensory ligament of ovary (infundibulopelvic ligament)* connents it with pelvic brim.

Lower pole (uterine end) is connected with lateral angle of uterus by *ligament of the ovary,* just posteroinferior to the attachment of fallopian tube.

Lateral surface is related to ovarian fossa and is covered with peritoneum which separates it from Obturator vessels and nerve.

Medial surface is related to fallopian tube and is separated by a peritoneal recess, called ovarian bursa.

Anterior border (mesovarian border) is straight and related to fallopian tube and obliterated umblical artery. It is attached to posterior surface of broad ligament of uterus by mesovarium and forms the *hilus of ovary.*

*Posterior border (free border)* is convex and is related to fallopian

tube and ureter.

## 64. Crura of penis is supplied by ?

a) Dorsal artery of penis

b) Deep artery of penis

c) External pudendal artery

d) Obturator artery

Correct Answer - B
Ans. is 'b' i.e., Deep artery of penis
Internal pudendal artery on each side enters the deep perineal pouch and passes forward, giving rise to :-
*i) Artery to the bulp of penis.*
*ii) Arteries to crura of the penis (deep artery of penis).*
iii) Dorsal artery of penis which suppies the skin and fascia of penis.

## 65. Arteria pancreatic magna is a branch of which artery ?

a) Left gastric

b) Right gastric

c) Common hepatic

d) Splenic

Correct Answer - D
**Ans. is 'd' i.e., Splenic**
**Branches of coeliac trunk**
The coeliac trunk is only about 1.25 cm long and it ends by divided into its three terminal branches :?
1) Left gastric artery :- It is the *smallest branch of coeliac trunk.* It ends by anastomosing with right gastric artery. It gives off :
*a) Two or three esophageal branches.*
*b) Number of gastric branches.*
2) Common hepatic artery :- It runs to the right behind lesser sac and enters the *free right border of lesser omentum* and then run upwards as proper hepatic artery, in front of portal vein and to the left of bile duct. After reaching the porta hepatis it terminates by dividing into *right and left hepatic branches.* It gives of following branches :
*a) Gastroduodenal artery :-* It terminates by dividing into right gastroepiploic artery and superior pancreaticoduodenal artery.
*b) Right gastric artery.*
*c) Cystic artery :-* It is a branch of right hepatic artery.
3) Splenic artery :- It is the *largest branch of coeliac trunk.* It runs horizontally to the left along upper border of pancreas and has tortuous course. It crosses left suprarenal gland and left kidney to

enter the linorenal ligament through which it reaches the hilum of spleen where it divides into *5-7* splenic (hilar) branches. It gives off :
*a) Numerous pancreatic brnaches :-* These *supply body and tail of pancreas.* One of the pancreatic branches is large and is called arteria pancreatic magna. Another large branch is called *arteria caudae pancreatis.*
*b) Short gastric anteries :-* Run in gastrosplenic ligament and supply the fundus of stomach.
*c) Left gastroepiploic artery :-* It anastomoses with right gastroepiploic artery and supplies stomach and *greater omentum.*
*d) Posterior gastric artery :-* It is an inconsistent branch and supplies posterior body and fundus of stomach.

## 66. Lymphatic drainage of Vulva is into ?

a) Obturator nodes

b) Internal iliac nodes

c) Superficial inguinal nodes

d) Paraaortic nodes

Correct Answer - C
Ans. is 'c' i.e., Superficial inguinal nodes
*Lymphatics of Vulva drain primarily into superficial inguinal lymph nodes and subsequently to deep inguinal and external iliac ndes.*
*Lymphatics of Clitoris primarily drain into deep inguinal nodes.*

## 67. Lymphatic drainage of ovary is through:

a) Preaortic and para-aortic lymph nodes

b) Superficial inguinal lymph nodes

c) Deep inguinal lymph nodes

d) Internal iliac lymph nodes

Correct Answer - A

**Lymph Drainage of ovary**

The lymph vessels of the ovary follow the ovarian artery and drain into the pre aortic and para-aortic nodes at the level of the first lumbar vertebra.

**Arterial Supply**

The ovarian artery arises from the abdominal aorta at the level of the first lumbar vertebra.

**Venous drainage.**

The ovarian vein drains into the inferior vena cava on the right side and into the left renal vein on the left side. Nerve Supply

The nerve supply to the ovary is derived from the aortic plexus and accompanies the ovarian artery.

## 68. Fundus of uterus drains into ?

a) External iliac

b) Inguinal

c) Paraaortic

d) Obturator

Correct Answer - C
Paraaortic

- *Cervix (lower lymphatics) :-* Lymphatics drain into external iliac, internal iliac, and sacral nodes.
- *Lower part of body (middle lymphatics) :-* Lymphatics drain into the *external iliac nodes.*
- *Fundus and upper part of body (upper lymphatics) :-* Lymphatics drain mainly into para-aortic nodes and a few lymphatics from the *uterine cornu* accompany the round ligaments to reach the *superficial inguinal nodes.*

## 69. Lymphatic drainage of cervix is to

a) Iliac lymph nodes

b) Para aortic lymph nodes

c) Superficial inguinal lymph nodes

d) Deep inguinal lymph nodes

Correct Answer - A
A. i.e. Iliac lymph nodes

## 70. Internal pudendal artery is a branch of ?

a) Anterior division of internal iliac

b) Posterior division of internal iliac

c) Anterior division of external iliac

d) Posterior division of external iliac

Correct Answer - A
Ans. is `a' i.e., Anterior division of internal iliac
Branches of anterior division of internal iliac artery are : (i) Superior vesical, (ii) Middle rectal, (iii) Inferior vesical (in males), (iv) *Internal pudendal,* (v) Vaginal (in females), (vi) *Uterine* (in females), (vii) *Obturator,* and (viii) *Inferior gluteal.*
Branches of posterior division are : (i) *Iliolumbar,* (ii) Lateral sacral, and (iii) Superior gluteal.

## 71. Uterine artery is branch of ?

a) Anterior branch of internal iliac

b) Posterior branch of internal iliac

c) Anterior division of external iliac

d) Psterior division of external iliac

Correct Answer - A
Anterior branch of internal iliac

## 72. Left gastric artery is a branch of ?

a) Hepatic artery

b) Splenic artery

c) Superior nesenteric artery

d) Coeliac trunk

Correct Answer - D

**Ans. is 'd' i.e., Coeliac trunk**

**Arterial supply of stomach is as follows -**

- *Along lesser curvature :* Left gastric artery (branch of coeliac trunk) and right gastric artery (branch of proper hepatic artery).
- *Along greater curvature :* Right gastroepiploic artery (branch of gastroduodenal artery) and left gastroepiploic artery (branch of splenic artery).
- *Fundus* 5-7 short gastric arteries (branches of splenic artery).
- Most consistently largest artery to stomach is left gastric artery.

## 73. Short gastric artery is a branch of ?

a) Coeliac trunk

b) Splenic artery

c) Hepatic artery

d) Superior mesentric artery

Correct Answer - B
Ans. is 'b' i.e., Splenic artery

## 74. Portocaval anastomosis is seen at all of the following places, except?

a) Gastroesophageal junction (lower end of esophegus)

b) Rectum

c) Spleen

d) Liver

Correct Answer - C
Spleen

## 75. Portal vein is formed ?

a) Behind the spleen

b) Behind the tail of pancreas

c) Behind the neck of pancreas

d) Behind the second part of duodenum

Correct Answer - C
The portal vein is about 8 cm long.
It is formed by union of superior mesenteric vein and splenic vein behind the neck of pancreas at the level of $\mathbf{L_2}$ vertebrae in front of inferior vena cava (IVC).

## 76. How many vascular segments are present in each kidney?

a) 3

b) 4

c) 5

d) 6

Correct Answer - C
**Renal artery :-** Right renal artery is longer and passes behind **IVC.**
Renal artery divides into : ?
*a) Posterior division :-* Supplies posterior segment.
*b) Anterior division :-* Divides further into 4 branches to supply apical, upper anterior, middle anterior and lower segments.
**Thus, there are five vascular segments** in each kidney :- Posterior, apical, upper anterior, middle anterior and lower.
**Branches of renal artery are end arteries.**

## 77. Internal rectal venous plexus lies at ?

a) Outer anal verge

b) White line of Hilton

c) Proximal to pectinate line

d) Distal to pectinate line

Correct Answer - C

- Internal rectal venous plexus (Hemorrhoidal plexus) lies above the pectinate line.
- It lies in the submucosa of anal canal and drains mainly into superior rectal vein, but communicates freely with external rectal venous plexus.
- The internal plexus is in the form of a series of dilated pouches and veins present in the 3, 7 and 11 O'clock positions are large and constitute potential sites from primary internal piles (hemorrhoids).

## 78. Feature of epithelium of anal canal ?

a) Upper part is lined by stratified columnar epithelium

b) Upper part contains anal columns of morgagni

c) Middle part is below Hilton's line

d) Middle part contains sweat and sebaceous glands

Correct Answer - B

Ans. is **'b' i.e.,** Upper part contains anal columns of margagni

The interior of anal canal is divided by *pectinate line* and *Hilton's white line* into three parts.

1) Upper part (mucous part)

- It is upper 15 mm part of anal canal and extends upto pectinate line. It is lined by mucous membrane which is *simple columnar.* Mucosa shows 6-10 longitudinal folds called anal columns of Morgagni. Lower ends of these folds are united by short transverse folds, *anal valves.* Line of attachment of anal valve is known as pectinate line or dentate line. Slight depression above each anal valve is known as *anal sinus.*

2) Middle part (transitional zone or pecten)

- This area is 15 mm in extent and intervenes *between pectinate (dentate) line and Hilton's white line.* It is lined by *non-keratinized stratified squamous epithelium* without sebaceous and sweat glands.

3) Lower part (cutoneous) part

- It is about 8 mm in extent and is *lined by true skin,* i.e. *stratified squamous keratimizing epithelium* with sebaceous and sweat glands.

**79.**

## Anal valve is found in which part of anal canal ?

a) Upper

b) Middle

c) Lower

d) At anus

Correct Answer - A
Ans. is 'a' i.e., Upper

## 80. Watershed line in anal canal ?

a) Hilton's line

b) Pectinate line

c) Mucocutaneous junction

d) None

Correct Answer - B
Ans. is 'b' i.e., Pectinate line
Pectinate line forms the *water-shed line* of anal canal.
Area above pectinate line drains into internal iliac nodes and area below it drains into superficial inguinal nodes.

## 81. Which is not a boundary of calot triangle

a) Common hepatic duct

b) Cystic duct

c) Right lobe of liver

d) Gall bladder

Correct Answer - D
Gall bladder

## 82. All nerves pass thorugh greater sciatic notch except ?

a) Superior gluteal nerve

b) Inferior gluteal nerve

c) Sciatic nerve

d) Obturator nerve

Correct Answer - D
Ans. is 'd' i.e., Obturator nerve

## 83. Medial longitudinal arch of the foot is maintained by all except ?

a) Peroneous longus

b) Tibialis posterior

c) Flexor digitorum longus

d) Plantar aponeurosis

Correct Answer - A
Ans. is 'a' i.e., Peroneous longus
The arches of the foot are well known features of the foot. There are two longitudinal arches, i.e. medial longitudinal arch and lateral longitudinal arch.
In addition there are two transverse arches, i.e. posterior transverse arch and an anterior transverse arch.

## 84. Action of tibialis anterior ?

a) Plantar flexion of foot

b) Adduction of foot

c) Inversion of foot

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Inversion of foot

## 85. Spring ligament consists of all except ?

a) Plantar calcaneocuboid ligament

b) Plantar calcaneonavicular ligament

c) Medial calcaneonavicular ligament

d) Lateral calcaneonavicular ligament

Correct Answer - A
Ans. is 'a' i.e., Planter calcaneocuboid ligament
The spring ligament (Plantar calcaneonavicular ligament) is a group of ligaments which connect calcaneum to navicular.
It consists of :?
i) Superomedial ligament.
*ii) Medioplantar oblique ligament (medial or intermedial calcaneonavicular ligament).*
*iii) nferoplantar longitudinal ligament (Lateral calcaneonavicular ligament).*
The *spring ligament* or *plantar calcaneonavicular ligament* is powerful.
It is attached posteriorly to the anterior margin of the sustentaculum tali, and anteriorly to the plantar surface of the navicular bone between its tuberosity and articular margin.
The head of the talus rests directly on the upper surface of the ligament, which is covered by fibrocartilage.
The plantar surface of the ligament is supported by the tendon of tibialis posterior medially, and by the tendons of flexor hallucis longus and flexor digitorum longus, laterally.

## 86. Action of popliteus muscle ?

a) Medial rotation of femur

b) Lateral rotation of femur

c) Locking of knee

d) Extension of knee

Correct Answer - B
Ans. is 'b' i.e., Lateral rotation of femur
Ponliteus

- Popliteus is a deep muscle of posterior compartment of leg.
- Features of popletius are ?

**Origin**

- Lateral surface of lateral condyle of femur, origin is intracapsular.
- Outer margin of lateral meniscus of knee.

**Insertion**

- *Posterior surface of shaft of tibia above soleal line.*

**Nerve supply**

- Tibial nerve

**Action**

- *Ulocks knee joint* by lateral rotation of femur on tibia prior flexion.
- Accessory flexor of knee

## 87. Not a content of Hunter's canal ?

a) Femoral artery

b) Femoral vein

c) Femoral nerve

d) Sphenous nerve

Correct Answer - C
Ans. is 'c' i.e., Femoral nerve
Contents of adductor canal are femoral artery, femoral vein, Saphenous nerve, nerve to vastus medialis, *descending genicular artery, deep lymph vessels,* and *two terminal divisions of obturator nerve.*

## 88. Talus bone articulates with all of the following EXCEPT:

a) Calcaneum

b) Tibia

c) Navicular

d) Cuboid

Correct Answer - D
*Proximal surface of cuboid articulates with calcaneum, distal surface with 4th and 5th metatarsal and medial surface articulates with lateral cuneiform bone.*

## 89. All of the following statements regarding the deep fascia of the thigh are true except:

a) It splits in the gluteal region to enclose gluteus maximus muscle

b) Iliotibial tract forms a sheath for tensor fasciae latae muscle

c) Medially the fascia is thickened to form iliotibial tract

d) It is also known as fascia lata

Correct Answer - C
Deep Fascia of the Thigh's (Fascia Lata) upper end is attached to the pelvis and the inguinal ligament. On its lateral aspect, it is thickened to form the iliotibial tract, which is attached above to the iliac tubercle and below to the lateral condyle of the tibia. The iliotibial tract receives the insertion of the tensor fasciae latae and the greater part of the gluteus maximus muscle.
In the gluteal region, the deep fascia forms sheaths, which enclose the tensor fasciae latae and the gluteus maximus muscles.
The saphenous opening is a gap in the deep fascia in the front of the thigh just below the inguinal ligament. It transmits the great saphenous vein, some small branches of the femoral artery, and lymph vessels.
The saphenous opening is filled with loose connective tissue called the cribriform fascia.

**90. Which of the following is not present in Deep perineal pouch ?**

a) Bartholin's gland

b) Bulbourethral glands

c) Dorsal nerve of penis

d) Sphincter urethrae

Correct Answer - A
Great vestibular gland (Bartholin's gland) is a component of superficial perineal pouch.

## 91. Content of superficial perineal pouch ?

a) Sphincter urethrae

b) Deep transverse perinei

c) Bulbospongiosus

d) Artery of penis

Correct Answer - C
Bulbospongiosus

## 92. Superficial perineal muscles include?

a) Iliococcygeus

b) Ischiococcygeus

c) Bulbospongiosus

d) Levator ani

Correct Answer - C
Superficial muscles of perineum (lie in superficial perineal pouch) are ischiocavernosus, bulbospongiosus and superficial transverse perinei.
Deep muscles (lie in deep perineal pouch) are splincter urethrae, deep transverse perinei, and in females, compression urethrae and sphincter urethravaginalis.

## 93. Urogenital diaphragm is pierced by all except -

a) Intemalpudendal artery

b) Dorsalartery of penis

c) Dorsal nerve of penis

d) Urethra

Correct Answer - A

**Male:**

- **Urethra, 2-3 cm behind the inferior border of the symphysis pubis.**
- **Vessels and neryes to the bulb of the penis.**
- **Ductus of the bulbourethral glands, posterolateral to the urethral orifice.**
- **Deep dorsal vessels and dorsal nerves of the penis, behind the pubic arch in the midline.**
- **Posterior scrotal vessels and nerves, anterior to the transverse perinei.**

**Female:**

- **Urethra, 2-3 cm behind the inferior border of the symphysis pubis.**
- **Vagina, centrally**
- **Ducts of Bartholin's glands, posterolateral to tbe urethral orifice**
- **Deep dorsal vessels and dorsal nerves of the clitoris, behind the pubic arch io the midline.**
- **Posterior labial vessels and nerves, anterior to the transverse perinei.**

## 94. Which of the following is not involved in formation of perineal body ?

a) Superficial transverse perenei

b) Deep transverse perenei

c) Bulbocavernosus

d) Levator ani

Correct Answer - A
Ans. is 'a' i.e., Superficial transverse perenei
Thyroid gland is the *largest endocrine gland* situated in front and sides of lower part of neck opposite C5-T4 vertebrae. The weight of thyroid gland is approximately *25 gm.* The gland is made of :-
*i) Right and left lobes*
*ii) Isthmus*
*iii) Pyramidal lobe*
The gland lies against vertebrae C5 to T1. Each lobe extends from the middle of thyroid cartilage to the 4th or 5th tracheal ring. The isthmus lies against the 2nd and 3rd tracheal rings.

## 95. Lateral border of ischeorectal fossa is formed by?

a) Gluteus maximus

b) Perineal membrane

c) Pelvic diaphram

d) Obturator internus

Correct Answer - D
**Ans. is 'd' i.e., Obturator internus**
**Boundries of ischeoanal (ischeorectal) fossa are :-**
*i) Anteriorly :-* Posterior border of perineal membrane .
*ii) Posteriorly :-* Gluteus maximus muscle, sacrotuberous ligament.
*iii) Laterally :-* Ischial tuberosity and obturator internus.
*iv) Medially :-* Sphincter ani externus (external anal sphincter) and pelvic diaphragm (levator ani).

## 96. Clavipectoral fascia splits to enclose subclavius and pectoralis minor, and continues as ?

a) Axillary sheath

b) Costocoracoid ligament

c) Costoclavicular ligament

d) Suspensory ligament

Correct Answer - D

**Clavipectoral fascia**

- It is a *strong sheet of fascia,* situated deep to pectoralis major muscle and extends from the pectoralis minor to the clavicle. It splits in upper part to enlose subclavius and splits in lower part to enclose pectoralis minor. Below this it is continuous as suspensory ligament.
- Traced upward, it splits to enclose the subclavius, and its two layers are attached to clavicle, one in front and the other behind. The latter layer fuses with *deep cervical fascia and axillary sheath.*
- Medially, clavipectoral fascia blends with the fascia covering first two intercostal spaces and is attached to first rib medial to origin of subclavius.
- Laterally, it is very thick and dense, and is attached to coracoid process. The portion extending from first rib to coracoid process is called costocoracoid ligament.

## 97. Inferior angle of scapula lies at -

a) T6

b) T7

c) T3

d) T12

Correct Answer - B

**Important landmarks of scapula**

i) Inferior angle overlaps seventh rib or seventh intercostal space and lies opposite to tip of T7 spinous process.

*ii)* Superior angle lies opposite to *tip of T2 spinous process.*

iii) Lateral angle corresponds to glenoid fossa.

iv) Junction of medial (vertebral) border corresponds to tip of T3 spine.

## 98. Which border of scapula is not palpable ?

a) Medial

b) Lateral

c) Inferior

d) Superior

Correct Answer - D
*"The medial border, inferior angle and part of the lateral border of scapula can be palpated on a patient as can the spine and acromian. The superior border and angle of the scapula are deep to soft tissue and are not readly palpable"*

**99. Superior angle of scapula lies at which level ?**

a) $T_7$

b) $T_{12}$

c) $T_2$

d) $C_5$

Correct Answer - C
Ans. is 'c' i.e., $T_2$

## 100. Muscle attached to coracoid process ?

a) Pectoralis major

b) Long head of triceps

c) Medial head of triceps

d) Short head of biceps

Correct Answer - D
Ans. is 'd' i.e., Short head of biceps
Tip of the coracoid process gives origin to coracobrachialis (medially) and short head of the biceps. The upper surface receives insertion of pectoralis minor.

## 101. Not under flexor retinaculum

a) Median nerve

b) Ulnar nerve

c) FDS

d) FPL

Correct Answer - B

**Structures deep to flexor retinaculum**

1) Lateral compartment : Flexor carpi radialis tendon with its synovial sheath lodged in the groove on the palmar surface of trapezium.

2 Medial compartment : (carpal tunnel proper).

**<u>Structures superficially to flexor retinaculum</u>**

1) Palmaris longus tendon continuous with apex of palmar aponeurosis.

2) Palmar cutaneous branch of median nerve.

3) Palmar cutaneous branch of ulnar nerve.

4) Ulnar nerve.

5) Ulnar vessels protected superficially by volar carpal ligament (superficial part of the flexor retinaculum).

## 102. Carpal tunnel syndrome is due to involvement of which nerve: *March 2009*

a) Radial nerve

b) Median nerve

c) Ulnar nerve

d) Axillary nerve

Correct Answer - B
Ans. B: Median Nerve

## 103. Bounderies of anatomical snuff box are all except

a) APL

b) EPL

c) EPB

d) ECU

Correct Answer - D
Ans. is 'd' i.e., ECU
**Anatomical Snuffbox**

- Triangular depression on the dorsal and radial aspect of the hand become visible when thumb is fully extended. Boundaries
- Medial/Posterior → Tendon of the *extensor pollicis longus.*
- Lateral/Anterior → Tendon of the *extensor pollicis brevis and abductor pollicis longus.*
- Roof Skin and → fascia with beginning of cephalic vein and crossed by superficial branch of the radial nerve.
- Floor → Styloid process of radius, trapezium, scaphoid and base of 1st metacarpal.
- Contents → The radial artery.

**104.** **Which of the following structure is NOT a content of the cubital fossa?**

a) Brachial artery

b) Ulnar nerve

c) Radial nerve

d) Median nerve

Correct Answer - B

The *cubital fossa* is a triangular intermuscular space seen as a shallow surface depression in front of the elbow. The contents of the cubital fossa are tendon of biceps brachii, brachial artery, median nerve and radial nerve. Radial nerve is present in the superolateral aspect of the fossa under cover of brachioradialis.

Boundaries of cubital fossa:

- *Base* is formed by an imaginary line passing through the medial and lateral epicondyle of humerus.
- Medial boundary is formed by lateral margin of pronator teres muscle.
- *Lateral boundary* is formed by medial margin of brachioradialis muscle.
- Apex is located at the crossing of pronator teres and brachioradialis muscle.
- *Floor* consist of brachialis in the upper part and supinator in the lower part.

## 105. Which of the following is not intracapsular ?

a) Coronoid fossa

b) Radial fossa

c) Olecranon fossa

d) Lateral epicondyle

Correct Answer - D
Ans. is 'd' i.e., Lateral epicondyle
*The capsular ligament of the elbow joint* is attached to the lower end along a line that reaches the upper limits of the radial and coronoid fossae anterioly; and of the olecranon fossa posteriorly; so that these fossae lie within the joint cavity.
Medially, the line of attachment passes between the medial epicondyle and the trochlea.
On the lateral side, it passes between the lateral epicondyle and the capitulum.

## 106. Supination - pronation occurs at ?

a) Wrist joint

b) Radiocarpal joint

c) Radio-ulnar joint

d) Elbow joint

Correct Answer - C
Radio-ulnar joint

## 107. Which of the following nerve does not have root valve C5, C6,C7

a) Lateral pectoral nerve

b) Musculocutaneous nerve

c) Lateral root of median nerve

d) Ulnar nerve

Correct Answer - D
Ulnar nerve does not have root valve C5, C6,C7 .

## 108. Attachment at hook of hamate -

a) FCR

b) Flexor retinaculum

c) FCU

d) FDP

Correct Answer - B
**The hamate :**
*i)* The tip of the hook gives attachment to the *flexor retinaculum.*
*ii)* The medial side of the hook gives attachment to the *flexor digiti minimi* and the *opponens digiti minimi.*

**109. Which flexor muscle is attached to hook of hamate?**

a) Flexor pollicis brevis

b) Flexor pollicis longus

c) Flexor digiti minimi

d) Flexor carpi ulnaris

Correct Answer - C
Ans. is 'c' i.e., Flexor digiti minimi

## 110. True about serratus anterior ?

a) Causes protraction

b) Causes lateral rotation

c) Supplied by thoracodorsal nerve

d) Forms lateral boundary of axilla

Correct Answer - A

Serratus anterior causes protraction of scapula.

- It is supplied by long thoracic nerve (Nerve of Bell).
- It forms medial boundary of axilla.

**Serratus anterior**

- *Origin :* Outer surface of upper 8 ribs by 8 digitations (multipennate muscles).
- *Insertion : Medial border of scapula and inferior angle.*
- *Nerve supply :* Long thoracic nerve (nerve of bell).
- *Actions :* Action of serratus anterior are -
- Rotates the scapula so that glenoid cavity is raised upward & forward - Helps in *Vertical over head abduction* (in this action *assisted by trapezius).*
- Draws the scapula forward around the throcic wall so *paralysis leads to winging of scapula.*°
- Also used when arm is pushed forward in horizontal position as in *forward punch (helped by Pectoralis minor in this action)e.*
- Steadies the scapula during weight carrying.
- Helps in *forced inspiration.2* (Accessory muscle of inspiration).
- Because of greater pull exerted on the inferior angle, inferior angle passes laterally and forward and the glenoid cavity is raised upward & forward; in this action the muscle is assisted by trapezius.

## 111. Serratus arterior is supplied by ?

a) Thoracodorsal nerve

b) Axillary nerve

c) Musculocutaneous nerve

d) Nerve of bell

Correct Answer - D
Ans. is 'd' i.e., Nerve of bell

## 112. Which of the following is Climber's muscle ?

a) Serratus anterior

b) Lattissimus Dorsi

c) Rhomboidus major

d) Subscapularis

Correct Answer - B
Ans. is 'b' i.e., Lattissimus Dorsi
Lattissimus Dorsi is sometimes referred as the *'Climber' s muscles'* as it comes in visible action in climbing up the trees, so also in swimming and rowing.

## 113. Rotator cuff is/are formed by all except

a) Supraspinatus

b) Infraspinatus

c) Teres minor

d) Teres major

Correct Answer - D
Teres major
*Rotator cuff (Musculotendinous cuff)* is formed by blending of tendons of supraspinatus (superiorly); *infraspinatus and teres minor* (psoteriorly) and *subscapularis* (anteriorly).

## 114. Muscle of Arm with additional supinator action?

a) Brachialis

b) Biceps

c) Coracobrachialis

d) Triceps

Correct Answer - B
Ans. is 'b' i.e., Biceps

## 115. Action of anconeus ?

a) Mild pronation

b) Flexion

c) Supination

d) Extention

Correct Answer - D
Ans. is 'd' i.e., Extention

## 116. Which muscle of extensor Compartment flexes the elbow ?

a) ECRL

b) ECU

c) Anconeus

d) Brachioradialis

Correct Answer - D
Ans. is `d' i.e., Brachioradialis

## 117. Which muscle is inserted into the floor of the intertubercular sulcus of the humerus?

a) Latissimus dorsi

b) Teres major

c) Pectoralis major

d) Deltoid

Correct Answer - A
Ans. is 'a' i.e., Latissimus dorsi
The shaft of humerus is cylindrical in the upper half and triangular on cross-section in the lower half. The upper part has intertubercular sulcus (bicipital groove) anteriorly. Bicipital groove contains long head of biceps with its synovial sheath and an ascending branch of anterior circumflex humeral artery. Middle third of posterior surface of shaft of the humerus has a spiral groove (radial groove) which contains radial nerve and *profunda brachi vessels.*
**Attachment to shafts are ?**
i) Insertions of pectoralis major (on lateral lip of bicipital groove), latissimus dorsi (on floor of bicipital groove), teres major (on deltoid tuberosity) and coracobrachialis (medially on mid shaft).
ii) Origin of brachialis (anterior surface); Lateral and medial head of triceps (posterior surface); pronater teres (from medial supracondylar ridge); brachioradialis (from lateral supracondylar ridge) and ECRL (from lateral supracondylar ridge).

## 118. Nerve supply of Teres major is ?

a) Suprascapular nerve

b) Axillary nerve

c) Upper subscapular

d) Lower subscapular nerve

Correct Answer - D
**Ans. is 'd' i.e., Lower subscapular nerve**

## 119. Adductor pollicis is supplied by

a) Superficial branch of ulnar nerve

b) Deep branch of ulnar nerve

c) Superficial branch of median nerve

d) Deep branch of median nerve

Correct Answer - B
Ans. is 'b' i.e., Deep branch of ulnar nerve

## 120. True about trapezius are all except ?

a) Elevates the scapula

b) Originates for C7

c) Supplied by cranial part of accessory nerve

d) Causes over-head abduction

Correct Answer - C
Ans. is 'c' i.e., Supplied by cranial part of accessory nerve
The trapezius muscle is a postural and active **movement** muscle, used to tilt and turn the head and neck, shrug, steady the shoulders, and twist the arms.
The trapezius elevates, depresses, rotates, and retracts the scapula, or shoulder blade.
Innervation of the trapezius is derived from the spinal accessory nerve.

## 121. Axillary artery is divided into three parts by?

a) 1st rib

b) Clavicle

c) Pectoralis minor muscle

d) Teres minor muscle

Correct Answer - C

**Axillary artery**

- It is the main artery of upper limb. *It begins at the level of outer border of first rib as a continuation of subclavian artery.* It ends at the level of lower border of teres major to continue as brachial artery.
- The axillary artery is covered anteriorly by pectoralis minor, which divides it into three parts:?

1) First part :- This part is proximal to upper border of pectoralis minor, i.e. extends from outer border of first rib to upper border of pectoralis minor. The branch of first part is *Superior thoracic artery.*

2) Second part :- This part is behind pectoral is minor. It gives following branches.

*A) Thoracoacromial artery :-* It pierces clavipectoral foscia and gives following branches :-

(i) *Acromial*

(ii) *Pectoral,*

(iii) *Clavicular and deltoid.*

*B) Lateral thoracic artery*

3) Third part :- This part is distal to lower border of pectoralis minor, i.e. extends from pectoralis minor (lower border) to teres major (lower border). It gives following branches ?

*A) Subscapular artery:-* It gives off *circumflex scapular artery* and

then continues us *thoracodorsal artery.*

*B)* Anterior *circumflex humeral artery.*

*C)* *Posterior circumflex humeral artery.*

- Anterior and posterior circumflex arteries (both are branches of 3rd part of axillary artery) forms anastomosis around surgical neck of humerus.

**122.** **Most common nerve involved in supracondylar fracture of humerus is:**

a) Radial nerve

b) Ulnar nerve

c) Median nerve

d) Anterior Interosseous nerve

Correct Answer - D

Nerve injuries occur in about 40% of type III (Gartland's classification) supracondylar fractures. Studies indicate that the anterior interosseous branch of median nerve is mostly affected.

**Nerve involvement differ with the type of fracture.**

- Anterior interosseous nerve is mostly affected during posterolateral displacement of the distal fragment
- Radial nerve is mostly affected with posteromedial displacement
- Ulnar nerve is involved in flexion type of supracondylar fracture

**Ref:** Nerve and vascular injuries in Sports medicine, by Venu Akathota, Stanley A.Herring, Page 76, 77; The elbow and its disorders By Bernard F. Morrey, Joaquin Sanchez-Sotelo, Page 226.

**123. A 35-year-old construction worker presents with complaints of nocturnal parasthesias of the thumb and the index and middle fingers. There is some atrophy of the thenar eminence. Tinel sign is positive. The most likely diagnosis is**

a) Carpal tunnel syndrome

b) De Quervain's tenosynovitis

c) Amyotrophic lateral sclerosis

d) Rheumatoid arthritis of the wrist joint

Correct Answer - A
(Braunwald, 15/e, pp 1984–1986.) Carpal tunnel syndrome results from median nerve entrapment and is usually due to excessive use of the wrist. The process has been associated with thickening of connective tissue as in acromegaly, or with deposition of amyloid. It also occurs in hypothyroidism, rheumatoid arthritis, and diabetes mellitus. As in this patient, numbness occurs in the distribution of the median nerve. Later in the process, atrophy of the abductor pollicis brevis becomes apparent. The Tinel sign (parasthesia induced in the median nerve distribution by a reflex hammer hitting on the volar aspect of the wrist) is very characteristic. De Quervain's tenosynovitis causes focal wrist pain on the radial aspect of the hand and is due to inflammation of the tendon sheath of the abductor pollicis longus. It should not produce a postive Tinel sign. Amylotrophic lateral sclerosis may present with distal

muscle weakness that is diffuse and not focal. Diffuse atrophy and muscle fasiculations would be prominent. Rheumatoid arthritis would not produce these symptoms unless inflammation of the wrist was causing median nerve entrapment in the carpal tunnel.

**124.** **Lymph nodes draining the breast and lying behind the pectoralis minor are labelled as:**

a) Level 1

b) Level 2

c) Level 3

d) None of the above

Correct Answer - B

Axillary nodes receive more than 75% of the lymph from the breast. There are 20-40 nodes, grouped artificially as pectoral (anterior), subscapular (posterior), central and apical. Surgically, the nodes are described in relation to pectoralis minor. Those lying below pectoralis minor are the low nodes **(level 1)**, those behind the muscle are the middle group **(level 2),** while the nodes between the upper border of pectoralis minor and the lower border of the clavicle are the upper or apical nodes **(level 3)**.

## 125. All form the posterior wall of axilla EXCEPT:

a) Subscapularis

b) Subclavius

c) Teres major

d) Latissimus dorsi

Correct Answer - B
Subclavius forms the anterior wall of axilla

**126.**

## Cervical part of esophagus all are true except?

a) Arise at cricoid level

b) Site of portosystemic anastomosis

c) Foreign body obstruction common at this level

d) Striated muscle fibres positive

Correct Answer - B

- Portosystemic (Porto caval) anastomosis is seen in lower part (abdominal part) of esophagus.
- Cervical esophagus begins at lower border of cricoid cartilage (at C6 vertebral level) as a downward continuation of pharynx.
- Muscularis externa of cervical esophagus contains only skeletal muscle (striated muscle) fibers.
- Foreign body obstruction is common in this part of esophagus.

## 127. True about SA node are all except ?

a) Supplied by nodal artery

b) Primary pacemaker

c) Supplied by left vagus nerve

d) Made up of nodal cells and connective tissue

Correct Answer - C

- SA node is located in the upper part of crista terminalis at the junction of SVC and the right atrium.
- It is the pacemaker of the heart and generates impulse at a rate of 70-100/min.
- SA node is suplied by nodal artery, a branch of RCA in 65% cases and a branch of circumflex branch of LCA in 35% cases.
- SA node is supplied by right vagus/parasympathetic (inhibitory) and right Sympathetic (excitatory) system as it develops from structures on the right side of embryo.
- *The SA node consists of connective tissue stroma containing an irregular whorled network of cardiac nodal cells, the SA nodal artery and numerous nerve endings (postganglionic parasympathetic and postganglionic sympathetic).*

**128.**

# True about Thoracic part of sympathetic trunk:

a) The first five ganglia give preganglionic fibers

b) The sympathetic trunk has 13 segmentally arranged ganglia

c) It is the most medially placed structure in the mediastinum

d) The first ganglion is often fused with the inferior cervical ganglion to form the stellate ganglion

Correct Answer - D

Thoracic Part of the Sympathetic Trunk is continuous above with the cervical and below with the lumbar parts of the sympathetic trunk.

It is the most laterally placed structure in the mediastinum and runs downward on the heads of the ribs.

It leaves the thorax on the side of the body of the 12th thoracic vertebra by passing behind the medial arcuate ligament. The sympathetic trunk has 12 (often only 11) segmentally arranged ganglia, each with white and gray ramus communicans passing to the corresponding spinal nerve.

The first ganglion is often fused with the inferior cervical ganglion to form the stellate ganglion.

**Branches**

- The postganglionic fibers are distributed through the branches of the spinal nerves to the blood vessels, sweat glands, and erector pili muscles of the skin.
- The first five ganglia give postganglionic fibers to the heart, aorta, lungs, and esophagus.
- The lower eight ganglia mainly give preganglionic fibers, which are grouped together to form the splanchnic nerves and supply the abdominal viscera.

## 129. At hilum of lung, what enters ?

a) Primary/Principal bronchus

b) Secondary bronchus

c) Tertiary bronchus

d) Bronchiole

Correct Answer - A

**The root (hilum) of lung is made up of following structures :?**

1. Principal bronchus on the left side, and eparterial and hyparterial bronchi on the right side.
2. One pulmonary artery.
3. Two pulmonary veins, superior and inferior.
4. Bronchial arteries, one on the right side and two on the left side.
5. Bronchial veins.
6. Anterior and posterior pulmonary plexuses of nerves.
7. Lymphatics of the lung.
8. Bronchopulmonary lymph nodes.
9. Areolar tissue.

## 130. Foreign body from trachea most common goes to right bronchus due to ?

a) Right bronchus shallow

b) Wider & in continuous line with trachea

c) Right bronchus is longer

d) Right bronchus is horizontal

Correct Answer - B
Trachea bifurcates at Carina (at lower border of T4 vertebra at $T_4$-$T_5$ disc space) into *right and left principal (primary) bronchi.*
Right principal bronchus is wider, shorter (2·5 cm long), and more vertical in the line of trachea (25° with median plane).
Therefore a foreign body is most likely to lodge in the right bronchus.

**131.**

## Which of the following is situated in the upper part of Crista terminalis ?

a) AV node

b) Bundle of his

c) Right Bundle branch

d) SA node

Correct Answer - D
SA node

## 132. SA node is located in ?

a) Triangle of Koch's

b) In crista terminalis

c) In membranous part of interventricular septum

d) Upper part of interatrial septum

Correct Answer - B
In crista terminalis

## 133. Cardiac ganglion is situated ?

a) Below arch of aorta

b) Above arch of aorta

c) Left side of ligamentum arteriosum

d) Posterior to ligamentum arteriosum

Correct Answer - A

**Nerve supply of heart**

- Nerve supply to the heart has both (i) *Motor,* and (ii) *Sensory components.*

**Motor component**

*i) Superficial cardiac plexus :-* Lies in front of right pulmonary artery below the arch of aorta. It is fored by:- o *Superior cervical cardiac branch of the left sympathetic chain.*

- *Inferior cervical cardiac branch of left vagus.*
- A small ganglion, the cardiac ganglion of Wrisberg, is occaisonally found connected with these nerves at their point of junction. This ganglion, when present, is situated immediately beneath the arch of aorta, on right side of ligamentum arteriosum.

*ii) Deep cardiac plexus :-* Lies in fron of the bifurcation of trachea, behind the arch of aorta. *It is formed by all sympathetic and parasympathetic cardiac branches except those forming the superficial plexus.*

**Sensory component**

- Pain sensation arising due to ischemia is conveyed by afferents which pass through sympathetic cardiac fibers and reach the $T_1$ to T, cord segments on left side. Since these dorsal root ganglia also receive sensory impulses from the medial side of arm, forearm and upper part of front of chest, the pain gets referred to these areas

through these thoracic splanchnic nerves ($T_1$-$T_4$). Though the pain is usually referred to the left side, it may even be referred to right arm, jaw, epigastrium, neck, shoulder or back.

**134.** **What is the root value of phrenic nerve?**

a) CI-3

b) C2-4

c) C3-5

d) C4-6

Correct Answer - C

*The cervical plexus also gives rise to the phrenic nerve (C3–C5).* Courses vertically along the anterior scalene muscle between the subclavian artery and the subclavian vein en route to innervate the diaphragm.

*Also know:*

- "C3–C5, keep the diaphragm alive" is a mnemonic that is used to remember the spinal nerve levels of the phrenic nerve.

**135. Oesophagus crosses the diaphragm at the level of:**

a) $T_8$

b) $T_{10}$

c) $T_{12}$

d) $T_2$

Correct Answer - B
$T_{10}$

## 136. Thoracic duct enters from abdomen to thorax at ?

a) T6

b) T10

c) T12

d) T8

Correct Answer - C

- Thoracic duct is also called as Pecquet duct. It is the *largest lymphatic duct* in body, about 45 cm (18 inches) long. o It has a *beaded appearance* because of the presence of many valves in its lumen.
- Thoracic duct begins as a continuation of the upper end of the cisterna chylinear the lower border of Tuvertebra and enters the thorax through the aortic opening of diaphragm (at $T_{12}$ ).
- It then ascends through the posterior mediastinum and at $T_5$ level crosses from right side to the left side and ascends along left margin of oesophagus to enter the neck.
- At the level of $C_7$ vertebrae, arches towards left side to open into left brachiocephalic vein at the angle of union of left subclavian and left internal jugular veins.

## 137. Which is not a lobe of lung ?

a) Azygous

b) Superior

c) Inferior

d) Lingual

Correct Answer - D

**Fissure and lobes of lungs**

The right lung is divided into 3 lobes (upper, middle and lower) by two fissures, oblique and horizontal. The left lung is divided into two lobes (upper and lower) by the oblique fissures. Each lobe is further subdivided into bronchopulmonary segemts. Each lung has 10 bronchopulmonary segments.

## 138. Pericardial space is present between ?

a) Endocardium and pericardium

b) Epicardium and pericardium

c) Endocardium and epicardium

d) Parietal and visceral pericardium

Correct Answer - D
Pericardial space (pericardial cavity) lies between parietal serous pericardium and visceral serous pericardium.

## 139. Vasa Vasorum of ascending aorta arises from ?

a) Left coronary artery

b) Anterior interventricular artery

c) Posterior interventricular artery

d) Left atrium

Correct Answer - A
Clinical anatomy
*"Both coronary arteries supply vasa vasorum of ascending aorta"*
*"Coronary arteries are vasa vasorum of ascending aorta"*
**Vasa vasorum of ascending aorta and arch of aorta arise from :**
i) Coronary arteries (at their ostia).
ii) Brachiocephalic trunk.
iii) Bronchial artery.
**Vasa vasorum of descending aorta arise from':**
i) Intercostal arteries (thoracic part).
ii) Lumbar and mesenteric arteries (abdominal part).

## 140. Attachment to the first rib is all Except

a) Scalenius-anterior

b) Scalenius-posterior

c) Scalenius-medius

d) Suprapleural membrane

Correct Answer - B

B. i.e. Scalenius posterior

- The scalene tubercle provides the insertion for the tendon of scalenus anterior.
- Behind the scalene tubercle lies a second groove. Immediately behind this groove is the area of insertion of scalenus medius.
- To the inner margin of the first rib is attached the suprapleural membrane, better known to clinicians as Sibson's fascia.
- The small subclavius muscle arises from the anterior extremity of the upper surface of the rib
- Serratus anterior and the intercostal muscles of the first space find attachment to the lateral margin of the rib, and its inferior aspect lies against the cervical pleura.
-

**141. The order of neurovascular bundle in the intercostal space from above downwards is:-**

a) VAN

b) ANV

c) AVN

d) VNA

Correct Answer - A
The spaces between the ribs contain three muscles of respiration: the external intercostal, the internal intercostal, and the transversus thoracis muscle.
The intercostal nerves and blood vessels run between the intermediate and deepest layers of muscles. They are arranged in the following order from above downward: intercostal vein, intercostal artery, and intercostal nerve (i.e., VAN).

**142.** **Torus aorticus is an impression in the cavity of?**

a) Right atrium

b) Left atrium

c) Right ventricle

d) Left ventricle

Correct Answer - A

Torus aorticus *is a bulge in the right atrial wall anterosuperiorly above the membranous septum.* It is superior to the coronary sinus and anterior to the fossa ovalis. It represents the deeper and anterior surface of the posterior sinus and cusp of the aortic valve.

## 143. Not true about superior vena cava

a) Opens into right ventricle

b) Enters the heart at level of 3rd costal

c) Pierces paricardium at 2nd costal cartilage

d) Receives azygos vein behind sternal angle

Correct Answer - A
SVC opens in to right atrium (not right ventricle).
**Superior vena-cava**

- SVC collects blood from the upper half of the body and drains into the right atrium. It is formed by the union of two brachiocephalic veins at the level of lower border of 1" right costal cartilage. It passes vertically downwards behind the right border of sternum and *piercing the pericardium* at the level of the *second costal cartilage, enters the upper border of the right atrium to end in the upper and posterior part of sinus venorum at the lower border of third right costal cartilage (opposite* ***$T_s$ vertebra).***
- ***Superior vena cava :- Has no valve***
- *Behind the sternal angle ($T_4$ vertebral level), SVC receives the azygos vein.*
- SVC is divided into two parts -
  *i) Upper half (extrapericardial)*
  *ii) Lower half (intrapericardial)*

## 144. Main inspiratory muscle is ?

a) Lattissimus dorsi

b) Transversus thoracis

c) Serratus anterior

d) Diaphragm

Correct Answer - D
Respiratory muscles
**Inspiratory muscles**
*1. During quiet breathing :* Diaphragm (most important), external intercostal and interchondral part of internal intercostal.
*2. During forced inspiration :* Sternocleidomastoid, serratus anterior, serratus posterior superior, pectoralis major and minor, erector spinae, scaleni and levator costarum.
**Expiratory muscles**
*1. During quiet breathing :* Passive process due to passive recoil of the lungs and thoracic wall.
*2. During forced expiration :* Internal intercostal, innermost intercostal, transversus thoracic, serratus posterior inferior, subcostalis, *lattissimus dorsi* and abdominal muscles (rectus abdominis, internal and external oblique and transversus abdominis).

**145.** **Isthmus of thyroid gland corresponds to which of the following tracheal rings?**

a) 1-3

b) 2-4

c) 4-6

d) 6-8

Correct Answer - B

Isthmus of the thyroid gland lies in front of the second, third and fourth tracheal rings.
It is covered in front by skin and fascia, and by sternothyroid and sternohyoid muscles and by the anterior juglar veins.
Upper end of each lobe of thyroid lies opposite C5 vertebrae.
The lower end of the lobe lies at the level of 5th or 6th tracheal ring corresponding to T1 vertebrae.

## 146. Isthmus of thyroid gland lies at which level?

a) C2

b) C4

c) C5

d) C7

Correct Answer - D
Isthmus of thyroid gland lies at C7 level

## 147. Not true about right atrium ?

a) Posterior part is smooth

b) Anterior part is derived from absorption of right horn of sinus venosus

c) Fossa oval i s repressent remnant of foramen ovale

d) Anterior and posterior parts are divided by Crista terminalis

Correct Answer - B

**Ans. is 'b' i.e., Antirior part is derived from absorption of right horn of sinus venosus**

Sinus venarum (posterior part of right atrium) is derived from absorption of right horn of sinus venosus (not anterirpart).

**Right atrium**

It has *thinnest walls* of the four chambers. It is divided by crista terminalis into two parts :-

i) Rough anterior part or atrium proper (pectinate part), including auricle.

It is *derived from right half of primitive atrial chamber.* There is a series of transverse muscular ridges called *musculi pectinate* which are attached to crista terminalis and gives appearance like *"teeth of a comb".* SA node is situated in the upper part of crista terminates. Auricle lies in the superomedial portion.

ii) Posterior smooth part or sinus venorum.

It is derived from *absorption of right horn of sinus venosus.* It has openings of *:?*

*I) Superior vena cava :-* Has no valve.

*2) Inferior vena cava :-* Orifice is guarded by a rudimentary valve of IVC *(Eustachian valve)* derived from embryonic right venous valve, which directs the blood from IVC towards *foramen ovale* in fetal live.

This valve is nonfunctional in adults.
*3) Coronary sinus :-* Orifice lies between tricuspid orifice and IVC orifice. It is guarded by a functional semilunar valve (thebesian valve). Thebesian valve develops from right venous valve.
*4) Venae cardis minimae (thebesian veins):-* Open through foramina venorum minimarum.
*5) Anterior cardiac vein*
*6) Right marginal vein :-* Sometimes it may open into coronary sinus (not in right atrium).
iii) Interatrial septal region
Interatrial septum develops from approximation of embryonic septum primum and septum secundum. Feauters on right atrial side are :
*1) Fossa ovalis :-* Oval shaped depression lying above the level of IVC opening in the interatrial septum. It is the embryologic remnant of foramen ovale, which connects right atrium to left atrium in embryonic life. Floor of the fossa ovalis is formed by septum primum.
*2) Limbus fossa ovalis (Annulus ovalis) :- It* is thickened rim present above the fossa ovalis. *It represents the lower free margin of septum secundum.*
*3) Triangle of Koch :-* It is a triangular region in the lower part of interatrial septum which contains AV node. It is bounded above by tendon of Todaro below by base of septal leaflet of tricuspid valve and anteriorly (base) by orifices of coronary sinus.
Immediately above the membranous septum, the septal region shows a slight bulge known as torus aorticus, produced by right posterior (non-coronary) aortic sinus (of valsalva).

## 148. True about atrioventricular groove are all except ?

a) Contains left anterior descending coronary artery

b) Also called coronary sulcus

c) Contains right coronary artery

d) Contains circumflex branch of left coronary artery

Correct Answer - A

**Ans. is 'a' i.e., Contains left anterior descending coronary artery**

**Grooves (sulci) of heart**

A) Atrioventricular groove

- Atria are separated by ventricles by atrioventricular Sulcus (atrioventricular groove, also called coronary sulcus).
- It is divided into anterior and posterior parts. The right half of anterior part is large and lodges right coronary artery. Left half of anterior part is small and lodges circumflex branch of left coronary artery.

B) Interventricular grooves

- Right and left ventricles are separated by interventricular grooves.
- Anterior interventricular groove is nearer to left margin of heart and contains anterior interventricular artery (also called left anterior descending artery).
- Posterior interventricular groove is situated on diaphragmatic (inferior) surface. It contains posterior interventricular artery (continuation of RCA).

## 149. True about arch of aorta are all of the following except:

a) Situated behind the lower half of the manubrium sterni

b) Right common carotid artery arises from the arch of aorta

c) It ends at the sternal end of the left second costal cartilage

d) Begining and end of the arch lies at same level

Correct Answer - B

The arch of the aorta is a continuation of the ascending aorta.

- It lies behind the manubrium sterni and arches upward, backward, and to the left in front of the trachea (its main direction is backward).
- It then passes downward to the left of the trachea and, at the level of the sternal angle, becomes continuous with the descending aorta.

**Branches**

- The brachiocephalic artery arises from the convex surface of the aortic arch.
  – It passes upward and to the right of the trachea and divides into the right subclavian and right common carotid arteries behind the right sternoclavicular joint.
- The left common carotid artery arises from the convex surface of the aortic arch on the left side of the brachiocephalic artery. It runs upward and to the left of the trachea and enters the neck behind the left sternoclavicular joint.
- The left subclavian artery arises from the aortic arch behind the left common carotid artery.
  – It runs upward along the left side of the trachea and the esophagus to enter the root of the neck.
  – It arches over the apex of the left lung.

**150. Which of the following is not a branch of Arch of aorta ?**

a) Branchiocephalic trunk

b) Left subclovion artery

c) Left common carotic artery

d) Right subclavian artery

Correct Answer - D
Ans. is 'd' i.e., Right subclavian artery

## 151. Intercostal nerve is a branch of ?

a) Brachial plexus

b) Dorsal rami of thoracic spinal nerves

c) Ventral rami of thoracic spinal nerves

d) Ventral rami of cervical spinal nerves

Correct Answer - C
Ans. is 'c' i.e., Ventral rami of thoracic spinal nerves
Ventral rami of upper $11^{th}$ thoracic spinal nerves are known as intercostal nerves and ventral ramus of T12 is known as subcostal nerve.
Upper six intercostal nerves supply thoracic wall whereas lower five intercostal nerves and subcostal nerve supply thoracic and anterior abdominal walls and hence known as *thoracoabdominal nerves.*
Upper two intercostal nerves also supply the upper limb.
Thus only $3^{rd}$ to $6^{th}$ are called typical intercostal nerves.

## 152. Bronchopulmonary segment is supplied by ?

a) Primary bronchus

b) Secondary bronchus

c) Tertiary bronchus

d) Principal bronchus

Correct Answer - C
Ans. is 'c' i.e., Tertiary bronchus
It is supplied independently by a segmental (tertiary) bronchus and a tertiary branch of the pulmonary artery.

## 153. Hyoid lies at the level of ?

a) $C_3$

b) C,

c) $C_7$

d) T2

Correct Answer - A
Ans. is 'a' i.e., $C_3$

**Surface anatomy of larynx are :**

- C, Level of body of hyoid and its greater cornu.
- $C_3$ -C, Junction Level of upper border of thyroid cartilage and bifurcation of common carotid artery. $C_4$- C, Junction Level of thyroid cartilage.
- $C_6$ Level of cricoid cartilage.

## 154. Muscle attached to medial lip of linea aspera of this bone in this image

a) Short lead of biceps femoris

b) Vastus lateralis

c) Vastus intermedius

d) Vastus medialis

Correct Answer - D
Ans;D).Vastus medialis
Posterior border of femur shaft is in the form of a broad roughened rigde, called **linea aspera**. The linea aspera has distinct medial and lateral lips.
**Attachments on linea aspera are :**
**i) Lateral lip :** Vastus lateralis (in upper half), short head of biceps femoris, lateral intermuscular septum.
**ii) Medial lip** *:* Vastus medialis, medial intermuscular septum.
**iii) Three adductors** *:* Adductor longus, brevis and magnus.

**155.** **Common peroneal nerve is related to which of the following structures?**

a) Shaft of tibia

b) Neck of fibula

c) Lower tibio-fibular joint

d) Shaft of fibula

Correct Answer - B

The common fibular nerve arises from the posterior division of the sacral plexus (L4–S2) and descends in an inferolateral direction, across the popliteal fossa to the fibular head. Just distal to the fibular head, the common fibular nerve bifurcates into the deep fibular and superficial fibular nerves.*It is easily palpated against ihe neck of fibula because of its subcutaneous position.It is commonly injured in fractues of neck of the fibula.It gets thickened in leprosy which may also cause foot drop.*

## 156. Origin of PCL- Posterior cruciate ligament

a) Posterior part of intercondylar area of tibia

b) Anterior part of intercondylar area of tibia

c) Medial part of medial femoral condyle

d) Lateral part of medial femoral condyle

Correct Answer - A

Posterior cruciate ligament (PCL)

- PC L begins *from posterior part of intercondylar area of tibia and runs upwards, forwards and medially to attach the anterior part of the lateral surface of medial condyle of femur.*
- PCL is *extrasynovial but intracapsular, i.e.* lies between synovium and capsule of the knee joint.
- It provides antero-posterior stability and *prevents posterior gliding of tibia on femur.*
- It *is taut in* flexion.
- Blood supply of cruciate (anterior & posterior) ligaments is from :-

1. *Middle genicular artery (major supply).*
2. Inferior genicular (medial & lateral) artery (less important).
3. Nerve supply of cruciate ligaments (ACL & PCL) is from posterior articular branch of tibial nerve.

## 157. ACL originates from ?

a) Posterior part of intercondylar area of tibia

b) Anterior part of intercondylar area of tibia

c) Medial part of medial femoral condyle

d) Lateral part of lateral femoral condyle

Correct Answer - B

**Ans. is 'b' i.e., Anterior part of intercondylar area of tibia**

**Anterior cruciate ligament (ACL)**

- ACL is one of the most important ligament of the knee joint.
- ACL begins *from anterior part of intercondylar area of tibia just behind the anterior horn of medial meniscus and runs upwards, backwards & laterally to attach the posterior part of medial surface of lateral condyle of femur.*
- *ACL is intrasynovial i.e.,* it lies inside the synovium.
- ACL also provides *proprioceptive function* of knee joint.
- ACL is *taut during extension.*

## 158. Pes anserinus includes following three muscles except

a) Semitendinosus

b) Semimembrinosus

c) Gracilis

d) Sartorius

Correct Answer - B
**Semimembrinosus**
Guy ropes or pes anserinus represent three muscles inserted into anteromedial surface of proximal tibia, one muscle from each compartment of thigh *:?*
*i) Sartorius* (from anterior compartment of thigh).
*ii) Gracilis* (from medial compartment of thigh).
*iii) Semitendinosus* (from posterior compartment of thigh).

## 159. Structure which lies outside the femoral sheath

a) Femoral artery

b) Femoral nerve

c) Femoral vein

d) Genitofemoral nerve

Correct Answer - B
Femoral nerve

**Femoral sheath**

Femoral sheath is a funnel shaped fascial prolongation around proximal part of femoral vessels, situated in the femoral triangle, below the inguinal ligament. *It is 3-4 cm long.* It is formed by fascia iliaca.

Femoral sheath is divided into 3 separate fascial compartements by septa **:?**

**i) Lateral compartment :-** It contains **femoral artery** and **femoral branch of genitofemoral nerve.**

**ii) Intermediate compartment :- Femoral vein.**

**iii) Medial compartment (femoral canal) :-** It is conical in shape, wider above adn narrow below. The wider upper opening is known as **femoral ring,** which is potentially a *weak point* in lower abdomen and is the site for *femoral hernia. Femoral ring is bounded :*
**Anteriorly by inguinal ligament, medially by lacunar ligament,** *posteriorly by pectineus with its covering fascia,* and **laterally by septum separating it from femoral vein. Femoral canal contains lymph node of cloquet or Rosenmuller and lymphatics.**

**160.**

## An intern while doing venesection at lower limb could injure ?

a) Sural nerve

b) Saphenous nerve

c) Common peroneal nerve

d) Tibial nerve

Correct Answer - B
Ans. is 'b' i.e., Saphenous nerve
Venesection of lower limb is usually done in great saphenous vein, which is accompanied by saphenous nerve.

## 161. True about saphenous opening ?

a) Saphenous vein passes above this opening

b) Situated above and lateral to pubic tubercle

c) Covered by cribriform fascia

d) Opening in scarpa's fascia

Correct Answer - C

**Ans. is 'c' i.e., Covered by cribriform fascia**

**Saphenous opening**

- This is an oval opening in the fascia lata.
- The centre of the opening is 4 cm below and 4 cm lateral to the pubic tubercle.
- It is about 2·5 cm long and 2 cm broad with its long axis directed downwards and laterally.
- The opening has a sharp crescentic lateral margin or falciform margin which lies in front of the femoral sheath.
- The medial well define margin of the opening lies at a deeper level.
- It is formed by the fascia overlying the pectineus. The fascia passes behind the femoral sheath.
- The saphenous opening is closed by the *cribriform fascia* formed by modification of superficial fascia which covers the opening.

## 162. Coronary blood flow regulated by

a) Sympathetic adrenergic system

b) Sympathetic cholinergic system

c) Local muscle action and reflexes

d) Parasympathetic system

Correct Answer - C

Ans. is 'c' i.e., Local muscle action and reflexes

Regulation of coronary blood flow mainly occurs by chemical regulation through autoregulation.

**Regulation of coronary blood flow**

- Regulation of coronary flow occurs by two mechanisms : ?

**1) Chemical regulation (Autoregulation)**

- Regulation of coronary blood flow occurs through local intrinsic regulation, i.e., autoregulation, most likely through the production of vasodilating metabolites in response to minimal degree of ischemia. The vasodilatory chemical stimuli are *low* $PO_2$*, High* $PCO_2$*,* $H^+$*,* $K^+$*, lactic acid, ADP AMP and adenosine.* Chemical regulation (autoregulation) of coronary blood flow is far more important than neural regulation.

**2) Neural regulation**

- Coronary arteries are supplied by autonomic sympathetic and parasympathetic system. Coronary arteries have both alpha and beta sympathetic (adrenergic receptors), with the beta receptors predominating. Beta receptor stimulation produces vasodilation whereas alpha receptor stimulation produces vasoconstriction. There are relatively few parasympathetic (vagal) fibers supplying the coronary arteries. The direct effect of these fibers is vasodilatation; But indirect effect causes vasoconstriction and predominates.

Indirect effect is the result of decrease in formation of vasodilator metabolites due to decrease in heart rate and cardiac contractility.

## 163. Basal cardiac output in an adult in nearly:

a) 7.5 litre

b) 5 litre

c) 12 litre

d) 10 litre

Correct Answer - B
Ans. B i.e. 5 litre

## 164. $2^{nd}$ messenger in vagal bradycardia ?

a) CAMP

b) $Ca^{2+}$

c) DAG

d) None

Correct Answer - A
Ans. is *'a' i.e.,* cAMP
Muscarinic receptors (cholinergic receptors) in heart are $M_2$ type.
These are responsible for vagus mediated bradycardia.
$M_2$ mediated actions are through cAMP.

**TYPES OF RECEPTORS**

Drug action on receptors is a two step process *?*
*Step 1* → Binding of drug to receptors that leads to conformational change in receptors (in case of agonist) or prevention of conformational change by competing with agonist (in case of antagonist).
*Step 2* → This conformational change induces changes in systems within the cell through a series of intermediate steps *(transduction)* that in turn brings about the response to the drug.

## 165. Signal from Baroreceptors goes to ?

a) Caudal ventrolateral medulla

b) Rostral ventrolateral medulla

c) Nucleus of tractus solitarius

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Rostral ventrolateral medulla
Baroreceptors are *mechanoreceptors* that are located in the adventia of carotid artery and aorta, at specialized locations called sinuses.
1) Carotid sinus is a little bulge at the root of internal carotid artery, located just above the bifurcation of the common carotid artery. It is innervated by the sinus nerve, a branch of glossopharyngeal (IX cranial) nerve.
2) Aortic arch (aortic sinus) also contains mechenoreceptors (stretch receptors) which are similar to carotid sinus receptors. However, their afferent nerve fibers travel in the aortic nerve, a branch of Vagus (X cranial) nerve.
The sinus nerve (from carotid sinus) and aortic nerve/vagal fibers (from aortic sinus) are together called `Sinoaortic nerves'. They, together, are also refered to as 'Buffer nerves' because they are the afferents of cardiovascular reflexes that buffer abrupt changes in blood pressure.
Baroreceptors are highly sensitive to any change in mean blood pressure. *Sinoaortic nerves (buffer nerves)* normally discharge rhythmically, synchronous with the pressure fluctuation during systole and diastole. They respond to BP changes between 70 mm Hg and 150 mm Hg. *When BP rises, baroreceptors are stimulated*

and their afferents (through sinoaortic nerves) stimulate nucleus of tractus solitarus (NTS) which inturn inhibits the pressor area ofVMC, i.e., Rostral ventrolateral medula (RVLM). This results in decreased sympathetic outflow and therefore decreases in vasomotor tone and vasodilation. Vasodilation brings down the BP, thereby helping hemostasis. Activated NTS also stimulates nucleus ambiguous (cardioinhibitory center) of medulla, which increases parasympathetic (vagal) output, through vagus, that decreases heart rate. Reduction in heart rate reduces the cardiac output, which also reduces BP. Baroreceptor stimulation also weekly inhibits respiration.

When BP falls, for instance while changing the posture from lying down to standing, reverse change takes place. When a person stands up, his blood is pooled in the veins of lower limbs by the effect of gravity. Central venous pressure and venous return decrease, which causes a fall in stroke volume. Hence the systolic BP falls. As a result, the discharge rate of baroreceptors decreases leading to a decrease in the inhibitory influence on the pressor area of VMC. Hence vasomotor tone increases, leading to vasoconstriction, and consequently *an increase in BP.* Simultaneously, the nucleus ambiguous of the vagus is also inhibited, increasing the heart rate and *consequently stroke volume and eventually BR Thus fall in BP due to change ofposture is very brief (Transient).*

## 166. Preload is determined by ?

a) Enddiastolic volume

b) Endsystolic volume

c) Ventricular ejection volume

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Enddiastolic volume

## 167. Which of the following causes increase in conduction velocity of impulse through heart ?

a) Vagal stimulation

b) Parasympathetic stimulation

c) Sympathetic stimulation

d) All of the above

Correct Answer - C
Ans. is 'c' i.e., Sympathetic stimulation
Effects of sympathetic stimulation are :
*i) Heart :-* positive chronotropic *(1' heart rate),* ii) Positive ionotropic *(1' contractility),* iii) Positive dromotropic *(1' conduction velocity),* iv) Positive bathmotropic (increased automaticity), *v) Decreased refractory period in all cardiac cells.*
ii) Vasoconstriction :- T total peripheral resistance (due to arteriolar constriction), venous capacitance (due to venoconstriction)
iii) Increased stroke volume, cardiac output and BP.
Effects of parasympathetic stimulation are *:?*
*i) Negative chronotropic (decreased heart rate) :* - Vagal stimulation cause decrease in slope (flattening) of prepotential (pacemaker potential) and therefore the time taken to reach the threshold levelis increased --> Heart rate is decreased.
ii) Negative dromotropic (decreased conduction).
iii) Increased refractory period of all type of cardiac cells.

## 168. Vagal stimulation in heart causes decrease in heart rate by ?

a) Decrease in action potential spike

b) Decrease in slope of prepotential

c) Increase in repolarization

d) Decrease conduction

Correct Answer - B

**Ans. is 'b' i.e., Decrease in slope of prepotential**

**Effect of autonomic nervous system**

The SA node develops from structures on the right side of the embryo and the AV node from structures on the left. This is why right vagus (parasympathetic) is distributed primarily to SA node and the left vagus (parasympathetic) mainly to AV node. Similarly, the sympathetic innervation on the right side is distributed primarily to the SA node and the sympathetic innervation on the left side primarily to AV node.

**Effects of ANS on cardiac physiology are as follow : ?**

A) Parasympathetic (vagal) stimulation

*i) Negative chronotropic (decreased heart rate) :* - Vagal stimulation cause decrease in slope (flattening) of prepotential (pacemaker potential) and therefore the time taken to reach the threshold level is increased --> Heart rate is decreased.

ii) Negative dromotropic (decreased conduction).

iii) Increased refractory period of all type of cardiac cells.

B) Sympathetic stimulation

i) Positive chronotropic (Increased heart rate):- Sympathetic stimulation increases the slope of phase 4 prepotential (pacemaker potential); therefore, time taken to reach the threshold is decreased

and heart rate is increased.
ii) Positive ionotropic (Increased contractility).
iii) Positive dromotropic (Increased conduction velocity in conductive tissue).
iv) Decreased in refractory period of all type of cardiac cells.
v) Positive bathmotropic (Increased automaticity).

**169. Two vessels are compared as shown belorv. Assuming constant pressure along both the vessels and linear flow pattern, what will be the flow across the vessel 1 compared to vessel 2?**

a) 2 times

b) 4 times

c) 8 times

d) 16 times

Correct Answer - C
Answer- C. 8 times
Poiseuille Hagen Formula
$F = (P_A – P_B) \times (\pi /8) \times (1/?) \times (r4/L)$
Where,
F= flow
$P_A$-$P_B$ = pressure difference between two ends of the tube
? = viscosity
r = radius of tube
L = length of tube
Because flow is equal to pressure difference divided by resistance (R),
$R = 8?L/\pi r^4$

## 170. Maximum pressure in left ventricle seen is ?

a) 2 mm Hg

b) 25 mm Hg

c) 80 mm Hg

d) 120 mm Hg

Correct Answer - D
Ans. is 'd' i.e., 120 mm Fig

## 171. Maximum pressure in left ventricle is seen in which phase of cardiac cycle ?

a) Isovolumetric contraction

b) Ventricular ejection

c) Protodiastole

d) Rapid ventricular filling

Correct Answer - B

**Ans. is 'b' i.e., Ventricular ejection**

During ventricular ejection phase, when the steeply rising left ventricular pressure exceeds the aortic pressure (120 mm Hg), it is able to push open the aortic valve and eject the blad into the aorta, making the onset of ventricular ejection.

**PHASE OF CARDIAC CYCLE**

A cardiac cycle refers to the interval between onset of one heartbeat to the onset of the next heart beat. It has two main phases : Ventricular systole and ventricular diastole.

**Ventricular systole (or simply systole)**

**The systolic phase is divided into : -**

i) Isovolumetric contraction : As the ventricular contraction starts, the intraventricular pressure begins to rise, leading to an abrupt closure of AV valves (mitral and tricuspid valves). The closure of AV valves produces first heart sound ($S_1$). the pressure is not enough to push open the semilunar valves (aortic and pulmonary) but causes the closed AV valve to bulge into the atrium, causing a small but sharp rise in atrial pressure called the 'C' wave on jugular venous pulse (JVP). Because both the valves (AV valves an semilunar valves) are closed, there is no change in volume, i.e.,

there is isovolumetric (isometric) contraction. Isovolumetric contraction ends with opening of semilunar (aortic and pulmonary) valves.

*ii)* Ventricular ejection : When the steeply rising ventricular pressure exceeds the pressure in aorta and pulmonary artery, the semilunar valves open and ventricular ejection begins. The ejection of blood is rapid at first (rapid ejection phase), but slows down during later part of systole (slow ejection phase). During rapid ejection phase, when the ventricles contract, the fibrous partition separating the ventricles from the atria (the AV ring) is pulled down. As a result, the atrial muscles get stretched and the atria dilate which causes a sharp fall in atrial pressure and the *X-descent in JVP.*

*iii)* Protodiastole : In this very short phase, ventricles start relaxing and ventricular pressure begins to fall very sharply but the semilunar valves are still open. As a result, the column of blood in aorta (or pulmonary artery for right ventricle) tries to fall into the ventricle, hitting on its way the semilunar (aortic or pulmonary) valves. This causes closure of the aortic/pulmonary valves which produces 2" heart sound ($S_2$). The venous blood flow continues to flow in the atria from great veins (SVC and ICC) and there is relaxation of fibrous AV ring due to ventricular relaxation; both of which cause a rise in atrial pressure and *production of `V' wave in JVP.*

**<u>Ventricular diastole (or simply diastole)</u>**

**The diastole phase is divided into : -**

i) Isovolumetric relaxation : - This phase is the period between the closure of semilunar valve and opening of the AV valve. The ventricles continue relaxing and there pressure continues to fall. However, as both valves (AV valves and semilunar valves) are closed, there is no change in volume, i.e., *isovolumetric relaxation.* Relaxation phase ends with opening of AV valve.

ii) Rapid ventricular filling : - When the ventricular pressure falls below atrial pressure, AV valves open and the accumulated blood in the atria rushes into the ventricle very rapidly. This passive filling contributes to 70% of ventricular filling, normally. This results in a sharp fall in atrial pressure which produces Y descent in JVP.

iii) Diastasis : - After the initial rapid ventricular filling, blood flows slowly and smoothly from the SVC and IVC through the right atrium

into the right ventricle without any turbulence anywhere along the path. Similarly, blood from the pulmonary veins flows into the left ventricle without any turbulence. This phase of nonturbulent ventricular filling is called diastasis. The atrial pressure remains slightly greater than the ventricular pressure because inflow to atrium exceeds the outflow the atrium.

iv) Last rapid filling phase (atrial systole) : - The atria contract and pump blood rapidly into the ventricles.Atrial systole is associated with sharp rise in atrial pressure which produces a-wave in JVP.

## 172. Bilateral cutting of vagus nerve causes ?

a) Decrease heart rate

b) Decrease respiratory rate

c) Increase heart rate

d) Decreased BP

Correct Answer - C
**Ans. is 'c' i.e., Increase heart rate**
**Aortic nerve (a branch of vagus nerve) carries :?**
i) Baroreceptor afferent from Aortic sinus.
ii) Chemoreceptor afferent from Aortic bodies.
*Bilateral sectioning of vagus nerve causes increase in heart rate and BP* due to two reasons :?
i) Abolition of baroreceptor discharge of aortic sinus on RVLM → causing increasing in sympathetic output.
ii) Inhibition of nucleus ambiguous → causing decreased parasympathetic tone.
Effect on chemoreceptors afferent is minimal as chemoreceptors are stimulate by low PO, and normally they have no dischange.

## 173. A wave in JVP is due to ?

a) Atrial systole

b) Atrial diastole

c) Ventricular systale

d) Ventricular diastole

Correct Answer - A
Ans. is 'a' i.e., Atrial systole

## 174. Mean BP is ?

a) CO x TPR

b) CO x heart rate

c) Heart rate x TPR

d) Stroke volume x TPR

Correct Answer - A

Ans. is 'a' i.e., CO x TPR

- Arterial blood pressure is the product of the cardiac output and the total peripheral vascular resistance (TPR). *Mean blood pressure is the major determinant of adequate blood flow through the tissues.*

  Mean BP = Cardiac output x Total peripheral resistance
- If cardiac output is expressed as a product of stroke volume and heart rate, the formula blood pressure can be expressed as the product of three variables (the triple product) : -

  Mean BP = Stroke volume x Heart rate x TPR
- Blood pressure is therefore affected by conditions that affect any of these factors. Changes in cardiac output (or stroke volume) affect mainly the systolic pressure while changes in peripheral resistance affect mainly the diastolic pressure.

## 175. Positive G effect ?

a) Red out

b) Black out

c) Increased cerebral arterial pressure

d) Increased cardiac output

Correct Answer - B
Ans. is 'b' i.e., Black out
**Effects of positive G:**

- **Venous return decreases** --> hence, **cardiac output decreases.**
- **Blood rushes towards lower limbs** --> hence **increased pressure in lower limb vessels.**
- **Blood is drawn away from upper body** --> hence **decreased cerebral arterial pressure.**
- **At very high positive G:**
  - Difficulty in blood flow to brain --> results in cerebral ischemia & unconsciousness.
  - **Moments before unconsciousness**, there is **gray-out.**
    - Everything appears gray - Due to **ischemia of cone & loss of color vision.**
    - Eg: Gray-out serves as warning **sign for pilots** - Indicates need **for slowing down aircraft & reduce positive'G'.**
- **Gray-out followed by black-out**
  - Black-out means total **loss of vision.**

**176.** **During which phase of cardiac cycle is coronary blood flow maximum?**

a) Isovolumetric contraction

b) Rapid ejection

c) Slow ejection

d) Isovolumetric relaxation

Correct Answer - D

**Coronary blood flow is maximum during the isovolumetric relaxation phase of cardiac cycle.** During this phase, coronary flow is maximum because of maximum fall of coronary vascular resistance or due to minimal compression of coronary artery by myocardium during this period.

**Must know:**

**Variation of Coronary flow with Cardiac cycle:**

- **During the phase of isometric ventricular contraction:** coronary flow falls sharply and reaches minimum or even falls below the level of zero due to back flow.
- **During the maximum ejection phase:** coronary inflow rises sharply due to the sudden rise of aortic pressure.
- **During the reduced ejection phase:** coronary inflow again falls below the previous level. This is because, aortic pressure is falling but myocardium is still compressing the coronary vessel.
- **During isovolumetric relaxation:** coronary blood flow rises sharply.

**Ref:** Textbook of Anesthesia for Postgraduates By T. K. Agasti page 109.

## 177. Relaxation volume of lung is documented as ?

a) Functional residual capacity

b) Residual volume

c) Vital capasity

d) Closing volume

Correct Answer - A

**Ans. is 'a' i.e., Functional residual capacity**

**Relaxation volume**

The relaxation volume is the volume of the relaxed respiratory system, i.e., the volume at which net elastic recoil of he total respiratory system is zero (the elastic recoil of chest wall is equal and opposite to that of lungs). In healthy subjects, this occurs at the end of quiet expiration, i.e., *at functional residual capacity.*

Therefore, in healthy adults at rest FRC is essentially equal to relaxation volume of respiratory system and FRC is usually treated as synonymous with relaxation volume.

However, in real sense FRC and relaxation volume are not synonymous terms and, while the two volumes are some times equal, more often they are not, i.e., active or passive mechanisms often operate to make FRC different from relaxation volume. For example, neonates have a more compliant (less stiff) chest wall. The chest wall thus has less elastic recoil to balance that of lung, thus decreasing the relaxation volume of lung. FRC then is often maintained above relaxation volume by active mechanisms like inspiratory muscle activity and slowing of expiration.

Another example where FRC and relaxation volume may differ is in obstructive lung disease where FRC is dynamically determined and

may be considerably above relaxation volume.

## 178. Air volume in lung after normal expiration is called as ?

a) FRC

b) ERV

c) RV

d) TC

Correct Answer - A
Ans. is 'a' i.e., FRC
FRC is the amount of air remaining in the lungs after a normal tidal expiration (FRC = ERV + RV).

## 179. Spirometry can demonstrate and measure all of the following except :

a) Tidal volume

b) Residual volume

c) Vital capacity

d) Inspiratory reserve capacity

Correct Answer - B
B i.e. Residual Volume

## 180. Oxygen comes from alveoli to blood by ?

a) Diffusion

b) Receptor mediated

c) Active transport

d) Osmosis

Correct Answer - A

**Ans. is 'a' i.e., Diffusion**

Oxygen is transferred from the alveoli to the pulmonary capillaries by the process of diffusion. The diffusion occurs across the respiratory membrane.

As oxygen diffuses into the blood, it *combines with hemoglobin.* However, the oxygen, in combination with hemoglobin, does not contribute to the $PO_2$ of blood. Therefore the alveolar - capillary gradient of $PO_2$ is maintained much longer than it would be if hemoglobin were not present. The sequence mey be visualized as follows:-

i) Oxygen diffuses from the alveoli into the plasma due to the $PO_2$ gradient.

ii) To start with, the $PO_2$ in the RBC fluids is the same as in the plasma. As soon as diffusion from the alveoli to plasma raises the $PO_2$ of plasma above that of the RBC fluids, oxygen diffuses from the plasma into the RBC.

iii) As soon as oxygen enters the RBC, it combines with hemoglobin, which mops up oxygen but does not let $PO_2$ rise. The process continues till hemoglobin cannot pick up any more oxygen.

iv) Then the $PO_2$ in the RBC fluids rises to equal that in the plasma and diffusion from the plasma to RBC stops.

v) After that the $PO_2$ in the plasma also rises to equal that in the alveoli, and consequently diffusion from the alveoli to the plasma stops.

Thus, the presence of hemoglobin makes an enormous difference to the amount of oxygen transferred. By mopping up oxygen without letting the $PO_2$ rise, it lets the diffusion of oxygen continue much longer. *While the $PO_2$ gradient determines the direction of diffusion of oxygen, it is actually hemoglobin that lays the trap for carrying large amounts of oxygen in the blood.*

## 181. Fetal hemoglobin has more affinity for oxygen than adult hemoglobin because ?

a) Decreased 2,3 DPG concentration

b) Low affinity for 2,3 DPG

c) Increase 2,3 DPG concentration

d) Reduced pH

Correct Answer - B
Ans. is 'b' i.e., Low affinity for 2,3 DPG
Make it very clear in mind that higher affinity of fetal hemoglobin for oxygen is due to low affinity of HbF for 2,3DPG (not due to decreased 2, 3-DPG concentration). HbF does not combines to 2, 3-DPG as avidly as adult hemoglobin.

## 182. Pacemaker of respiration?

a) Dorsal nuclear group

b) Apneustic centre

c) Pnemotaxic centre

d) Pre Botzinger complex

Correct Answer - D
D i.e. Pre Botzinger complex

**183. What will be hemoglobin saturation, if $P0_2$ is 60 mm Hg at pH 7.4 and temperature 37°C ?**

a) 50%

b) 60%

c) 75%

d) 90%

Correct Answer - D
Ans. is `d' i.e., 90%
Examiner is asking about Hb saturation at $PO_2$ 60 mmHg, under normal physiological conditions (pH 7.4, temperature 37°C). At $PO_2$ 60 mmHg, Hb saturation is 89%.

**184. In presence of Halden effect, $CO_2$ uptake is 2 ml/ 100 ml of blood in arteries, what will be $CO_2$ uptake in absence of Haldone effect in veins ?**

a) 2 ml/100 ml of blood

b) 4 ml/100 ml of blood

c) 6 ml/100 ml of blood

d) 8 ml/100 ml of blood

Correct Answer - B
Ans. is 'b' i.e., 4 ml/100 ml of blood

## 185. Normal respiratory compliance is ?

a) 200 ml/cm water

b) 50 ml/cm water

c) 100 ml/cm water

d) 150 ml/cm water

Correct Answer - A
Ans. is 'a' i.e., 200 ml/cm water
The lungs and thoracic cage are both elastic structures. Hence they display a constant relationship between distending pressure and change in volume.
The change in volume per unit change in pressure is called "compliance".
The total compliance of both lungs together in the normal adult human being is about *0·2 L/cm water.*
That is, every time the transpulmonary pressure increases by 1 centimeter of water, the lung volume will expand 0·2 L (200 ml).
*Compliance is a measure of distensibility.*

## 186. In which $O_2$ therapy is used ?

a) Hypoxic hypoxia

b) Anemic hypoxia

c) Histotoxic

d) Stagnant

Correct Answer - A
Ans. is 'a' i.e., Hypoxic hypoxia

## 187. Among which hypoxia AV 0 difference is max ?

a) Histotoxic

b) Stagnant

c) Hypoxic

d) Anemic

Correct Answer - B
Ans. is 'b' i.e., Stagnant

## 188. Least A-V $O_2$ difference is seen in ?

a) Hypoxic hypoxia

b) Anemic hypoxia

c) Stagnant hypoxia

d) Cyanide poisoning

Correct Answer - D
Ans. is 'd' i.e., Cyanide poisoning

## 189. Negative intrapleural pressure is due to ?

a) Uniform distribution of surfactant over alveoli

b) Negative intraalveolar pressure

c) Absorption by lymphatics

d) Presence of cartilage in the upper airway

Correct Answer - C

Ans. is 'c' i.e., Absorption by lymphatics

- The pleural pressure is negative, more negative during inspiration, less negative during expiration, but always negative during quiet breathing.

This is because *both the thoracic cage and lungs are elastic structures;* therefore, both tend to recoil, but in opposite direction. This creates negative intrapleural pressure.

*"A negative force is always required on the outside of the lungs to keep the lungs expanded. This is provided by negative pressure in the normal pleural space. The basic cause of this negative pressure is pumping of fluid from the space by the lymphatics (which is also the basis of the negative pressure found in most tissue spaces of the body)." - Guyton 12/e p 483*

So, two important reasons of negative intrapleural pressure are :-

i) Elasticity of lungs and thoracic cage in opposite direction.

ii) Lymphatic drainage of pleural fluid.

## 190. Pleural pressure at the end of respiration is ?

a) Zero

b) More negative

c) Positive

d) Less negative

Correct Answer - B
Ans. is 'b' i.e., More negative
During quiet breathing, the intrapleural pressure fluctuates between -3 and -6 mm Hg, depending upon the phase of respiration, more negative at the end of inspiration and less negative during expiration.
**Intrapleural pressure (Pleural pressure)**
It is the pressure between two pleural surfaces. The lung is covered with visceral pleura and the thoracic cage is lined on inside with parietal pleura. Between the two layers of pleura is a very narrow space, called the pleural cavity. *Intrapleural pressure is always negative and during quiet breathing the Intrapleural pressure fluctuates between -3.8 mm Hg (- 5.0 cm watery to -6.0 mm Hg (-8.0 cm water).*
Now let us examine why the pleural pressure is negative; more negative during inspiration, less negative during expiraion, but always negative during quiet breathing. The key to the answer is the fact that both the thoracic cage and lungs are elastic structures. Being elastic structure they both tend to recoil, but in opposite direction. The lungs have a tendency to collapse and thoracic cage has a tendency to expand. However, because of the anatomical relationships in the body, these tendencies do not normally

materialize. But the tendencies do create an inward pull on the visceral pleura (by lung) and an outward pull on parietal pleura (by thoracic cage). The results of these pulls is a negative pressure in the space between the pleural surfaces, i.e., in the pleural cavity.

## 191. True about $O_2$ binding to myoglobin

a) Sigmoid shaped curve

b) More affinity than hemoglobin

c) Binds 4 molecule of $O_2$ to myoglobin

d) $P_{50}$ is 26 mmHg

Correct Answer - B

Ans. is 'b' i.e., More affinity than hemoglobin

Myoglobin is present in higher concentration in red (slow) muscle fibers.

*Myoglobin has greater affinity for oxygen than hemoglobin* and its $P_{50}$ is only 5 mm Hg (as compared to $P_{50}$ of hemoglobin which is about 26 mm Hg).

Therefore, myoglobin-oxygen dissociation curve is shifted far to the left than Hb-$O_2$ dissociation curve.

It has shape of hyperbola as compared to sigmoid shape of Hb-$O_2$ curve because it binds 1 molecule of $0_2$ per mole (in comparison to Hb which binds 4 molecules of $O_2$ per mole).

The role of myoglobin is to bind $O_2$ at very low $PO_2$ and release them at even lower $PO_2$, for example in *exercising muscles* where $PO_2$ close to zero.

## 192. Apneusis occur when ?

a) Lesion is above pons

b) Lesion is midpontine with intact vagus

c) Lesion is midpontine with damaged vagus

d) Lesion is at pontomedullary junction

Correct Answer - C
Ans. is 'c' i.e., Lesion is midpontine with damaged vagus

## 193. Right shift of oxygen dissociation curve is caused by?

a) Hypothermia

b) Hypoxia

c) Alkalosis

d) HbF

Correct Answer - B
Ans. is `b' i.e., Hypoxia

## 194. True about carotid body receptors ?

a) Most potent stimulus is high PCO2

b) Dopamine is neurotransmitter

c) Low blood flow

d) Afferent through vagus nerve

Correct Answer - B

**Ans. is 'b' i.e., Dopamine is neurotransmitter**

**Peripheral chemoreceptors**

The peripheral chemoreceptors which regulate respiration are located in the *carotid body and aortic bodies.* These bodies are located in the connective tissue associated with the vessel wall, at the bifurcation of the common carotid, and on the arch of aorta, respectively. The characteristic cells of both these structures are *called glomus cells.* Type I glomus cells have a high dopamine content, which they possibly employ as a neurotransmetter. Peripheral chemoreceptors convey information to the DRG of neurons in medulla, for which purpose *the afferent neurons from the carotid bodies pass through glossopharyngeal nerve and from the aortic bodies pass through vagus nerve.*

The most potent natural stimulus for peripheral chemoreceptors is low arterial $P0_2$ (hypoxic hypoxia). The other stimuli which activate peripheral chemoreceptors are high arterial $PCO_2$, and an increase in arterial hydrogen ion concentration (acidosis or low pH). The response to activation of peripheral chemoreceptors is an increase in pulmonary ventilation through an increase in the rate and depth of breathing.

*The blood flow to peripheral chemoreceptors, on per unit mass basis, is the highest to any tissue in the body.* With a blood flow of

2000 ml/min/100 gm tissue, the carotid and aortic bodies, inspite of their high metabolic rate, hardly remove any oxygen from the blood supplies to them. That is why the arteriovenous oxygen difference is negligible in these bodies. Thus these structures are idealy built to sense change in arterial P02.

*It is good to keep in mind that stimulation of peripheral chemoreceptors not only stimulates medullary respiratory centers but also medullary vasomotor center. Therefore, the response to their stimulation is tachycardia, vasoconstriction and increase BP along with hyperventilation.*

## 195. How will you calculate that how much inspired air actually ventilates the alveoli ?

a) Single breath $N_2$ method

b) Dalton's law

c) Bohr equation

d) Boyle's law

Correct Answer - A

Ans. is 'a' i.e., Single breath $N_2$ method

Examiner is simply asking that how will you measure anatomical dead space.

When air is breathed in, only the air that reaches the alveoli participates in gas exchange. The air in the airways (Trachea, bronchi) is breathed out unchanged as air in them does not participate in gaseous diffusion. Hence the airway space behaves as functionally dead so far as gas exhange is concerned. This is called 'anatomical dead space'. The volume of this space is 150 ml. That means only the first 350 ml of the 500 ml inspired with each breath (tidal volume) at rest mixes with the air in the alveoli. Conversely, with each expiration, the first 150 ml expired is gas that occupied the dead space, and only the last 350 ml is gas from the alveoli. So, normally dead space ($V_d$) : tidal volume ($V_i$) ratio is $0{\cdot}30$ (150: 500).

Anatomical dead space is calculated by single-breath $N_2$ method.

About option 'C'

Bohr equation is used to calculate physiological (total dead space).

Normally, 350 ml of air enters the alveoli, with each breath. However, not all the air that enters the alveoli necessarily

participates in alveolar gas exchange. In disease states, no diffusion (exchange) may take place between the gas in some of the alveoli and blood, and some of the alveoli may be overventilated. Such spaces in the alveoli constitues 'alveolar' dead space. The sum of anatomical dead space and alveolar dead space is called the 'physiological' dead space. Hence, the physiological dead space is the volume of inspired air, in airways (anatomical dead space) and in the alveoli (alveolar dead space), that does not participate in gaseous exchange. In healthy individuals, anatomical dead space and physiological dead space are identical because all the air entering into the alveoli participates in gaseous exchange (as alveolar diffusion, ventilation and perfusion are normal in healthy individuals).

**196. Chemical regulation of respiration is not affected by?**

a) pH

b) $pCO_2$

c) $pO_2$

d) BP

Correct Answer - D
Ans. is 'd' i.e., BP

## 197. Total lung capacity is ?

a) 2.4 L

b) 3.6 L

c) 6 L

d) 10 L

Correct Answer - C
Ans. is 'c' i.e., 6 L

## 198. Normal reduced hemoglobin in blood is ?

a) 3%

b) 10%

c) 20%

d) 30%

Correct Answer - A
Ans. is 'a' i.e., 3%
Normally 97% of hemoglobin is oxygenated.
3% of hemoglobin is deoxygenated hemoglobin or reduced hemoglobin.

**199. Ventilation perfusion ratio is maximum at :**

a) Apex of lung

b) Base of lung

c) Posterior lobe of lung

d) Middle of the lung

Correct Answer - A
A i.e. Apex of lung

## 200. Troponin C mediated function is of which of the following?

a) Dystrophin

b) Calmodulin

c) Actin

d) Calcineurin

Correct Answer - C
Ans. is `c' i.e., Actin
$Ca^{+}$ binds to troponin and this troponin - $Ca^{+}$ complex cause lateral displacement of tropomysin.
As a result active sites of actin becomes uncovered and interact with myosin.
**Important skeletal muscle proteins**
1 .Myosin : - Myosin is the protein that constitutes the *thick filaments.* Myosin of skeletal muscle is *myosin-IL* Myosin participates in the contractile mechanism and also acts as an ATPase.
2.Actin : - Actin is the major protein of *thin filament.* It is the actin which slides over myosin during contraction.
3.Tropomyosin : - It is the other protein of *thin filament.* It covers the active sites (myosin binding sites) on actin. When $Ca^{+2}$ concentration of cytoplasm (sarcoplasm) is raised, it uncovers the active sites of actin and allow the contraction So, *the 'cross-bridge cycling' is switched off or on by the tropomyosin molecule which slides on the actin molecule to cover or uncover the active sites on it.*
4. Troponin : - It is a protein also associated with thin filament. The regulatory action of $Ca^{+2}$ on tropomysin is mediated by troponin, a

*$Ca^{+2}$ binding protein.* When the cytoplasmic (sarcoplasmic) $Ca^{+2}$ concentration rises $Ca^{+2}$ ions bind to troponin-C. The troponin - $Ca^{+2}$ complex induces changes in Troponin-I and Troponin-T, which in turn brings about a shift of tropomyosin away from the active sites of actin. When the sarcoplasmic $Ca^{+2}$ concentration falls, $Ca^{+2}$ dissociates from troponin-C and tropomyosin slides back on the actin filament to cover the active sites. Thus, the first event during muscle contraction, after cytoplasmic rise in $Ca^{+2}$ concentration, is binding of troponin C to $Ca^{+2}$ which trigers the further steps by sliding the tropomysin away from the active sites of actin.

**There are additional structural proteins in skeletal muscles.**

*i) Actinin :* It binds actin to Z-lines.

*ii) Titin :* It is the *largest known protein* and connects Z-lines to M-lines and is responsible for passive stiffness of muscle, by limiting range of motion of sarcomere in tension.

*iii) Desmin :* It adds structures to Z lines in part by binding the Z-lines to plasma membrane.

## 201. Hair cells baseline membrane potential O?

a) 30mV

b) -50mV

c) -40mV

d) -60mV

Correct Answer - D
Ans. is 'd' i.e., -60mV
The resting membrane potential of the hair cells is about -60 mV.
When the stereocilia are pushed toward the kinocilium, the membrane potential is decreased to about -50 mV.
When the bundle of processes is pushed in the opposite direction, the cell is hyperpolarized.
Displacing the process in a direction perpendicular to this axis provides no change in membrane potenital, and displacing the processes in directions that are intermediate between these two directions produces depolarization or hyperpolarization that is proportional to the degree to which the direction is toward or away from the kinocilium.
Thus, the hair processes provide a mechanism for generating changes in membrane potential proportional to the direction and distance the hair moves.

## 202. Not a circumventricular organ ?

a) Subfornical area

b) Neurohypophysis

c) Adenophysis

d) OVLT

Correct Answer - C
**Ans. is 'c' i.e., Adenophysis**
**Structures outside the blood brain barrier**
Certain areas of brain have fenestrated capillaries and because of their permeability, are said to be outside blood-brain barrier. These areas are located around the third ventricle and are therefore called circumventricular organs. These areas are (i) *Posterior pituitary (neurohypophysis)* and the adjacent ventral part of *median eminence* of the hypothalamus; (ii) The *area postrema;* (iii) The organ vasculusum of lamina terminalis (OVLT); and (iv) Subfornical organs (SFO).
*Although the blood-brain barrier is deficient in the circumventricular organs, the blood-CSF barrier in these organs is quite effective* due to the presence of tight-junctions between the modified ependymal cells of the third ventricle called the `tancytes'.

## 203. Blood brain barrier is absent in ?

a) Adenohypophysis

b) Neurohypophysis

c) Hypothalamus

d) Thalamus

Correct Answer - B
Ans. is 'b' i.e., Neurohypophysis

## 204. Smooth muscle physiology different from skeletal?

a) $K^+$ requires for contraction

b) $Ca^{2+}$ required for contraction

c) Troponin is absent

d) Myosin is required for contraction

Correct Answer - C

Ans. is 'c' i.e., Troponin is absent

- Troponin is absent in smooth muscle, but required in skeletal muscles for contraction.
- $Ca^+$ and Myosin are required by both smooth muscles and skeletal muscles.
- $K^+$ has no direct role in contraction of smooth muscle and skeletal muscle.

**Smooth muscle contraction**

- In smooth muscle there is no troponin. Therefore calcium initiates contraction through a mechanism different from that employed by skeletal muscle. Smooth muscle contains a calcium binding protein called calmodulin. Increase in cytoplasmic (sarcoplasmic) calcium leads to its binding to calmodulin. The calcium-calmodulin complex activates myosin kinase, also called myosin light chain kinase (MLCK). MLCK is a phosphorylase which phosphorylates a light chain belonging to myosin chain, often called *cross-bridge phosphorylation.* The phosphorylated myosin head interact with actin, i.e., cross-bridging of myosin with actin. The cross-bridging leads to contraction.
- The reversal of contractile response depends on a reduction in

sarcoplasmic calcium by calcium pumps in the sarcoplasmic reticulum membrane and sarcolemma which pump calcium into sarcoplasmic reticulum and extracellular fluid respectively. Reduction in cytoplasmic (sarcoplasmic) calcium level activates an enzyme myosin phosphatase. Myosin phosphatase dephosphorylates the myosin head, thereby terminating the actin-myosin interaction and produces relaxation.

**So, calcium influx has two functions in smooth muscles : -**

i) Generation of action potential

ii) Essential for contraction initiation (Excitation contraction coupeling)

- It is intersting to know that although, dephosphorylation of myosin head is necessary for relaxation, dephosphorylation of myosin does not necessarily leads to relaxation of the smooth muscle. This is due to the latch effect, i.e., myosin bridges hold on to the actin filament like a latch. Due to this smooth muscle contracts, and it can maintain its contraction for prolonged period (sustained contraction) for a long period of time with minimal expenditure of energy → Characteristic feature of smooth muscle.
- As with skeletal, muscle ATP is required which is hydrolysed by myosin head which has ATPase activity (In a similar way as in skeletal muscle).

## 205. Acetylcholine on respiratory tract acts by all except?

a) Bronchoconstriction

b) Increases secretion

c) Stimulates chemoreceptor of aortic body

d) Inhibits chemoreceptor of carotid body

Correct Answer - D
**Ans. is 'd' i.e., Inhibits chemoreceptor of carotid body**
Actually both option c & d are incorrect as carotid body chemoreceptors are not found in respiratory tract. Carotid body and aortic odies are located in connective tissue associated with wall of common carotid artery and arch of aorta, respectively.
But, option 'C' can be considered correct as acetylcholine stimulates chemoreceptors (not inhibits).
*"Acetylcholine increases chemoreceptor discharge in carotid body".* – Principles of medical physiology
Thus best answer here is option 'd'.
**About option a & b**
Acetylcholine causes bronchoconstriction and increases tracheobronchial secretions.

## 206. Which of the following relays via interneurons on anterior horn cell ?

a) Muscle spindle

b) Corticospinal tract

c) Spinothalamic tract

d) Spinocerebellar tract

Correct Answer - B

**Ans. is 'b' i.e., Corticospinal tract**

Corticospinal tract terminates on α-motor neuron (anterior or ventral horn cells) via interneuron.

**PYRAMIDAL TRACT (CORTICOSPINAL TRACT)**

- Corticospinal tract is the most important tract through which the motor cortex controls the activity of the ventral horn cells (a-motor neurons) in the spinal cord. *It is also called pyramidal tract because they form the pyramid of the medulla.*
- *The corticospinal tract originates about 30 percent from primary motor cortex, 30 percent from premotor areas (premotor cortex & supplementary motor area) and 40% from the somatosensory area.* So, there are 40% sensory fibers in the corticospinal tract.
- After leaving the cortex, it passes through the posterior limb of internal capsule and then downward through the brainstem, forming the pyramids of medulla. The *majority (80%) of the pyramidal fibers then cross* the lower medulla to the opposite side and descend as the lateral corticospinal tract and finally *terminating principally on the interneuron* in the intermediate region of gray matter. Some also *terminate directly on the α-motor neuron,* especially those concerned with skilled movement.
- A *few fibers (20%) do not cross* to the opposite in the medulla and

descend ipsilaterally as anterior (ventral) corticospinal tract.

- The most impressive fibers in the pyramidal tract are a population of *large (16 pm) myelinated fibers* which originate from Giant pyramidal cells, called Betz cells, that are found only in primary motor cortex. These fibers transmit the nerve impulses to the spinal cord at fastest speed. However, these fibers form only 3% of the total. The other 97% are mainly fibers smaller than 4 m in diameter that conduct background tonic signals to the motor areas of the cord.
- Coricospinal tract is concerned with voluntary activities of body→ Voluntary control of movement is absolutely dependent on the activity of corticospinal fibers.

## 207. Sleep spindles are seen in which stage of sleep ?

a) REM

b) Stage 1 NREM

c) Stage 2 NREM

d) Stage 3 NREM

Correct Answer - C
**Ans is 'c' i.e., Stage 2 NREM**
**Stages of sleep**

- Sleep is basically divided into two phases :?

A) Non-REM (NREM) or slow-wave sleep :- It is called Non-REM sleep because no rapid eye movement (REM) is there on eletrooculogram, rather there is *slow or quiscent eye movement.* It is also referred as *S-sleep (synchronized sleep) or quiet sleep or orthodox sleep* because there is diminished physiological functions and a low level of overall activity. It is further divided into : *?*

*1) Stage 1 :-* It is a transition from wakefulness to sleep and is characterized by *disappearance of alpha activity and appearance of theta activity.* There is *slow eye movements.*

*2) Stage 2 :-* It is characterized by typical EEG activity i.e., *Sleep spindles and If-complex'. No eye movement* occurs.

*3) Stage 3 & 4 :-* Stage 3 & 4 are stages of *deep sleep.* These are also called *slow wave sleep* as these stages are characterized by *slow delta waves.* Delta wave appearance starts in stage 3 and dominated in stage 4.

B) REM sleep :- The REM sleep is so named as there is rapid roving movements of eye, i.e., rapid eye movement (REM)on electro-oculogram. It is also called paradoxical sleep because there is a

paradoxical elevation of brain activity & metabolism and physiological activity. The high-amplitude slow waves seen in stage 3,4 of REM sleep is replaced by rapid low voltage activity (Beta wave). Features of REM sleep are:-

*i) EEG* → Beta-wave, Reappearance of alpha wave, Saw-tooth wave (low voltage fast activity), Ponto-genital-occipital spikes.

ii) Dreaming

*iii) Other features :-* Generalized muscular atony, Penile erection, autonomic hyperactivity (Increased pulse rate & BP) and intermittent movement of small muscle groups.

The NREM (with its four stages) and REM sleep repeat several times a night in cyclic manner, 4-6 times depending on the length of sleep. A typical cycle starts with stage 1 of the NREM sleep which is followed by second, third and fourth stages. After this the sleep returns to stage 3 and 2. The first REM sleep occurs now, 7090 minutes after the the commencement of sleep (Note : - Stage 1 NREM sleep occurs only once at the start of the sleep as this is only a transition phase between wakefulness and sleep. Once the sleep starts the cycle rotates between stage 2, 3, 4 NREM and REM sleep). *REM sleep occupies 20-30% of total sleep and NREM sleep occupies 60-70%* (Stage-1 → 5-10%; Stage 2 → 40-50%; Stage 3 & 4 → 15-20%).

## 208. The basal ganglia function from thalamus is controlled by ?

a) Anterior nucleus

b) Intralaminar nucleus

c) Dorsal nucleus

d) Pulvinar nucleus

Correct Answer - A
Ans. is 'a' i.e., Anterior nucleus
Motor nuclei (ventral anterior and ventral lateral) of thalamus relay and process messages from basal ganglia (especially globus pallidus) and cerebellum to motor and premotor cortex.
**From functional point of view, thalamic nuclei are divided into :?**
*A) Specific sensory nuclei (relay nuclei) :-* These nuclei receive all sensory afferents from ascending pathways and project to the somatosensory cortex. These include *ventroposterior nucleus* and *medial & lateral geniculate bodies.*
*B) Association nuclei :-* These nuclei have reciprocal connections with the association areas of the cerebral cortex and therefore help in integration of different type of sensory information. These nuclei include *the lateral group of nuclei (Pulvinar, lateral dorsal, lateral posterior nuclei) and part of medial dorsal nucleus.*
*C) Nonspecific nuclei :-* These nuclei also receive sensory information but project to the cortex in a diffuse manner. Therefore they seem to be involved in the arousal induced by sensory stimuli. These nuclei are *intralaminar and reticular nuclei.*
*D) Motor nuclei :-* There nuclei relay and process messages from the basal ganglia and cerebellum to motor and premotor cortex. These

nuclei are *ventral anterior and ventral lateral nuclei.*

## 209. Nerve growth factor is required for growth of ?

a) Sympathetic neurons

b) Brain

c) Motor neuron

d) y-neuron

Correct Answer - A
Ans. is 'a' i.e., Sympathetic neurons
Nerve growth factor (NGF) promotes growth of neurons, particularly autonomic nervous system.
Antiserum against NGF can be prepared and injection of this serum causes total destruction of sympathetic ganglia - immunosympathectomy.
NGF is also required for growth of basal forebrain cholinergic neurons.

## 210. Fastest conduction is for -

a) Cold

b) Pain

c) Proprioception

d) Pressure

Correct Answer - C
Ans. is 'c' i.e., Proprioception

## 211. Sensory fibers least susceptible to hypoxia ?

a) Type I

b) Type II

c) Type III

d) Type IV

Correct Answer - D
Ans. is 'd' i.e., Type IV
Type C fibers (Type IV Lloyd & Hunt) are least susceptible to hyproxia.
Local anesthesia, hypoxia and pressure can block the conduction of nerve impulses. Different fibers have different susceptibility :-
*Most susceptible fibers to pressure are 'A' fibers and least susceptible fibers to pressure are C fibers. Amongst the A fibers, Aa are most susceptible to pressure.*
Most susceptible fibers to hypoxia are B fibers *and least susceptible fibers to hypoxia are C fibers.*
Most susceptible fibers to local anesthesia are C fibers and least susceptible fibers to LA are A fibers.

## 212. Pain is carried by which type of nerve fibres ?

a) aα

b) Aβ

c) B

d) C

Correct Answer - D
Ans. is 'd' i.e., C

## 213. True about Generatory potential ?

a) Not graded

b) Magnitude increased in direct proportion to strength of stimulus

c) All or none phenomenon

d) Propagated

Correct Answer - B
**Ans. is 'b' i.e., Magnitude increased in direct proportion to strength of stimulus**
**Generator potential is a local potential which is :-**
*i) Graded* → Magnitude directly related to the strength of stimulus.
*ii) Decreased* → Fade out after traveling a short distance.
*iii) Non-propagated.*

## 214. Pyrogens act on which site of brain ?

a) Basal ganglia

b) Limbic system

c) Thalamus

d) Hypothalamus

Correct Answer - D
**Ans. is 'd' i.e., Hypothalamus**
**<u>Pyrogenes</u>**
Pyrogenes are substances that cause fever.
Pyrogens may be exogenous or endogenous
Exogenous → Bacterial toxins
Endogenous → IL-1, TNF-a, IL-6, Interferons, Ciliory's neurotropic factor
These pyrogenes increase the level of *PGE,* in the hypothalamus that elevates the thermoregulatory set point and causes fever.

## 215. Resting membrane potential of nerve is equal to equilibrium potential of

a) Na+

b) Cl-

c) K+

d) HCO3-

Correct Answer - B
B i.e. Chloride ion

## 216. Food causes reflex defecation?

a) Enterogastric reflex

b) Defecation reflex

c) Gastrocolic reflex

d) Rectoanal reflex

Correct Answer - C
**Ans. is'c'i.e., Gastrocolic reflex**
[Rel Guyton llth/e p. 771)

- Appearance of mass movements after a rneal is facilitated by gastrocolic and duodenum reflexes.
- These reflexes result from the distension of the stomach and duodenum.
- The best example of gastrocolic reflex is seen in early infancy where defecation often follows a meal.

## 217. Temporal lobectomy in monkey leads to ?

a) Hypersensitivity

b) Aggressive behavior

c) Hypersexuality

d) None

Correct Answer - C
**Ans. is 'c' i.e., Hypersexualy**
**Kluver-Bucv syndrome**
Kluver-Bucy syndrome is a neuro-behavioural syndrome associated with bilateral lesions in the anterior temporal horn or amygdala. Heinrich kluver and Paul Bucy first described the syndrome in 1937 after experimental work where they removed rhesus monkey's temporal lobes. They found that the monkeys developed.
*1) Visual agnosia :* they could see, but were unable to recognise familiar objects or their use.
*2) Oral tendencies :* they would examine their surroundings with their mouths instead of their eyes.
*3) Hypermetamorphosis :* a desire to explore everything.
*4) Emotional changes :* emotion was dulled and facial movements and vocalisations were far less expressive. They lost fear where it would normally occur. Even after being attacked by a snake, they would casually approach it again. This was called "placidity".
*5) Hypersexuality :* a dramatic inc rease in overt sexual behaviour, including masturbation, and homosexual and heterosexual acts. They may even attempt copulation with inanimate objects.
The syndrome in humans is due to bilateral destruction of the amygdaloid body and inferior temporal cortex, most commonly due

to herpes simplex encephalitis (HSE). It shares visual agnosia and loss of normal fear and anger responses in common with the monkey model but one also seen loss of memory with dementia, distractibility and seizures. The hypersexuality tends to be less overt than in the monkeys but may be public and unacceptable.

## 218. Action potential generates from -

a) Cell body

b) Dendrites

c) Axon

d) Initial segment

Correct Answer - D
Ans. is 'd' i.e., Initial segment
Neuron is the functional unit (basic unit of nervous tissue). It is specialized for the function of reception, integration and transmission of information in the body. The basic structure of neuron is best studied in a spinal motor neuron. This cell has a 'cell body (soma)' with 5-7 small processes called 'dendrites'. There is a long process called 'axon' that originate from "axon hillock (A thickned area of cell body from which axon originates)". The first portion of the axon is called "initial segment". In a motor neuron, the axon hillock and the initial segment of axon have the lowest threshold for excitation. This is because they have *a much higher density of voltage gated sodium channels.*

## 219. Satiety centre is located at ?

a) Ventromedial nucleus of hypothalamus

b) Dorsomedial nucleus of hypothalamus

c) Peritrigonal area

d) Lateral nucleus

Correct Answer - A
Ans. is 'a' i.e., Ventromedial nucleus of hypothalamus

## 220. Muscle tone is maintained by ?

a) Golgi tendon organ

b) Renshaw cells

c) Muscle spindle

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Muscle spindle**

- Sensory receptors (stretch receptors) for stretch reflex are muscle spindles.
- Stretch reflex has two principal functions *:*
  1) *To maintain muscle tone*
- Tone is a tendency of a muscle to resist being stretched.
- Muscle tone is not only important for maintaining posture but also facilitates locomotion and makes all voluntary movement smooth.
  2) *To make muscles respond to stretch and release*
- Stretch reflex makes a muscle respond to stretch by contraction and to release by relaxation.
- both these responses, which oppose the triggering stimulus, help make voluntary movement smooth and graceful.

## 221. Cushing reflex is associated with all except ?

a) Hypotension

b) Increased intracranial pressure

c) Bradycardia

d) Tachyponea

Correct Answer - A
Ans. is 'a' i.e., Hypotension
A rise in intracranial pressure causes impaired blood supply to VMC (RVLM) neurons and the local hypoxia and hypercapnia increase their discharge to the systemic resistance vessels, i.e., cushing reflex. The resultant rise in BP tends to restore cerebral blood flow and over a considerable range, the BP rise is proportional to the increase in intracranial pressure. The increase in BP causes reflex bradycardia through arterial baroreceptors. That is why bradycardia rather than tachycardia is characteristically seen in patients with increase (ICP).
Cushing reflex consists of *hypertension (increased BP), bradycardia and tachyponea.*

## 222. Wernicke's area is located in ?

a) Inferior frontal gyrus

b) Superior temporal gyrus

c) Inferior temporal gyrus

d) Cingulate gyrus

Correct Answer - B

**Ans. is 'b' i.e., Superior temporal gyrus**

**Wernick's area**

It is located in the posterior end of superior temporal gyrus. It ***is*** the site of integration of secondary somatic, Auditory and visual areas. In response to words heard or read and interpreted by the secondary auditory or visual sensory areas, the *Wernicke's area formulate ideas* (words are planned) for expressive part of the speech and sends signals to the Broca's area *via arcuate faciculus. So, Wernicke's area is concerned with comprehension.* Lesion to this area results in sensory (fluent) aphasia.

**Broca's area (Area 44)**

Broca's area is located in the inferior frontal gyrus. It constitutes the center for *motor part of speech.* It receives information from Wernicke's area and sends it to the motor cortex concerned with control of larynx, lips and tongue for spoken speech and fingers for written speech. Lesions of the Broca's area produce an inability to express onself by spoken speech called motor aphasia or nonfluent aphasia.

**223. Which of the following increases appetite ?**

a) Insulin

b) Leptin

c) α-MSH

d) Neuropeptide Y

Correct Answer - D
Ans. is 'd' i.e., Neuropeptide Y

## 224. Spinothalamic tract carries ?

a) Proprioception

b) Kinestheisa

c) Two point discrimination

d) Pain and temperature

Correct Answer - D
Ans. is `d' i.e., Pain and temperature

## 225. Fructose uptake in small intestine is via ?

a) Passive diffusion

b) Facilitated diffusion

c) Primary active transport

d) Secondary active transport

Correct Answer - B
Ans. is b' i.e., Facilitated diffusion

## 226. Iron absorption is increased by all except ?

a) High vitamin C in diet

b) High phosphates in diet

c) Ferrous form

d) Acidity

Correct Answer - B
Ans. is 'b' i.e., High phosphates in diet

## 227. Iron absorption is inhibited by ?

a) Ascorbic acid

b) Vitamin C

c) Hepcidin

d) All of the above

Correct Answer - C
Ans. is 'c' i.e., Hepcidin

## 228. Bile acids are reabsorbed from ?

a) Duodenum

b) Proximal jejunum

c) Distal jejunum

d) Ileum

Correct Answer - D
Ans. is 'd' i.e., Ileum

## 229. Bilirubin bound inside hepatocyte to ?

a) Albumin

b) Ubiquinone

c) Ligandin

d) Globulin

Correct Answer - C
**Ans. is 'c' i.e., Ligandin**
**Bilirubin metabolism**
Bilirubin is the end product of heme degradation.
The heme is derived from -
i) Senescent erythrocytes by mononuclear phagocytic system in the spleen, liver and bone marrow (major source).
ii) Turnover of hemoproteins (e.g. cytochrome p.450).
Heme is oxidized to biliverdin by heme oxygenase.
Biliverdin is then reduced to bilirubin by biliverdin reductase.
Bilirubin is transported to liver in bound form with albumin.
*Bilirubin is transferred to hepatocytes where it is bound to ligandin.*
There is carrier mediated uptake of bilirubin in the liver.
This bilirubin is conjugated with glucuronic acid by UDP glucuronyl transferase (UGT1A1) to from conjugated bilirubin (bilirubin glucronides).
Conjugated bilirubin is excreted into bile.
Most of the conjugated bilirubin is deconjugated and degraded to urobilinogen.
The most of the urobilinogen is excreted in the feces.

**230.** **$Na^+$ uptake at basolateral surface of apical cells is by**

a) Active transport

b) Passive transport

c) Diffusion

d) Osmosis

Correct Answer - A
Ans. is 'a' i.e., Active transport

## 231. Parathormone increases calcium absorption by acting at ?

a) PCT

b) DCT

c) Loop of henle

d) Collecting duct

Correct Answer - B

**Ans. is 'b' i.e., DCT**

**Paratharmone**

- Paratharmone is 84 aminoacid polypeptide hormone secreted from parathyroid glands.
- Its secretion is regulated by plasma Ca++ concentration — fall in Ca++ concentration increases the secretion of paratharmone.

**Actions**

- PTH increases resorption of calcium from bone → *most prominant action.*
- PTH increases calcium reabsorption from *distal* tubules of kidney.
- PTH decreases phophate reabsorption from *proximal* tubules of kidney.
- PTH has no direct effect on calcium absorption from intestine but increases it indirectly by enhancing the formation of calcitriol by activating la-hydroxylose.
- PTH decreases calcium level in milk, saliva, and ocular lens — may be responsible for development of cataract in hypothyroidism.

## 232. Action of parathormone on phosphate level ?

a) Decreases phosphate level

b) Increases phosphate level

c) No effect

d) Variable effect

Correct Answer - A
Ans. is 'a' i.e., Decreases phosphate level

## 233. Active form of Vitamin -D ?

a) 25-hydroxycholecalciferol

b) 24,25-dihydroxycholecalciferol

c) 1,25-dihydroxycholecalciferol

d) Cholecalciferol

Correct Answer - C

**Ans. is 'c' i.e., 1,25-dihydroxycholecalciferol**

***Vitamin* D**

- Vitamin D is the major vitamin involved in the absorption of calcium.
- Beside dietary intake, cutaneous synthesis is the other and more important source of vitamin D (cholecalciferol) in the body. The keratinocytes of stratum corneum of the epidermis of skin contain *7-dehydrocholesterol* which is converted to Vitamin $\mathbf{D_3}$ (cholecalciferol) by the action of sunlight (UV light).
- This vitamin $\mathbf{D_3}$ (Cholecalciferol) is converted to calcidiol (calcifediol or 25 hydroxy cholecalciferol or 25hydroxy vitamin $D_3$) by 25 hydroxylase in the livery.
- Calcidiol is the major circulating form of vitamin **D3.**
- Calcidiol is then converted to Calcitriol (1-25 dihydroxy-cholecalciferol or 1-25 dihydroxy vitamin D3) by 1-a hydroxylation in kidneys.
- The final hydroxylation in kidney is rate limiting steps.
- Calcitriol is the active form of vitamin *D.*
- Dietary vitamin D is absorbed in ileum $^{Q}$ and requires bile salts.
- When $Ca^{+2}$ level is high, little calcitriol is produced, and the kidney produce the relatively inactive metabolite 24, 25 dihydroxycholecalciferol insteadY.

## 234. Glucose transporter present in the RBC-

a) a) GLUT 1

b) b) GLUT 2

c) c) GLUT 3

d) d) GLUT 4

Correct Answer - A
Highest level of GLUT 1 is present in RBC.

**235. Subnuclear cytoplasmic vacualization is seen in which stage of menstural cycle ?**

a) Proliferative phase

b) During mensturation

c) Secretory phase

d) None

Correct Answer - B
Ans. is 'b' i.e., During mensturation

## 236. Alpha chain of HCG is identical to all except ?

a) LH

b) TSH

c) FSH

d) ACTH

Correct Answer - D

**Ans. is 'd' i.e., ACTH**

**Human chorionic gonadotropin (HCG)**

- HCG is a placental hormone.
- It is synthesized by the syncytiotrophoblasitc cells of the placental villi
- It is a glycoprotein
- It is a dimer and has two dissimilar subunits

1. *α Subunits*
2. *β Subunits*

- *But only the* β *subunit of HCG is typically measured as a tumour marker because of specificity of the* β *subunit*
- The β subunit of HCG has unique sequences that are not shared with other human glycoprotein hormones.
- It is detected by radioimmunoassay using antibodies to the β chain.
- HCG is not used as tumour marker because a unit of the FSH, LH and TSH are identical
- So there can be cross reactivity between a subunits of these hormone.
- That is why in case of testicular tumours the patients also undergo simultaneous assay of LH to be certain that the marker detected is β HCG.

## 237. Major hormone secreted by zona reticularis of adrenal cortex ?

a) Glucocorticoids

b) Mineralcorticoids

c) Aldosterone

d) Androgens

Correct Answer - D
Ans. is `d i.e., Androgens
The adrenal cortex is divided into three zones (outer to inner) : Zona glomerulosa, zona fasciculata and zona reticularis.
All three cortical zones secrete corticosterone, but the active enzymatic mechanism for aldosterone biosynthesis is limited to the zona glomerulosa whereas the enzymatic machanisms for forming cortisol and sex hormones are found in the two inner zones.
Furthermore, subspecialization occurs within the inner two zones, the zona fasciculata, secreting mostly glucocorticoids and the zona reticularis secreting mainly sex hormones.

## 238. Aldosterone secretion is maximally stimulated by?

a) Hyperkalemia

b) ACTH

c) Hypernatremia

d) Exogenous steroids

Correct Answer - A
Ans. is 'a' i.e., Hyperkalemia
*Mineralocorticoid secretion is stimulated by hyperkalemia, angiotensin-H, ACTH and hyponatremia, in reducing order of efficacy.*
1) Aldosterone secretion in response to hyperkalemia is the most important and forms the basis for renal regulation of body potassium balance.
2) Stimulation of aldosterone by angiotensin II (through renin-angioensin system) is important for the correction of hypovolemia and hypotension in conditions like salt depletion or renal ischemia.
3) Stimulation of aldosterone secretion by ACTH results in diurnal variation of aldosterone secretion. However, ACTH is not an important physiological regulator for aldosterone secretion.
4) Hyponatremia *is* a weak stimulator of aldosterone secretion.

## 239. Maximum prostaglandin secretion is seen in

a) Amniotic fluid

b) Saliva

c) Seminal fluid

d) Urine

Correct Answer - C
Ans. is 'c' i.e., Seminal fluid
*"The concentrations in semen and mensural fluid probably reprent the highest concentrations of PGs found in human body" — www.reproductiveonline.org.*

## 240. G protein coupled receptor ?

a) NMDA receptor

b) Steroid

c) $M_2$

d) Insulin receptors

Correct Answer - C
Ans. is 'c' i.e., $M_2$
$M_2$ muscarinic receptors are G-protein coupled receptors and act through cAMP.

## 241. Average menstrual flow during normal menses is?

a) 50ml

b) 100ml

c) 90ml

d) 120ml

Correct Answer - A
Ans. is 'a' i.e., 50ml
Average amount of blood loss during normal mensturation is 30-40 ml per cycle.
Heavy bleeding is considered if blood loss is more than 60-80 ml per cycle.

## 242. Separation of first polar body occurs at the time of:
***September 2007, March 2012***

a) Fertilization

b) Ovulation

c) Implantation

d) Menstruation

Correct Answer - B
Ans. B: Ovulation
Asymmetrical cell division (cytokinesis) leads to the production of polar bodies during oogenesis. To conserve nutrients, the majority of cytoplasm is segregated into either the secondary oocyte and, or ovum, during meiosis I or meiosis II, respectively.
The remaining daughter cells generated from the meiotic events contain relatively little cytoplasm and are referred to as polar bodies. Eventually, the polar bodies degenerate.
There may be one or two polar bodies in the ovum. The first polar body is one of the two products in the first stage of meiosis, just before ovulation and is considered diploid, with 23 duplicated chromosomes. The second polar body is haploid, with 23 unduplicated chromosomes and is produced only when a sperm penetrates the oocyte.

**243.** **Major amount of angiotensin I is converted to angiotensin II in:**

a) Liver

b) Kidney

c) Lung

d) None of the above

Correct Answer - C

The lungs also activate one hormone; the physiologically inactive decapeptide angiotensin I is converted to the pressor, aldosterone-stimulating octapeptide angiotensin II in the pulmonary circulation. The reaction occurs in other tissues as well, but it is particularly prominent in the lungs.

Large amounts of the angiotensin-converting enzyme responsible for this activation are located on the surface of the endothelial cells of the pulmonary capillaries. The converting enzyme also inactivates bradykinin.

Circulation time through the pulmonary capillaries is less than 1 s, yet 70% of the angiotensin I reaching the lungs is converted to angiotensin II in a single trip through the capillaries.

**Ref:** Ganong's Review of Medical Physiology 23rd edition, Chapter 35.

## 244. Down regulation of hormone means ?

a) Decreased secretion of hormone

b) Decreased affinity to receptors

c) Defective regulation in secretion

d) Regulation by low concentration of hormone

Correct Answer - B
Ans. is 'b' i.e., Decreased affinity to receptors
Down regulation is a mechanism in which a *hormone decrease the number or affinity of its receptors in target tissues.*
Down-regulation may occur by decreasing the synthesis of new receptors, by increasing the degradation of existing receptors or by inactivating receptors.
The purpose of down-regulation is to reduce the sensitivity of the target tissue when hormone levels are high for an extended period of time.

## 245. Normal FSH level in adult male ?

a) 10-20 IU/L

b) 20-40 IU/L

c) 40-60 IU/L

d) 60-80 IU/L

Correct Answer - A
Ans. is 'a' i.e., 10-20 IU/L

## 246. True about second messengers ?

a) Act on intracellular receptors

b) Mediate response of extracellular hormones and neurotransmitter

c) Mediate response of intracellular hormones

d) Act by stimulation of transcription

Correct Answer - B
Ans. is 'b' i.e., Mediate response of extracellular hormones and neurotransmitter

## 247. True about spermatid ?

a) Derived from primary spermatocyte

b) Derived from secondary spermatocyte

c) Undergoes mitotic division

d) Undergoes meiotic division

Correct Answer - B
Ans. is 'b' i.e., Derived from secondary spermatocyte

## 248. After ejaculation into vagina sperm retains motility for ?

a) 24hrs

b) 36hrs

c) 72 hrs

d) 1 week

Correct Answer - A
Ans. is 'a' i.e., 24hrs
*"In ejaculated semen the maximum life span of sperm is 24-48 hours at body temperature".* — Indu Khurana

## 249. Sertoli cells in male secrete ?

a) Testosterone

b) Dehydroepiandrosterone

c) MIH

d) Progesterone

Correct Answer - C
**Ans. is 'c' i.e., MIH**
**Sertoli cells are stimulated by FSH and secrete :-**
i) Androgen binding protein (ABP)
ii) Inhibin
*iii) Mullerian inhibiting substance (MIS) or Mullerian inhibiting hormone (MIH)*
Leydig cells are stimulated by LH and secrete *androgens (testesterone), dihydrotestosterone, androstendione, dehydroepiandrosterone.*

## 250. Genetic expression of Na-K-ATP'ase inducible by?

a) Aldosterone

b) Cortisol

c) Thyroxine

d) ACTH

Correct Answer - A
**Ans. is 'a' i.e., Aldosterone**
**Mineralocorticoid actions**
The principal mineralocorticoid secreted by adrenal cortex is *aldosterone.*
*The main action of aldosterone is to enhance* $Na^+$ *reabsorption in the distal convoluted tubule in kidney.*

## 251. ADH acts on ?

a) PCT

b) Loop of Henle

c) Collecting duct

d) All sites

Correct Answer - C
**Ans. is `c' i.e., Collecting duct**
**<u>Antidiuretic hormone (ADH)</u>**
ADH (vasopressin) is a *nonapeptide* secreted by *posterior pitutary (neurohypophysis)* along with oxytocin.
It is synthesized in *hypothalamus* (Supraoptic and paraventricular area) nerve cell bodies as large precursor peptide along with its binding protein *neurophysin* and is transported down the axons to nerve endings in the median eminence and pars nervosa.
*The two main physiological stimuli for ADH release are rise in plasma osmolarity and contraction of ECF volume.*
Other factors which can influence ADH secretion are:
*Inhibit ADH secretion:* Cold environemnt, ethyl alcohol
*Stimulate ADH secretion:* Pain, exercise, stress, sleep and drugs like morphine

## 252. Insulin secretion is decreased by ?

a) Glucogen

b) Gastrin

c) Secretin

d) Somatostatin

Correct Answer - D
Ans. is 'd' i.e., Somatostatin

## 253. At puberty true is ?

a) Decreased FSH and LH

b) Decreased GnRH

c) Increased progesterone

d) Decreased estrogen

Correct Answer - C
Ans. is 'c' i.e., Increased progesterone
Puberty is triggered by a release of gonadotropins (FSH and LH) from pituitary gland.
These hormones act as signals to the gonads (testes/ovaries) that trigger the production of -
*i) Estrogen, progesterone and some testosterone in women.*
*ii) Testosterone in men.*
Leptin facilitates release of gonadotropin releasing hormone (GnRH), thereby helping in pubertal onset.

## 254. Daily sperm production is?

a) 3 million per day

b) 12 million per day

c) 30 million per day

d) 120 million per

Correct Answer - D
120 million per day REF: Guyton 11th edition page 999
The two testes of the human adult form up to 120 million sperm each day"
Note:

- The entire period of spermatogenesis, from spermatogonia to spermatozoa, takes about 74 days.
- Although sperm can live for many weeks in the suppressed state in the genital ducts of the testes, life expectancy of ejaculated sperm in the female genital tract is only 1 to 2 days.

The two testes of the human adult form up to 120 million sperm each day.

## 255. The major contributor to semen is from -

a) Seminal vesicle

b) Cowper's glands

c) Prostate

d) Urethral gland

Correct Answer - A
Ans. is 'a' i.e., Seminal vesicle

**256.** **Which of the following is NOT true about amniotic fluid index (AFI)?**

a) It is calculated by adding the vertical depths of the largest pocket in each of four equal uterine quadrants

b) Fluid restriction may lower the AFI

c) Significant hydramnios is defined by an index greater than 24 cm

d) There is steady increase in AFI after 36 weeks

Correct Answer - D

**Amniotic fluid index (AFI)** is calculated by adding the vertical depths of the largest pocket in each of four equal uterine quadrants.

Significant hydramnios is defined by an index greater than 24 cm. Fluid restriction or dehydration may lower the AFI.

Peak AFI is seen at approximately 32 weeks followed by a steady decline until 42 weeks.

**Ref:** Cunningham F.G., Leveno K.J., Bloom S.L., Hauth J.C., Rouse D.J., Spong C.Y. (2010). Chapter 21. Disorders of Amnionic Fluid Volume. In F.G. Cunningham, K.J. Leveno, S.L. Bloom, J.C. Hauth, D.J. Rouse, C.Y. Spong (Eds), *Williams Obstetrics*, 23e.

**257.** **Which of the following glucose transporter mediates insulin stimulated glucose uptake?**

a) SGLT-1

b) GLUT-1

c) GLUT-2

d) GLUT 4

Correct Answer - D

**Insulin stimulated glucose uptake into fat and muscle cells is mediated by GLUT 4.** Insulin stimulates translocation of a pool of GLUT 4 to the plasma membrane through targeted exocytosis and depress the rate of GLUT4 endocytosis.

## 258. Progesterone is produced by

a) Granulosa luteal cells

b) Stroma ot the ovary

c) Theca cells

d) Sertoli cells

Correct Answer - A
Granulosa luteal cells

## 259. What is role of insulin in lipid metabolism:

a) Active lipoprotein lipase

b) Increase lipolysis

c) Activate hormone sensitive lipase

d) All

Correct Answer - A
A i.e. Active lipoprotein lipase

## 260. Which of the following is NOT an amide ?

a) Lignocaine

b) Procaine

c) Mepivacaine

d) Dibucaine

Correct Answer - B
Ans. is 'b' i.e., Procaine

## 261. Macula densa is derived from ?

a) Afferent arteriole

b) Efferent arteriole

c) DCT

d) PCT

Correct Answer - C
Ans. is 'c' i.e., DCT

- The ascending limb of the loop of Henle proceeds towards its own glomeruluse, so that a portion of the distal convoluted tubule comes to lie very close to the afferent and efferent arterile.
- The juxtaglomerular apparatus is located at the angle of the *afferent and efferent arterioles,* where it comes in contact with the distal tubules.
- It comprises the macula dense, juxtaglomerular (JG cells), and the lacis cellse.
- The part of the distal tubule which comes in contact with the afferent earteriole is made of a specialized epithelium called the macula densa Q.
- The juxtaglomerular (granular) cells are modified smooth muscle cense in the scaly media of the terminal part of the afferent arteriolese.
- They contain large granules and secrete renine.
- JG cells are densely innervated by sympathetic nerve terminals and they release renin in response to sympathetic discharge.
- The lacis cells (extraglomerular mesangial cells) that are located in the angular space between the junction of afferent and efferent arterioles.
- The lacis cells also contain some renin.

## 262. Counter current multiplier system is primarily driven by ?

a) Concentration of Na+

b) H+ at loop of Henle

c) Concentration of Na±

d) H+ at ascending loop of henle, Osmolality at Loop of Henle

Correct Answer - A

**Ans. is 'a' i.e., Concentration of $Na^+$**

**Countercurrent multiplier**

The loop of Henle[Q] gives the nephron a peculiar shape. The descending limb, in which the tubular fluid flows towards the hairpin bend (downwords) and the ascending limb, in which the tubular fluid flows 'upwards' lie close to each other. Two such tubes with fluid flowing through them in opposite directions provide an opportunity for the countercurrent multiplication.

The thick ascending limb of loop of Henle is impermeable to water but it actively reabsorbs NaCl. The thin descending limb of loop of Henle is relatively impermeable to solutes but highly permeable to water. The most important cause of the high medullary osmolarity is active transport of sodium[Q] and co-transport of potassium[Q], chloride[Q] and other ions out of the thick ascending limb of loop of Henle[Q] into the medullary interstitium. Most important among all these is NaCl[Q], for maintenance of high medullary interstitium.

Consider the $Na^+$ is continuously flowing in from glomerulus into the tubule. However, most of the $Na^+$, instead of flowing out, gets trapped in a circular path and recycles between the ascending and descending limbs of the loop of Henle. Consequently, the $Na^+$

concentration becomes very high at the tip of the loop.

## 263. 1st urge at micturition comes at ?

a) 50 ml

b) 250 ml

c) 150 ml

d) 350 ml

Correct Answer - C
Ans. is 'c' i.e., 150 ml
*"First urge to void is felt at a bladder volume of about 150 ml, and a marked sense of fullness at about 400 ml".* – Ganong

## 264. Two particles have same diameter. The one which will pass easily through glomerular membrane has ?

a) Positive charge

b) Negative charge

c) Any of the above

d) Charge has no relation

Correct Answer - A

**Ans. is 'a' i.e., Positive charge**

The filtration surface is a three-layered structure : - i) *Glomerular capillary endothelium;* ii) *The basement membrane (Basal lamina); and iii) Visceral epithelium of Bowman's capsule with their foot process (Podocytes).*

However, even the three layers put together do not provide an adequate structural basis for the degree of sieving achieved during filtration.

The fenestration in the endothelium are 50-100 nm in diameter, and the slits between the foot process of epithelial cells (podocytes) are 25 nm wide.

That leaves only the basement membrane to account for the selectivity and the filtration function of the glomerular membrane.

Basement membrane contains hydrated channels approximately 6 nm wide.

A further functional barrier in basement membrane is added by the fact that basement membrane glycoproteins are strongly negatively charged.

That is why filtration surface is almost impermeable to plasma proteins which are negatively charged, e.g., albumin (size 7 nm).

proteins which are negatively charged, e.g., albumin (size 7 nm).
The passage of *neutral or positively charged* molecules of comparable diameter is not so difficult.
Ultimately, molecules less than 4 nm is diameter are freely filtered while molecules larger than 8 nm are not filtered atall and the molecules between 4-8 nm diameter are filtered with difficulty which increases proportionately with size.

**265.**

## Which of the following is not a part of glomerular filtration barrier ?

a) Mesangial cell

b) Endothelial cell

c) Podocyte

d) Basement membrane

Correct Answer - A
Ans. is 'a' i.e., Mesangial cell
The glomerular membrane (or the filtration barrier) is the *filtration surface* through which the fluid is filtered out from the blood into the uriniferous tubules.
**The glomerular membrane (filtration barrier) comprises :**
*i) The glomerular capillary endothelium,*
*ii) The basement membrane (basal lamina) and*
*iii) The Bowman's visceral epithelium (podocytes).*

## 266. Normal anionic gap is seen in:

***March 2009***

a) Lactic acidosis

b) Diarrhea

c) Ketoacidosis

d) Methanol poisoningo

Correct Answer - B

**Ans. B: Diarrhea**

## 267. Important role of distal tubule of kidney in acid-base balance ?

a) Secretion of Ammonia

b) Secretion of bicarbonate

c) Secretion of HCl

d) Absorption of Ammonia

Correct Answer - A
Ans. is 'a' i.e., Secretion of Ammonia
The $H^+$ ions secreted into the tubule are mopped up by urinary buffers present in the tubular fluid. The three important buffers are : -
*i) Bicarbonate buffer :* - Present in proximal segments (Proximal tubules, Thick ascending limb). It is nothing else but filtered $HCO_3$- ions which react with $H^+$ to form $H_2CO_3$. This is the most important buffer in proximal tubules.
*ii) Phosphate buffer :* - Especially important in distal tubules.
*iii) Ammonia buffers :* - Bind to $H^+$ and produce ammonium ion ($H^+ + NH_3 = NH_4$). The reaction with $NH_3$ occurs in the proximal and distal tubules but the main buffering mechanism is active in distal tubule and this is the most important buffer in distal tubule.
Thus, these buffers neutralize $H^+$ in the tubules and in exchange $HCO_2$ is reabsorbed. In case of bicarbonate buffer all filtered bicarbonates are reabsorbed. In case of ammonia and phosphate buffers, new $HCO_3$ is generated due to secretion of W. So, ammonia and phosphate buffers are excreted in exchange of $HCO_3$ absorption.

**268. $Na^+$ reabsorption is maximum in ?**

a) PCT

b) Loop of Henle

c) DCT

d) Collecting duct

Correct Answer - A
Ans. is 'a' i.e., PCT

## 269. Maximum phosphate is reabsorbed in ?

a) PCT

b) DCT

c) Loop of Henle

d) Collecting duct

Correct Answer - A
Ans. is 'a' i.e., PCT
About 60% -70% of filtered phosphate is absorbed in proximal tubule and most of the remaining in distal tubule.

## 270. True regarding water absorption in tubules:
***September 2007***

a) Majority of facultative reabsorption occurs in proximal tubule

b) Bulk of water reabsorption occurs secondary to sodium absorption

c) 25% of water is reabsorbed irrespective of water balance

d) Obligatory reabsorption is ADH dependent

Correct Answer - B
Ans. B: Bulk of water reabsorption occurs secondary to sodium absorption
Water reabsorption keeps pace with the sodium reabsorption in the proximal tubules and hence the concentration of sodium and total osmolarity remains the same.

## 271. True about ascending limb of loop of Henle ?

a) Recieves hypertonic saline

b) Maximum absorption of fluid

c) Respond to ADH

d) None of these

Correct Answer - A

**Ans. is 'a' i.e., Recieves hypertonic saline**

Fluid leaving the descending limb of loop of Henle and entering the ascending limb of loop of Henle is very hypertonic.

**Renal reabsorption and secretion**

- The Glomerular filtrate enters the renal tubules and flows through the successive parts of the tubule (i.e. *the proximal tubule, loop of Henle, distal tubule and finally collecting ducts)* before it is excreted as urine. Along its course, the tubular cells may selectively secrete some substances from the blood into the tubular lumen *(tubular secretion),* or may selectively remove some substances *(tubular reabsorption)* from the tubular filtrate, or may do both. When the Glomerular filtrate is initially formed, its osmolarity is about the same as that of plasma i.e. 300mOsm/L. Its osmolalilty changes depending on the absorption of water and solutes in the segment.

**Proximal convoluted tubule**

- The PCT reabsorbs- sodium, chloride, bicarbonate, phosphate, potassium, glucose and amino acids.
- The PCT secretes- H+, organic acids and bases (such as bile salts, oxalate, urate and catecholamines)
- The PCT is highly permeable to water. In PCT solutes and water are reabsorbed in equal proportions, thus little change in the osmolarity

occurs i.e. the tubular fluid in the PCT is isotonic to the plasma.

**Loop of Henle: Descending limb**

- The thin descending segment is highly permeable to water and moderately permeable to most solutes, including urea and sodium. No active reabsorption or secretion takes place.
- The water is reabsorbed as the tubular fluid passes down the descending limb and the filtrate becomes concentrated, in equilibrium with the surrounding interstitial fluid of the renal medulla, which is very hypertonic. Thus fluid leaving Descending limb of loop of Henle is very hypertonic.

**Loop of Henle: Ascending limb**

- The thick ascending limb reabsorbs - sodium, chloride, and potassium, calcium, bicarbonate, and magnesium. o This segment also secretes- hydrogen ions into the tubular lumen.
- The thin segment of the ascending limb has a much lower reabsorptive capacity than the thick segment, and the thin descending limb does not reabsorb significant amounts of any of these solutes.
- The ascending limb, including both the thin and the thick portions, is *completely impermeable to water, even in the presence ofADH.* Since other solutes are being reabsorbed, the tubular fluid becomes hypotonic. Thus the fluid leaving the ascending limb of loop is *hypotonic,* with an osmolarity of only about one third the osmolarity of plasma i.e. 100 mOsm/L.

**Early distal tubule**

- Early distal tubule has properties similar to those of the thick ascending limb of the loop, that is, it avidly reabsorbs most of the ions, including sodium, potassium, and chloride, but is virtually impermeable to water so there is further dilution of the tubular fluid.

**The late distal tubules and cortical collecting tubules**

- The late distal tubules and cortical collecting tubules are composed of two distinct cell types, the principal cells and the intercalated cells.
- The principal cells reabsorb sodium from the lumen and secrete potassium ions into the lumen.
- The intercalated cells reabsorb potassium and bicarbonate ions from the lumen and secrete hydrogenions into the lumen.
- The reabsorption of water from this tubular segment is controlled by

the concentration of antidiuretic hormone.

**Medullary Collecting Duct**

- The medullary collecting ducts actively reabsorb sodium and secrete hydrogen ions and are permeable to urea, which is reabsorbed in these tubular segments.
- The reabsorption of water in medullary collecting ducts is controlled by the concentration of antidiuretic hormone.
- In late distal tubule, cortical collecting tubules and medullary collection tubules the tubular fluid osmolarity *depends on the presence or absence ofADH.* In presence of high levels of ADH these tubules are highly permeable to water and significant amounts of water are reabsorbed and the tubular fluid becomes *hypertonic,* up to 1200 mOsm/L (equal to osmolarity of the surrounding medullary interstitium). In the absence of ADH, these segments are almost impermeable to water; therefore osmolarity decreases even further because of continued active reabsorption of ions from these segments-tubular fluid thus becomes hypotonic with osmolarity as low as 50mOsm/L.

## 272. Minimum filteration through glomerulatus ?

a) Glucose

b) Inulin

c) Creatinine

d) Myoglobin

Correct Answer - D
Ans. is 'd' i.e., Myoglobin
Water is freely filterable through glomerular barrier. A filterability of 1.0 means that the substance is filtered as freely as water; a filterability of 0.75 means that the substance is filtered only 75 percent as rapidly as water. Substances that are freely filterable (filterability 1.0) are water, sodium, glucose, Bicarbonate, inulin, and creatinine. *Myoglobin* is partially filterable (filterability of 0.75) and albumin is almost not filterable (filterability of 0·005) under normal conditions.

## 273. Effect of dopamine on renal vessels ?

a) Vasodilatation

b) Vasoconstriction

c) Increased permeability

d) No effect

Correct Answer - A
Ans. is 'a' i.e., Vasodilatation.

- Injected dopamine produces renal vasodilation, probably by acting on a specific dopaminergic receptor.
  - It also produces vasodilation in the mesentery.
- Elsewhere; it produces vasoconstriction, probably by releasing norepinephrine, and it has a positive inotropic effect on the heart by an aciton on fl¡adrenergic receptors.
- The net effect of moderate doses of dopamine is an increase in systolic pressure and no change in diastolic pressure.
  - Because of these actions, dopamine is useful in the treatment of traumatic and cardiogenic shock.

## 274. GFR is determined by ?

a) Afferent arteriolar resistance

b) Efferent arteriolar resistance

c) Arterial pressure

d) All of the above

Correct Answer - D
**Ans. is 'd' i.e., All of the above**
**Determinants of GFR**
A) Increase glomerular capillary hydrostatic pressure increases GFR. Glomerular hydrostatic pressure is determined by following variables : i) Arterial *pressure,* ii)Afferent *arteriolar resistance;* iii) *Efferent arteriolar resistance.*
*i) Increased arterial pressure tends to raise glomerular hydrostatic pressure and, therefore, to increase GFR. Opposite is true for decreased arterial pressure, i.e., Hypotension causes decrease in GFR.*
ii) Increased resistance of afferent arterioles (constriction of afferent arterioles) reduces glomerular hydrostatic pressure and decrease GFR. Conversely, dilation of the afferent arterioles increases both glomerular hydrostatic pressure and GFR.
iii) Efferent arteriolar constriction has a biphasic effect on GFR. At moderate levels of constriction, there is a slight increase in GFR, but with severe constriction, there is a decrease in GFR. Dilatation of efferent arterile decreases glomerular hydrostatic pressure and therefore decreases GFR.
B) Increased glomerular capillary colloid osmotic (oncotic) pressure decreases GFR. Decreased glomerular capillary colloid osmotic pressure increases GFR, .e.g, in hypoproteinemia. Increased renal blood flow increases GFR by decreasing glomerular capillary oncotic

blood flow increases GFR by decreasing glomerular capillary oncotic pressure. Increased RBF causes decrease in filtration fraction (filtration fraction = GFR/RPF). This results in more fluid remaining in the glomerular capillary and dilution of plasma proteins and as a result decrease in oncotic pressure. Conversely, by opposite effect, Decreased renal blood flow decreases GFR.
C) Increased Bowman's capsule hydrostatic pressure (due to increased tubular hydrostatic pressure as a result of obstruction) decreases GFR.
D) Decrease in glomerular capillary filtration coefficient ($K_1$) decreases GFR. *$K_2$ depends on the permeability of the glomerular membrane as well as its surface area.* Increased thickness of membrane decreases the permeability and $K_r$Chronic hypertension and diabetes increases the thickness of glomerular membrane and decrease $K_f$ and thereby GFR.$K_f$can be altered by the mesangial cells which contract and cause decrease in Kr by decreasing surface area of membrane. Relaxation of mesangial cells increase K1.
*i) Contraction of mesangial cells (therefore decrease in GFR) is produced by :* - Endothelin, angiotensin II, vasopressin, norepinephrine, PAF, PDGF, thromboxane $A_2$,$PGF_2$, Leukotrienes C4 & D4, Histamine.
*ii) Relaxation of mesangial cells (therefore increase in GFR) is produced by :* - ANP, Dopamine, PGE2, cAMP .

## 275. In a normal person at resting condition GFR is:

a) 125 ml/min

b) 90 ml/min

c) 60 ml/min

d) 150 ml/min

Correct Answer - A
A i.e. 125mlimin
GFR in an normal person at resting condition is *125m1/nin or* 7.5 *I/hour or 180L/dayQ.* Whereas the normal urine volume is about 1L/day. Thus 99% of filtrate is reabsorbed.

## 276. Loose fibrin accumulated in tight clot in coagulation pathway by factor ?

a) X

b) XI

c) XII

d) XIII

Correct Answer - D
Ans. is 'd' i.e., XIII
Loose (soluble) fibrin is converted to insuluble fibrin by thrombin and XIIIa.

## 277. Ferritin biosynthesis is regulated by serum level of ?

a) Ceruloplasmin

b) Hepcidin

c) Iron

d) Transferrin

Correct Answer - C
Ans. is `c' i.e., Iron
*"The level of iron in plasma is sensed by specific iron regulatory proteins which control the rate offerritin synthesis and to maintain homeostasis"* – Human physiology
Hepicidin regulates absorption of iron. But, it is also according to the serum iron level. If serum iron is deficiem, hepacidin level falls and there is increased iron absorption.

## 278. Plasma volume is measured by ?

a) Inulin

b) Evans blue

c) Mannitol

d) $D_2O$

Correct Answer - B
Ans. is 'b' i.e., Evans blue

## 279. Function of Golgi apparatus ?

a) Protein synthesis

b) Transcription

c) Glycosylation

d) Cholesterol synthesis

Correct Answer - C
**Ans. is 'c' i.e., Glycosylation**
**Golgi apparatus (Dietyosomel**
The golgi apparatus is a stack of six or more membrane-enclosed sacs (cisterns). The cell contains one or more Golgi apparatus, usually near the nucleus. Proteins and polypeptides synthesized in the rough ER are passed on to the golgi apparatus. These secretions (polypeptide) are stored in the golgi apparatus and also concentrated, processed and packed. Further, it is in the golgi apparatus that sorts out protein for their correct destinations, i.e., where the secretions to he sent.
Processing in Golgi apparatus may include addition of the carbohydrate moiety to proteins *(glycosylation)* to form *glycoproteins;* sulphation of mucopolysaccharides to form *hyaluronic acid & chondroitin sulfate;* cleavage of the polypeptide chain to form the active product, for example, proinsulin is cleaved by the Golgi apparatus to form insulin.
Each Golgi apparatus is a polarized structure with a cis (convex) side and a trans (concave) side. Membrane vesicles containing newly synthesized protein bud off from the rough ER and fuse with Cis (Convex) side of Golgi apparatus, i.e., Cis end is the receiving end. This protein is then process through Golgi apparatus to reach the trans (concave) side, from which vesicles bud off into the cytoplasm and are finally exocytosed from the cell. So, trans end is

cytoplasm and are finally exocytosed from the cell. So, trans end is secretory end.

## 280. Anticoagulant produced by mast cells -

a) Antithrombin III

b) Protein C

c) Protein C

d) Heparin

Correct Answer - D
**Ans. is 'd' i.e., Heparin**
**Mast cells**
Mast cells are bone marrow derived cells.
They are found predominantly near blood vessels and nerves and in subepithelial sites, where local immediate hypersensitivity reaction tend to occur.
Mast cells have cytoplasmic membrane-bound granules that contain a variety of biologically active mediators.
These granules are referred as metachromatic granules.
*Mast cells are central to the development of immediate hypersensitivity.*

**281.** **α-Granules of platelet contains all of the following, EXCEPT:**

a) Fibrinogen

b) Fibronectin

c) factors V

d) ATP

Correct Answer - D

Platelets play a critical role in normal hemostasis.
Their function depends on several glycoprotein receptors, a contractile cytoskeleton, and two types of cytoplasmic granules.
α-Granules have the adhesion molecule P-selectin on their membranes and contain fibrinogen, fibronectin, factors V and VIII, platelet factor 4 (a heparin-binding chemokine), platelet-derived growth factor (PDGF), and transforming growth factor-β (TGF-β).
**Dense (or δ) granules contain ADP and ATP, ionized calcium, histamine, serotonin, and epinephrine.**

**Ref:** Robbins 8th edition Chapter 4.

**282. Most abundant ion in intracellular fluid is:**
***September 2008, September 2012, March 2013***

a) Protein

b) Bicarbonate

c) Potassium

d) Sodium

Correct Answer - C
Ans. C: Potassium
Intracellular component of the body water accounts for about 40% of body weight and extracellular component for about 20%.
Concentration of potassium in cytosol is 139 millimeter and of Amino acids (in proteins) is 138 millimeter,

## 283. Secondary active transport true is ?

a) Occurs only in same direction

b) Occurs only in opposite direction

c) Uses ATP molecule

d) No carrier required

Correct Answer - C
Ans. is 'c' i.e., Uses ATP molecule

## 284. Sodium-potassium pump is a type of ?

a) Passive transport

b) Primary active transport

c) Secondary active transport

d) Counter transport

Correct Answer - B
Ans. is 'b' i.e., Primary active transport

## 285. Maximum storage of Mg in which of the following?

a) Liver

b) Bones

c) Kidney

d) Intestine

Correct Answer - B
Ans. is 'b' i.e., Bones
Human adult body contains about 25 gm of magnesium of which about half is found in the skeleton.

## 286. Secretory vesicles are transported ?

a) Along concentration gradient

b) Against concentration gradient

c) May be along or against concentration gradient

d) Have no relation with concentration gradient

Correct Answer - D

**Ans. is 'd' i.e., Have no relation with concentration gradient**

**Exocytosis**

Exocytosis is a reverse of endocytosis. This process is involved when secretory granules are extruded from the cell. When secretory vesicle comes in contact with inside of cell membrane, the membrane of the vesicle fuses with cell membrane and then there is extrusion of the contents of vesicle from the cells as secretory granules. Similar to endocytosis exocytosis requires $Ca^{++}$ and energy. Exocytosis is also called emiocytosis or reverse pinocytosis. Exocytosis (secretion from the cell) occurs via two pathways : - *Non-constitutive pathway :-* Proteins from the Golgi apparatus initially enter secretory granules, where processing of prohormones to mature hormones occurs before exocytosis. This pathway is sometimes called "regulated pathway". ii) *Constitutive pathway :-* Involves the prompt transport of proteins to the cell membrane in vesicles, with little or no processing or storage.

## 287. Sequence of vesicle transport is

a) ER -3 Trans → Cis -3 lysosome

b) ER→ > Cis → Trans → Cell membrane

c) ER → Lysosome → Trans → Cis

d) Cis -3 ER → Trans → Cell membrane

Correct Answer - B
B i.e. ER → Cis → Trans→ Cell membrane
Golgi apparatus serves as a unique *sorting & packing deviceQ,* that receives newly synthesized proteins, all *containing signal or transit peptide* from endoplasmic retinaculum. It rejects proteins with no signal or transit peptide without processing and that remain as cytoplasmic protein.
Golgi complex (apparatus) / Dictyosome
It is a collection of smooth membrane enclosed sacs *(cisterns)* that are stalked like dinner plates, usually near the nucleus. It has membrane similar to those of smooth ER. It is usually composed of ..4 stalked layers of 6 sacs in each apparatus It is a polarized structure with a *cis (proximal) and trans (distal) sidesQ*

## 288. Osmolarity of 4·2% solution of sodium bicarbonate is ?

a) 500 osmole/litre

b) 1000 osmole/litre

c) 1500 osmole/litre

d) 2000 osmole/litre

Correct Answer - B

Ans. is 'b' i.e., 1000 osmole/litre

4·2% solution of sodium bicarbonate contains 0·5 mmol/mL (or 500 mmol/ml).

This solution will have osmoloarity 1000 mOsm/L (as solution contains two active osmoles, i.e., 500 mOsmole of $Na^+$ and 500 mOsmole of $HCO_3^-$).

One mole of osmotically active particles is called one osmole. In case of non-dissociated solutes, one gram molecular weight of any substance contain similar number of osmotically active molecules (osmoles), thus a molar solution of glucose contains 1 osmole. On the other hand, in case of dissociated solutes, one gram molecular weight of any substance contain the number of osmotically active molecules (osmoles) equal to the number of dissociated molecules, e.g., a molar solution of NaCl contains 2 osmoles (1 mole of Na+ and 1 mole of $C1^{—}$). The osmolar concentration of a solution in osmole/litre is called osmolarity. When expressed in osmole/Kg of solution is called osmolality.

**289. The most important carrier of cholesterol in plasma is:**

a) Chylomicrons

b) HDL

c) VLDL

d) LDL

Correct Answer - D
D i.e. LDL

## 290. Role of creatine phosphate in muscle ?

a) Helps in gluconeogenesis

b) Provides instant energy

c) Involved in action-contraction coupling

d) Helps in stretch reflex

Correct Answer - B

**Ans. is 'b' i.e., Provides instant energy**

- In muscles, creatine phosphate occurs as a reservoir of high-energy phosphate groups.
- It provides a *quick source of energy* for muscle fibres to contract when they need an initial burst of energy.
- Creatine phosphate helps generation of ATP in exercising muscles by substrate level phosporylation.
- Creatine phosphate liberates 10·3 Kcal/mole (AG = -10.3).

## 291. Normal serum value of magnesium ?

a) 1·5 mEq/L

b) 5 mEq/L

c) 25 mEq/L

d) 50 mEq/L

Correct Answer - A
Ans. is 'a' i.e., 1.5 mEq/L

## 292. Magnesium is not involved in ?

a) Cellular oxidation

b) Membrane transport

c) Increased neuromuscular excitability

d) Glucose tolerance

Correct Answer - C
Ans. is 'c' i.e., Increased neuromuscular excitability
**Biochemical functions of magnesium**

- o Important function of magnesium are :?

**1. Enzyme activation**

- Magnesium activates a number of enzymes, particularly in which ATP-Mg" is a substrate, i.e. phosphate transferring enzymes.
- The enzymes needing magnesium are involved in intermediary metabolism, transcellular ion transport, muscle contraction and oxidative phosphorylation.
- Important examples of such enzymes are hexokinase, phosphofructokinase, pyruvate kinase, Glucose-6- phosphatase, enolase, creatine kinase, other phosphatases and kinases, adenylate cyclase, glutamine synthase, thiokinase, squalene synthase etc.

**2. Neuromuscular excitibility**

- Neuromuscular excitibility is *decreased by magnesium,* therefore, a decrease in magnesium level results in increased nerve excitibility.

**3. Other**

- Magnesium *improves glucose tolerance, probably by enhancing insulin dependent glucose uptake.*
- Magnesium is a constituent of bone & teeth.
- Magnesium binds to other nucleoside phosphates and nucleic acids

and is required for DNA replication, transcription and translation.

- The DNA helix is stabilized by binding of histones and magnesium to the exposed phosphate groups.

## 293. $NAD^+$ Acts as a coenzyme for ?

a) Xanthine oxidase

b) L-amino acid oxidase

c) Succinate dehydrogenase

d) Malate dehydrogenase

Correct Answer - D

.. Malate dehydrogenase *[Ref Harper 29th/e* p. *198, 199 & 26thie p. 163]*

- NAIr -linked dehydrogenases Pyruvate dehydrogenase, isocitrate dehydrogenase, malate dehydrogenase, a-ketoglutarate dehydrogenase, glutamate dehydrogenase, glyceraldehyde-3-P dehydrogenase, lactate dehydrogenase, 13-hydroxy acyl CoA dehydrogenase, glycerol 3-P dehydrogenase (cytoplasmic).
- NADP*-linked dehydrogenases Glucose-6-P dehydrogenase, 6-Phosphogluconate dehydrogenase, 3-ketoacyl reductase, Enoyl reductase, gulonate dehydrogenase.
- FAD-linked dehydrogenases Succinate dehydrogenase, fatty acyl CoA dehydrogenase, glycerol-3P dehydrogenase (mitochondrial).

## 294. Glutathion synthetase requires ?

a) Copper

b) Selenium

c) Magnesium

d) Iron

Correct Answer - C
Magnesium *[Ref Clinical biochemistry 9th le p. 786]*
Remember
*Glutathione synthetase requires* --* Magnesium
*Glutathione peroxidase contains* –> Selenium

**295.** **Trace element present in carbonic anhydrase is?**

a) Zinc

b) Molybdenum

c) Copper

d) Magnesium

Correct Answer - A

***Zn*** *is an essential component of several enzymes like carbonic anhydrase, alcohol dehydrogenase, alkaline phosphatase, carboxypeptidase and superoxaide dismutase.*

The **carbonic anhydrases** (or carbonate dehydratases) form a family of enzymes that catalyze the rapid interconversion of carbon dioxide and water to bicarbonate and protons (or vice versa), a reversible reaction that occurs rather slowly in the absence of a catalyst. The active site of most carbonic anhydrases contains a zinc ion; they are therefore classified as **metalloenzymes.**

**Ref:** Barrett K.E., Barman S.M., Boitano S., Brooks H.L. (2012). Chapter 39. Acidification of the Urine & Bicarbonate Excretion. In K.E. Barrett, S.M. Barman, S. Boitano, H.L. Brooks (Eds), Ganong's Review of Medical Physiology, 24e.

## 296. Xanthine Oxidase is associated with which co-factor:

a) Zinc

b) Copper

c) Selenium

d) Molybdenum

Correct Answer - D

Glutathione peroxidase contains selenium.
Xanthine oxidase is large protein, having a molecular weight of 270,000, and has 2 flavin molecules (bound as FAD), 2 molybdenum atoms and 8 iron atoms bound per enzymatic unit.
The molybdenum atoms are contained as molybdopterin cofactors and are the active sites of the enzyme.
The iron atoms are part of (2Fe-2S) ferredoxin iron-sulfur clusters and participate in electron transfer reactions

## 297. Enzyme Transketolase requires ?

a) FAD

b) TPP

c) PLP

d) FMN

Correct Answer - B

- Transketolase reactions require thiamine pyrophosphate (TPP).
- Coenzyme can be classified according to the group whose transfer they facilitate.
  *a) For transfer groups other than hydrogen :-* Sugar phosphate, CoA-SH, thiamine pyrophosphate (TPP), Pyridoxal phosphate, Folate, Biotin.
  *b) For transfer of hydrogen :* - NAD+, NADP+, FMN, FAP, Lipoic acid,Coenzyme Q.

## 298. Coenzyme A is formed from which vitamin?

a) C

b) B4

c) Nicotinic acid

d) Pentothenic acid

Correct Answer - D

- CoA biosynthesis requires cysteine, pantothenate (vitamin $B_5$), and adenosine triphosphate (ATP).
- it is naturally synthesized from pantothenate (vitamin B5), which is found in food such as meat, vegetables, cereal grains, legumes, eggs, and milk.
- Pantothenate (vitamin $B_5$) is phosphorylated to 4'-phosphopantothenate by the enzyme pantothenate kinase (PanK; CoaA; CoaX). This is the committed step in CoA biosynthesis and requires ATP.

.. A cysteine is added to 4'-phosphopantothenate by the enzyme phosphopantothenoylcysteine synthetase (PPCS; CoaB) to form 4'-phospho-N-pantothenoylcysteine (PPC). This step is coupled with ATP hydrolysis.[10]

2. PPC is decarboxylated to 4'-phosphopantetheine by phosphopantothenoylcysteine decarboxylase (PPC-DC; CoaC)

3. 4'-phosphopantetheine is adenylylated (or more properly, AMPylated) to form dephospho-CoA by the enzyme phosphopantetheine adenylyl transferase (PPAT; CoaD)

4. Finally, dephospho-CoA is phosphorylated to coenzyme A by the

| | |
|---|---|
| 5. | enzyme dephosphocoenzyme A kinase (DPCK; CoaE). This final step requires ATP. |

## 299. Transamination reaction requires which vitamin?

a) Thiamine

b) Pyridoxin

c) Riboflavin

d) Pentothenic acid

Correct Answer - B

Pyridoxal phosphate (active form of vitamin $B_6$) is the coenzyme for transamination reactions.

## 300. Which type of enzyme is Transaminase?

a) Xidoreductase

b) Isomerase

c) Ligases

d) Transferase

Correct Answer - D
Transferase- Amino transferase or transaminase, e.g., SGOT (AST) and SGPT (ALT), kinases (Hexokinase glucokinase, pyruvate kinase etc), Transketolases, transaldolases, transcarboxylases

## 301. ATP synthetase is a marker of ?

a) Golgi apparatus

b) Mitochondria

c) Cytosol

d) Endoplasmic reticular

Correct Answer - B
Ans. is 'b' i.e., Mitochondria

## 302. According to IUB classification of enzyme, 4th digit in enzyme refers to ?

a) Main class

b) Subclass

c) Sub-subclass

d) Individual enzyme

Correct Answer - D

The classification of enzyme was described in 1961 by enzyme commission of the international Union of Biochemistry (IUB). According to this classification, each enzyme code number or 'EC' number, consisting of four digits:-

- The first digit indicates the main class; that characterizes the type of reaction they catalyzed.
- Second digit indicates the subclass. This indicates the type of group involved in the reaction.
- Third digit indicates the sub-subclass, which denotes the substrate on which enzyme acts.
- The fourth digit specifies the individual enzyme. It indicates the systematic serial number and name. For example, lactate dehydrogenase (LDH) : EC (1.1.1.27)
- The first number indicates that the enzyme is an oxidoreductase.
- Second number indicates that the enzyme acts on the **CH-OH** group which is the donor of hydrogen.
- The third number indicates that the acceptor is NAD.

## 303. Which complex in mitochondrial ETC does not pump out H ions ?

a) Complex I

b) Complex II

c) Complex III

d) Complex IV

Correct Answer - B

Complex II *[Ref Harper 29th/e p. 126, 128]*

- Complex II does not act as proton ($H^+$) pump.

*Complex I: NADH CoQ-reductase* Permit *ATP formation (Site I)* Act as proton pump

Complex II: Succinate Co() rcductase No ATP form

*Complex CoQ - cytochrome - C reductase* Permit *ATP formation (Site II)* Act as proton pum

*Complex IV: Cytochrome* C *oxidase* Permit *ATP formation (Site III)* Act as proton pump

## 304. Inhibitor of FOF1 ATPase in Electron transport chain ?

a) Antimycin

b) Oligomycin

c) 2, 4 dinitrophenol

d) Barbiturate

Correct Answer - B

Oligomycin *[Ref Harper 29$^{m}$ le p. 127]*

**<u>Inhibitors of oxidative phosphorylation</u>**

- These compounds directly inhibit phosphorylation of ADP to ATP.
- Oligomycin inhibits $F_a$ component of $F_oF_i$ ATPase.
- Atractiloside inhibits translocase, a transport protein that transports ADP into mitochondria for phosphorylation into ATP.

## 305. In ETC cmplex-4 is inhibited by all except ?

a) CO

b) CN

c) $H_2S$

d) BAL

Correct Answer - D

**Ans. is 'd' i.e.,BAL** ***[Ref Harper 29th Ie*** **p.** ***127 & 28th Ie*** **p.** ***108, 109; Vasudevan 6[1]"/e p. 234]***

Complex I :- Barbiturates (amobarbital), piercidin A, rotenone, chlorpromazine, guanithidine.

## 306. Enzyme inhibited by insulin ?

a) Glucokinase

b) PFK-1

c) Glycogen phosphorylase

d) Glycogen synthase

Correct Answer - C
Ans. is 'c' i.e., Glycogen phosphorylase
Enzymes /Pathways inhibited by insulin :
*i)* *Gluconeogenesis :* Pyruvate carboxylase, PEP carboxykinase, fructose-1, 6-bisphosphatase, glucose-6 phosphatase
*ii)* *Glycogenolysis :* Glycogen phosphorylase
*iii)* *Lipolysis : Hormone sensitive lipase*

## 307. Fluroacetate inhibits ?

a) Citrate synthetase

b) Aconitase

c) Succinate dehydrogenase

d) Alphaketoglutarate dehydrogenase

Correct Answer - B

Aconitase *[Ref Harper 29' /e p. 164 & 28$^{t}$Ve* p. *145]*

In glycolysis

- *Fluoride inhibits --> Enolase*
- lodoacetate inhibits > Glyceroldehyde 3-phosphate dehydrogenase.
- Arsenite inhibits —> Phosphoglycerate kinase

In TCA cycle

- *Fluoroacetate inhibits aconitase non-competitively.*
- Arsenite inhibits a-ketoglutarate dehydrogenase non-competitively.
- Malonate inhibits succinate dehydrogenase competitively.
  - During glycolysis 2 ATP are utilized and 4 ATP are produced at substrate level. 2 reducing equalents NADH* are produced and reoxidized by electron transport chain, to generata 5 ATP molecules (2·5 ATP per NADH* molecule). Thus total 9 ATP molecules are produced and 2 are utilized, i.e., There is net gain of 7 ATP molecules in aerobic glycolysis.
  - In anaerobic conditions, the reoxidation of NADH by electron transport chain is prevented and NADH gets reoxidized by conversion of pyruvate to lactate by lactate dehydrogenase. Thus, in anaerobic glycolysis only 4 ATP are produced at substrate level. Therefore, there is net gain of 2 ATP molecules in anaerobic glycolysis.

## 308. Number of ATP molecules formed in anaerobic glycolysis ?

a) 1

b) 2

c) 4

d) 8

Correct Answer - C

**Two different questions can be framed *:?***

- *Number of ATP molecules produced in anaerobic glycolysis* → 4
- *Number of ATP molecules gained in aerobic glycolysis* → 2

## 309. Unaltered final product of TCA cycle ?

a) Oxaloacetate

b) Acetyl CoA

c) $CO_2$

d) Pyrovate

Correct Answer - A

TCA cycle consists of sequential reactions. It begins with condensation of four carbon oxaloacetate molecule with 2 carbon acetyl CoA molecule to form six carbon citrate molecule.
In subsequent reaction two carbon atoms are lost in the form of $CO_2$ at two different reactions.
A series of modifications occur in the remaining four carbon atoms to ultimately form oxaloacetate.
Thus the last substrate (oxaloacetate) of one cycle is ready for use as a substrate in the next cycle.
In this way, *there is no net generation of OAA, or of any of the cycle intermediates.*

## 310. Allosteric inhibitors of TCA cycle are all except?

a) ADP

b) ATP

c) NADH

d) Succinly CoA

Correct Answer - A

**Regulation of TCA cycle**

As the primary function of TCA cycle is to provide energy, respiratory control via the respiratory chain (ETC) and oxidative phosphorylation regulates citric acid cycle activity. Excess of ATP, NADH and succinyl-CoA which signals high energy status of the cell, inhibit TCA cycle. *ADP and $NAD^+$ stimulate the cycle* as these signal low energy status. Regulation occurs at three allosteric enzyms by *allosteric modulation :-*

*i) Citrate synthase :-* It is inhibited by ATP, long-chain acyl-CoA, and succinyl CoA.

ii) Isocitrate dehydrogenase :- It is activated by ADP and is inhibited by ATP and NADH.

*iii) α-ketoglutarate dehydrogenase complex :-* It is inhibits by succinyl-CoA and NADH.

## 311. Fructose 2-6 bisphosphate (F26BP) regulates glycolysis at the level of ?

a) Glucose -6- phosphate

b) Fructose -6- phosphate

c) Glyceraldehyde -3- phosphate

d) Phosphoenol pyruvate

Correct Answer - B

**Regulation of glycolysis**

- Glycolysis is regulated at 3 steps which are irreversible. These reactions are catalyzed by following key enzymes : (1) Hexokinase and glucokinase, (2) Phosphofructokinase I, and (3) Pyruvate kinase.

**Hexokinase and glucokinase**

- These enzymes catalyze the first step of glycolysis, i.e., Glucose —> Glucose-6-phosphate. Glucokinase is found in liver, Whereas hexokinase is found in all tissues. Kinetic properties of these two are different.
- Hexokinase has low Km, i.e., high affinity for glucose, low Vmax, and is subjected to feedback inhibition by the reaction product, glucose-6-phosphate. *Hexokinase is found in most of the tissue except liver and* comes into play when blood glucose is low. It is not affected by feeding or insulin. Hexokinase is not specific for glucose metabolism, it is also involved in metabolism of fructose and galactose.
- Glucokinase, on the other hand, is specific for glucose. It has high Km (i.e., low affinity for glucose), high Vmax and unlike hexokinase, it is not inhibited by glucose-6-phosphate. As it has low affinity for

glucose (high km), it comes into play only when intracellular glucose concentration is high. It is induced by feeding and insulin. Glucagon inhibits glucokinase.

- Function of hexokinase is to provide glucose-6-phosphate at a constant rate, according the needs of cells, i.e., function of hexokinase is to provide constant glucose utilization by all tissues of body even when blood sugar is low. Function of glucokinase in the liver is to remove glucose from blood after a meal, providing glucose-6phosphate in excess of requirement for glycolysis so that it can be used for glycogen synthesis and lipogenesis.

**Phosphofructokinase I**

- Phosphofructokinase I is the major regulatory enzyme of glycolysis. It catalyzes the 3rd reaction of glycolysis, i.e., fructose-6-P Fructose 1,6 bis-P. This reaction is irreversible and is the "rate -limiting step" for glycolysis. It is also the "commeted step", meaning that once fructose 1,6 bisphophate is formed it must go for the glycolytic pathway only. So, *most important control point for glycolysis is through regulation of phosphofructokinase I.*
- Phosphofructokinase - I *is allosterically activated by :* Fructose-6-phosphate, fructose 2,6-bisphophate, AMP, ADP, $K^+$ and phosphate. It is allosterically inhibited by : ATP, citrate, Ca+2, Mg+2, and low pH. Phosphofructokinase is an *inducible enzyme that increases its synthesis in response to insulin and decreases in response to glucagon.*
- *Fructose 2,6-bisphosphate (F-2,6-BP) is the most important allosteric modulator (activator) of phosphofructokinase-I.* Fructose 2,6-bisphosphate is synthesized as a side product of glycolysis. A *bifunctional enzyme named PFK-2/Fructose 2,6 bisphosphatase* is responsible for regulating the level of fructose 2,6 bisphosphate in the liver. Phosphofuctokinase-2 (PFK-2) activity of this bifunctional enzyme is responsible for synthesis of F-2,6-BP from fructose-6-phosphate and fructose 2,6 bisphosphatase activity is responsible for hydrolysis of F-2,6-BP back to fructose-6-phosphate.

## 312. Energy storage form in liver ?

a) Triglyceride

b) Cholesterol

c) FFA

d) Glycogen

Correct Answer - D

| Provider of energy | Grams | Kilocalories |
|---|---|---|
| Plasma glucose | 12 | 48 |
| Hepatic glycogen | 70 | 280 |
| Musde glycogen | 280 | 1120 |
| Fat (Triglyceride) in adipose tissue | 13,000 | 117, 000 |
| Muscle protein | 10,000 | 40,000 |

## 313. In how much time does Hepatic glycogen storage depletes during starvation?

a) 18 hrs

b) 36 hrs

c) 72 hrs

d) 48 hrs

Correct Answer - A

The primary role of altered metabolism during fasting is to maintain blood glucose through the synthesis (gluconeogenesis) and utilization of alternate substrates. Fasting-starvation is divided in three broad categories:?

i. *Initial stage :-* Lasts upto 2-3 days
i. *Intermediate stage :-* Lasts upto 24 days
i. Advanced *stage:-* begins after 24 days.

*a) Initial* stage (first stage):- *Liver glycogen is the first main provider of energy.* But due to limited storage it can not last longe (16-18 hrs.). Further glucose is provided by gluconeogenesis by non-carbohydrate sources *(muscle protein breakdown is increased which provides amino acids alanine and glutamine* for gluconeogenesis). Utilization of alternate substrates (other than glucose) starts increasing in terminal period of this stage. Free fatty acids and ketone bodies start rising in this stage. Glycogen is completely depleted by the end of this stage. Blood glucose is slightly decreased.

- The first priority of metabolism in starvation is to provide sufficient glucose to brain and other tissues that are absolutely dependent on glucose.

- Liver glycogen provides glucose only for a short period. Whereas, gluconeogenesis plays an essential role in maintaining blood glucose during both short-term and prolonged starvation.
- The substrate for gluconeogenesis are pyruvate, lactate (from RBCs and exercising muscles), glucogenic amino acids released from muscle protein breakdown, and glycerol released from lipolysis.
  b) Intermediate stage (Second stage):- *Free fatty acids are the major substrates for energy production.* They are derived from hydrolysis of fat (triglycerides) in adipose tissue. *Ketone bodies* serve as additional source of energy. As glycogen source is already depleted, the only source of glucose is increased *gluconeogenesis.* After sometimes muscle breakdown decreases due to decreased need of glucose as a fuel for brain which has began using ketone bodies as a source of energy.
  c) Advanced stage (Third stage):- When fat stores are almost exhaused, *energy requirment is obtained from breakdown of tissue proteins* and protein stores once again enter in stage of rapid depletion.
- Thus the second priority of metabolism in starvation is to preserve protein. This is accomplished by using fatty acids and ketone bodies in place of glucose as a fuel.

## 314. McArdle's disease is due to deficiency of ?

a) Branching enzyme

b) Glucose 6 phosphatase

c) Acid maltase deficiency

d) Muscle phosphorylase

Correct Answer - D

**Muscle phosphorylase *[Ref Harper 25$^{0}$/e p. 181***

| Type | | Enzyme deficiency | Organ (s) affected |
|---|---|---|---|
| | **von Gierke's disease** | **Glucose 6-phosphatase** | **Liver, kidney** |
| **II** | **Pompe's disease** | **a (1 4) Glucosidase (acid maltase)** | **All organs** |
| **III** | **Cori's disease/Forbe's disease** | **Debranching enzyme** | **Muscle, liver** |
| **IV** | **Andersen's disease** | **Branching enzyme** | **Liver, myocardium** |
| **V** | **McArdle's disease** | **Phosphorylase** | **Muscle** |
| **VI** | **Hers' disease** | **Phosphorylase** | **Liver** |
| **VII** | **Tarui's disease** | **Phosphofructokinase** | **Muscle, RBCs** |
| **VIII** | | **Phosphorylase kinase** | **Liver** |

- There is also on X-linked form of phosphorylase kinase deficiency.

This is sole exception as all other glycogen storage diseases are inherited as autosomal recessive trait.

## 315. Inhumans, ascorbic acid cannot be synthesized because of ?

a) Deficiency of G6PD

b) Deficiency of xylulose kinase

c) Deficiency of L-gulonolactone oxidase

d) Deficiency of phosphoglucomutase

Correct Answer - C

*In man, other primates and guinea pigs, ascorbic acid can be synthesized due to absence of L-glucanolactone oxidase,* an enzyme used in lower animals to synthesise ascorbic acid as a byproduct of *uronic acid pathway (glucuronic acid cycle).*

**316.** **Substrate level phosphorylation occur in step catalysed by which of the following enzyme in TCA cycle?**

a) Isocitrate dehydrogenase

b) Malate dehydrogenase

c) Aconitase

d) Succinate thiokinase

Correct Answer - D

Succinate thiokinase is the enzyme that generates ATP directly by substrate-level phosphorylation. In Krebs cycle succinate thiokinase catalyze the conversion of Succinyl CoA into succinate. In this step GDP is phosphorylated to GTP. GTP can then be converted to ATP by reacting with an ADP molecule.

Substrate-level phosphorylation is a type of metabolism that results in the formation and creation of adenosine triphosphate (ATP) or guanosine triphosphate (GTP) by the direct transfer and donation of a phosphoryl (P03) group to adenosine diphosphate (ADP) or guanosine diphosphate (GDP) from a phosphorylated reactive intermediate.

In glycolysis substrate level phosphorylation occur in two steps:
Conversion of 1,3 BPG to 3 Phosphoglycerate catalyzed by Phosphoglycerate kinase
Conversion of Phosphoenolpyruvate to pyruvate catalyzed by Pyruvate kinase

**Ref:** Textbook of Biochemistry By D M Vasudevan, 3rd Edition, Page 195

## 317. Which vitamin is associated with glycogen phosphorylase?

a) Pyridoxin

b) Niacin

c) Riboflavin

d) Thiamine

Correct Answer - A
Pyridoxin *[Ref Dinesh purl p. 187; Harper 29th le p. 180 & 27th /e p. 159-160]*
Pyridoxal phosphate is an essential cofactor for glycogen phosphorylase

## 318. Fructose uptake in small intestine is via ?

a) GLUT - 1

b) GLUT - 2

c) GLUT - 4

d) GLUT - 5

Correct Answer - D

- Fructose is absorbed by facilitated diffusion by GLUT-5.

## 319. ApoE, ApoC is synthesized by ?

a) Liver

b) Kidney

c) Intestine

d) RBCs

Correct Answer - A

- Liver *[Ref Harper 29:hie p. 239]*

**Site of synthesis**

Liver & intestine A-I ,
*Liver* A-V , B-00, C (C-I, C-11, C-III), E
Intestine A-IV, B-48
Spleen, brain, testes adrenal --> A- D

## 320. Endogenous triglycerides in plasma aremaximally carried in -

a) VLDL

b) Chylomicrons

c) LDL

d) HDL

Correct Answer - A
Ans. is 'a' i.e., VLDL
vLDL *[Ref Harper 29$^{Th}$/e p. 238 & 28$^{th}$ /e p. 213; Dinesh puri 3'/e p. 237]*

- Maximum triglyceride content - Chylomicrons
- Maximum exogenous triglyceride - Chylomicrons
- Maximum endogenous triglyceride - VLDL
- Maximum cholesterol content - LDL

## 321. Cholesteryl ester transfer protein transport cholesterol from HDL to ?

a) VLDL

b) IDL

c) LDL

d) Chylomicrons

Correct Answer - A

Cholesteryl ester is tranfered from HDL to VLDL and chylomicrons in exchange with triglyceride by the *cholesteryl ester transfer protein (CETP).*

## 322. Malonyl acetyl transferase has activity of how many enzymes?

a) 1

b) 2

c) 3

d) 4

Correct Answer - B

- Malonyl acetyl transferase (MAT) is a part of multienzyme complex : Fatty acid synthase.
  **It has two activities:?**
  1. *Acetyl transferase or acetyl transacylase (E1)*
  2. *Malonyl transferase or malonyl transacylase (E2)*

## 323. Total ATP generated by oxidation of stearic acid is

a) 114

b) 131

c) 148

d) None

Correct Answer - C

| *Fatty acid* | Cycles in 0-oxidation | Source of ATP | Total ATPs (recent calculations) | Total ATPs (older calculations) |
|---|---|---|---|---|
| Myristic acid (14-C) | 6 Cycles | 7 acetyl Cok | (7x10)+ (6x1·5)+(6x2-5) = 94 ATPs | (7x12)+(6x2)-1-(6x3) = 114 ATPs |
| | | 6 FADH NA | 92 ATPs) | gain ' ATPs) |
| Palmitic acid (16-C) | 7 Cycles | 8 acetyl CoA, 7 FADH , 6 NADH | = 108 ATPs (Net gain = 108-2 = 106 ATPs) | (6, i2)+(7x2) - 131 ATPs (Net gain = 131-2 = 129 ATPs) |
| Stearic acid (18-C) | 8 Cycle. | 9 acetyl | (9x10)+ (8x1·5)+(8x2-5)= 122 ATPs | (9x12)+( +(8x3)= 148 ATPs |
| | | 8 $FADH_2$, 8 NADH | (Net gain = 122-2 = 120 ATPs) | (Net gain = 148-2 = 146 ATPs) |

## 324. Tyrosine utilized in synthesis of all except ?

a) Melanin

b) Melatonin

c) Dopamine

d) Thyroxine

Correct Answer - B
Melatonin *[Ref Harper 29th/e p. 288-290]*

## 325. Hartnup disease is related to ?

a) Rickets symptoms

b) Pellagra symptoms

c) Burning foot syndrome

d) Angular stomatitis

Correct Answer - B

**Ans. B. Pellagra symptoms**

**Hartnup disease**

- It is an inherited disorder in the metabolism of tryptophan.
- It is due to defective transport of tryptophan and other neutral amino acids in the intestine and kidney.
- This results in deficiency of tryptophan leading to decreased synthesis of niacin and serotonin.
- Thus there are *pellagra (niacin deficiency), neurological symptoms (serotonin deficiency)* and *amino aciduria* due to defective transport of amino acids in kidney.

## 326. Serotonin is derived from -

a) Tyrosine

b) Tryptophan

c) Phenylalanine

d) Methionine

Correct Answer - B
Ans. is 'b' i.e., Tryptophan
*[Ref Harper 29'/e p. 300]*

- Tryptophan is a precursor for synthesis of niacin (nicotinic acid), serotonin and melatonin.

## 327. Succinyl CoA is formed by all except ?

a) Proline

b) Isoleucine

c) Methionine

d) Valine

Correct Answer - A

| | |
|---|---|
| Histidine, proline, glutamine, arginine | Glutamateà a-ketoglutarate |
| *Isoleucine, methionine, valine* | Succinyl CoA |
| Tyrosine, phenylalanine | Fumarate |
| Tryptophan | Alanine à Pyruvate |
| Hydroxyproline, serine, cysteine, threonine, glycine | Pyruvate |

**328.** **Albinism is due to deficiency of the following enzyme?**

a) Phenylalanine hydroxylase

b) Homogentisic acid oxidase

c) Tyrosinase

d) Decarboxylase

Correct Answer - C

The most common cause of albinism is a defect in tyrosinase, the enzyme most responsible for the synthesis of melanin. Albinism is an inborn error due to lack of synthesis of melanin. It is an autosomal recessive disorder with a frequency of 1 in 20,000.

**Ref:** Textbook of Biochemistry and Human Biology by G. P. Talwar, 3rd Ed, Page 452

## 329. Phenylalanemia I is due to deficiency of ?

a) Phenylalanine hydroxylase

b) Homogentisate oxidase

c) Tyrosinase

d) None

Correct Answer - A

Phenylalanine hydroxylase *[Ref Harper 29th/e* p. *288 & 28'5/e* p. *254]*

*i) Classical phenylketonuria (hyperphenylalanemia type I)*

Deficiency of phenylalanine hydroxylase.

*ii) Atypical phenylketonuria (hyperphenylalanemia type II and III)* • Defect in dihydrobiopterin reductase.

*iii) Hyperphenylalanemia type IV and V* • Defect in dihydrobiopterin synthesis.

## 330. Selenocysteine is associated with ?

a) Carbonic anhydrase

b) Catalase

c) Deiodinase

d) Transferase

Correct Answer - C

- *Selenocysteine is considered as 21 standard amino acid.*
- It is present at the active site of *some enzymes* that catalyze redox reactions, e.g. *thioredoxin reductase, glutathione peroxidase,* and *the deiodinase* (converts thyroxin to triiothyronine).
- Biosynthesis of selenocysteine requires *cysteine, serine, ATP* and a *specific t-RNA*
- Serine provides the carbon skeleton of selenocysteine.
- *Selenocysteine has a structure similar to cysteine,* but containing the trace element selenium in place of sulfur atom of cysteine

## 331. Amino acid with aliphatic side chain ?

a) Serine

b) Leucine

c) Threonine

d) Aspartate

Correct Answer - B
Ans. is 'b' i.e., Leucine

- Based on chemical sturcture of side chain, amino acids are classified into *?*

1. Aliphatic amino acids : - Alanine, glycine, isoleucine, leucine, valine.
2. Hydroxy amino acids : - Serine, threonine, tyrosine.
3. Sulfur containing amino acids : - Cysteine, methionine.
4. Dicarboxylic amino acids : - Aspartic acid (aspartate), glutamic acid (glutamate).
5. Amide containing amino acids : - Glutamine, aspargine (these are amides of dicarboxylic amino acids. Glutamine is amide of glutamic acid and aspargine is amide of aspartic acid).
6. Aromatic amino acids : - Phenylalanine, tyrosine, tryptophan.
7. Imino acids or heterocyclic amino acids : - One of the 20 amino acids, proline is an imino (-NH) acid not an amino (-NH) acid, as are other 19.

## 332. Carbamoyl phosphate synthase - 1 acts on ?

a) Ornithine

b) Carbamoyl phosphate

c) $CO_2$ & ammonia

d) Arginine

Correct Answer - C

$CO_2$ & Ammonia *[Ref Herper 29'Ve* p. *276-278]*

- CPS-I causes condensation of $CO_2$ and ammonia.
- Biosynthesis of urea occurs in five steps :

1) Carbamoyl phosphate synthase-I (CPS-I), a mitochondrial enzyme, catalyzes the formation of carbamoyl phosphate by condensation of $CO_2$ and ammonia. Two molecules of ATP are required for the reaction. CPS-I is the rate limiting enzyme of urea cycle. It is an allosteric enzyme and allosterically activated by N-acetyl glutamate.

2) Ornithine transcarbamoylase catalyzes the formation of citrulline from carbamoyl phosphate and ornithine.

3) Arginosuccinate synthase catalyzes the formation of arginosuccinate from citrulline and aspartate. This reaction requires 1ATP, but 2 high energy phosphate bonds are consumed as ATP is converted to AMP + PPi. The amino group of aspartate provides one of the two nitrogen atoms that appear in urea (The other one is provided by ammonia NH4).

4) Arginosuccinate lyase (arginosuccinase) catalyses the cleavage of arginosuccinate into arginine and fumarate. Fumarate enters in TCA cycle.

5) Arginase catalyses the formation of urea from arginine by hydrolytic cleavage of arginine to yield urea and ornithine. Ornithine is thus regenerated and can enter mitochondria to initiate another round of the urea cycle.

## 333. Carbamoyl phosphate synthase I is used in ?

a) Purine synthesis

b) Pyrimidine synthesis

c) Urea cycle

d) Uronic acid pathway

Correct Answer - C
Ans. is 'c' i.e., Urea cycle

- Carbamyl phosphate synthase I Urea cycle
- Carbamyl phosphate synthase II→ Pyrimidine synthesis

## 334. Reaction occuring in conversion of norepinephrine to epinephrine?

a) Hydroxylation

b) Oxidation

c) Glucuronidation

d) Methylation

Correct Answer - D
**Ans. D. Methylation**

## 335. Carnitine is synthesised from ?

a) Methionine

b) Arginine

c) Histidine

d) Choline

Correct Answer - A

Carnitine is synthesized from amino acids *lysine and methionine.*

## 336. Enzyme deficient in tyrosinemia type 1 ?

a) Phenylalanine hydroxylase

b) Tyrosinase

c) Fumarylacetoacetate hydroxylase

d) Tyrosine transaminase

Correct Answer - C

**Tyrosinemia**

It is a defect in metabolism of tyrosine. It may be of following types :-

1. *Tyrosinemia type-I (tyrosinosis/hepatorenal syndrome) :-* It is due to defect in *fumarylacetoacetate hydroxylase deficiency.* Patients with chronic tyrosinosis are prone to develop cirrhosis and hepatic carcinoma. There is cabbage like odor in acute tyrosinosis.
2. *Tyrosinemia type - II (Richer-Hanhart syndrome) :- It* is due to *deficiency of tyrosine transaminase (tyrosine aminotrans-ferase).*
3. *Neonatal tyrosinemia :* - It is due to deficiency of *hydroxyphenyl pyruvate hydroxylase.*

## 337. Brain damage in phenylketonuria is due to accumulation of ?

a) Tyrosine

b) Phenylalanine

c) Tryptophan

d) None

Correct Answer - B

*"The primary symptom of untreated phenylketonuria (i.e. mental retardation) is the result of consuming foods that contain phenylalanine, which is toxic to brain tissue"*

**Phenylaketonuria**

- It is an autosomal recessive disorder due to deficiency of phenylalanine hydroxylase.
- As a result phenylalanine is not metabolized by hydroxylase, and metabolism is shifted to alternative pathyway and there is increased concentration of *phenylalanine, phenylpyruvate, phenylacetate and phenyl-lactate.*
- Because phenylalanine is not converted into tyrosine, *tyrosine becomes an essential amino acid.*
- *Classical phenylketonuria is due to deficiency of phenylalanine hydroxylase.* Milder form may be caused by deficiency of dihydrobiopterin reductase that produces tetrahydrobiopterin, a cofactor for phenylalanine hydroxylase.

**Clinical presentation**

- The babies are *normal at birth* but may present with vomiting. Gradually mental retrardation and growth retardation develop. Baby has *light complexion with blue iris.* Other features are *microcephaly,*

rash, hypertonia, seizures, *exaggerated tendon reflex,* wide spaced teeth, *enamel hypoplasia* and hyperactivity.

- There is *musty or mousy odour of urine* and other body secretions due to presence of phenylketones.
- Pregnant females with increased pheynlalanine (maternal phenylketonuria) may cause *mental retardation, microcephaly, growth retardation and CHDs in babies.*

## 338. 1st Carbon to urea comes from ?

a) Succinyl CoA

b) Malonyl CoA

c) Acetyl CoA

d) $CO_2$

Correct Answer - D
Ans:D.)$CO_2$

**UREA CYCLE**

• Location: Cytosol and mitochondria of hepatocytes.
• Substrates: NH 3(as derived from oxidative deamination of glutamate); **$CO_2$**; aspartate; three ATP.
• Products: Urea; fumarate; H 2O.
• Purpose: The urea cycle allows for the excretion of NH 4+ by transforming ammonia into urea, which is then excreted by the kidneys.
• Important enzymes:

- Carbamoyl phosphate synthetase I: Converts ammonium and bicarbonate into carbamoyl phosphate. This is the rate-limiting step in the urea cycle. This reaction requires two ATP and occurs in the mitochondria.
- Ornithine transcarbamoylase: Combines ornithine and carbamoyl phosphate to form citrulline. Located in mitochondria.
- Argininosuccinate synthetase: Condenses citrulline with aspartate to form arginosuccinate. This reaction occurs in the cytosol and requires one ATP.
- Argininosuccinate lyase: Splits argininosuccinate into arginine and fumarate. Occurs in the cytosol.

- Arginase: Cleaves arginine into one molecule of urea and ornithine in the cytosol. The ornithine is then transported back into the mitochondria for entry back into the cycle.
  • Regulation: Carbamoyl phosphate synthetase I catalyzes the rate-limiting step of the cycle and is stimulated by N -acetylglutamate.
  • Diseases: Hyperammonemia occurs when there is a deficiency in one of more of the urea cycle enzymes,causing insufficient removal of NH 4+ .
- Ammonia intoxication leads to CNS deterioration in the form of mental retardation, seizure, coma, and death.

## 339. Creatinine is formed from -

a) Glycine

b) Lysine

c) Leucine

d) Histamine

Correct Answer - A

Creatinine and creatine are synthesized from glycine, arginine and methionine.

**Synthesis of creatine and creatinine**

Creatine and creatinine are not amino acids, but specialized products of amino acids. Creatine is synthesized from glycine, arginine and methionine. Synthesis start with formation of guanidoacetate from glycine and arginine in kidney. Further reactions takes place in liver and muscle.

## 340. Carbamoyl phosphate synthase - 1 is stimulated by ?

a) ATP

b) Arginosuccinate

c) Carbamoyl phosphate

d) N-acetyl glutamate

Correct Answer - D

Carbamoyl phosphate synthase-I (CPS-I), a *mitochondrial* enzyme, catalyzes the formation of carbamoyl phosphate by condensation of $CO_2$ and ammonia.

Two molecules of ATP are required for the reaction. *CPS-I is the rate limiting enzyme of urea cycle.*

It is an allosteric enzyme and allosterically activated by N-acetyl glutamate.

## 341. In mass spectrometer, peptide are studied by projection of ?

a) Helium

b) Hydrogen ion

c) Oxygen

d) None

Correct Answer - B

A mass spectrometer generates multiple ions from the sample under investigation, it then separates them according to their specific mass-to-charge ratio (m/z), and then records the relative abundance of each ion type.
In positive ionisation made, a trace of formic acid is often added to aid protonation (addition of proton or hydrogen ion) of sample molecules. Proteins and peptides are usually analysed under positive ionisation conditions.
In negative ionisation mode, a trace of ammonia solution or volatile amine is added to aid deprotonation (removal of proton or hydrogen ion) of the sample molecules. Saccharides and oligonucleotides are usually analysed under negative ionisation conditions.

## 342. Molecular size of protein is determined by?

a) Sedimentation

b) SDS-PAGE

c) Salting out

d) Liophilization

Correct Answer - B

*The molecular size of protein is estimated usually by SDS-PAGE.* Other common methods are *mass spectroscopy* and *MALDI.*

## 343. Protein separation based on moleular size ?

a) HPLC

b) Gel filtration chromatography

c) Salting out

d) Affinity chromatography

Correct Answer - B

Protein solubility *Salting out'* or salt extraction (precipitation of protein by ammonium sulfate)

Molecular size • **Gel filtration chromatography** (molecular-sieve chromatography or size exdusion chromatography)

- Ultracentrifugation
- SDS-PAGE (Sodium dodecyl sulphate-polyacrylamide gel electrophoresis)
- Dialysis

Molecular charge (Ionic charge) • Ion exchange chromatography

- High performance liquid chromatography (HPLC)
- Electrophoresis (simple on cellulose acetate starch gel)
- lsoelectric focusing (a variant of electrophoresis)

Molecular charge and molecular weight PAGE : polyacrylamide gel electrophoresis

**Affinity binding** Affinity chromatography

**Hydrophobicity** Hydrophobic interaction chromatography

## 344. Chargaff's rule state that, in DNA ?

a) Purines to pyrimidines ratio is 2

b) A+T=G+C

c) Purines = Pyrimidines

d) All of the above

Correct Answer - C

*[Ref : Harper 29$^{1h}$/e* p. *344 & 28$^{th}$ie* p. *302; Essentials of biochemistry* p. *915[*

- Chargaff's rule states that in DNA of all species quantities of ourines is the same as that of pyrimidines, i.e. A+G = T+C. In *A + G* other words, *ratio of purines to pyrimidines is one, i.e.* $_{T}$ c – ***1***
- This is because one member of a base pair in a DNA must always be a purine and the other a pyrimidine.
- This base pairing restriction explains that in a double stranded DNA molecule, *the content of adenine equals that of thymine (A=T) and the content of guanine equals that of cylosine (G=C).* Therefore = *7* **or** AC = TG

**345.** **If more than one codon codes for same amino acid, this phenomenon is known as?**

a) Degeneracy

b) Frameshift mutation

c) Transcription

d) Mutation

Correct Answer - A

3 out of 64 codons do not code for any amino acid. These have been termed nonsense codons.
These nonsense codons are utilized in the cell as termination signals; they specify where the polymerization of amino acids into a protein molecule is to stop.
The remaining 61 codons code for 20 amino acids.
Thus, there must be *degeneracy in the genetic code, ie; multiple codons must decode the same amino acid.*

Some amino acids are encoded by several codons; for example six different codons, UCU, UCC, UCA, UCG, AGU, and AGC all specify serine. Other amino acids, such as methionine and tryptophan, have a single codon. In general, the third nucleotide in a codon is less important than the first two in determining the specific amino acid to be incorporated, and this accounts for most of the degeneracy of the code.

However, for any specific codon, only a single amino acid is indicated; with rare exceptions, the genetic code is **unambiguous**—that is, given a specific codon, only a single amino acid is indicated. **The distinction between ambiguity and degeneracy is an important concept.**

**Ref:** Weil P. (2011). Chapter 37. Protein Synthesis & the Genetic Code. In D.A. Bender, K.M. Botham, P.A. Weil, P.J. Kennelly, R.K. Murray, V.W. Rodwell (Eds), Harper's Illustrated Biochemistry, 29e.

## 346. RNA primer in eukaryote is formed by ?

a) Ligase

b) RNA polymerase

c) Topoisomerase

d) Helicase

Correct Answer - B

DNA synthesis cannot commence with deoxyribonucleotides because DNA polymerase cannot add a mononucleotide to another mononucleotide.
Thus, DNA polymerase cannot initiate synthesis of complementary DNA synthesis strand of DNA on a totally single stranded template. For this, they require RNA primer, which is a short piece of RNA formed by enzyme primase (RNA polymerase) using DNA as a template.
RNA primer is then extended by addition of deoxyribonucleotides. Later on, the ribonucleotides of the primer are replaced by deoxyribonucleotides.
**Primase** is actually a DNA primase which has RNA polymerase activity. This DNA primase is also called DNA polymerase.

## 347. 3' end of t-RNA posseses ?

a) Poly 'A' tail

b) CCA sequence

c) Anticodon

d) D arm

Correct Answer - B

t-RNA molecule get folded into a structure that appears like a clover leaf.
There are four arms.
1. Acceptor arm : It consists of a base paired stem that terminates in the sequence CCA at the 3' end. This is the *attachment site for amino acids.*
2. D arm - It contains the base dihydrouridine (D).
3. Anticodon arm - It contains anticodon that base pairs with the codon of coming mRNA. Anticodon has nucleotide sequence complementary to the codon of mRNA and is responsible for the specificity of the t RNA.
4. Tyr C arm : It contains both ribothymidine (T) and pseudouridine

## 348. Genetic code does not contain ?

a) Adenine

b) Guanine

c) Thymine

d) Cytosine

Correct Answer - C

The information needed to direct the synthesis of protein is contained in the mRNA in the form of a genetic code, which inturn is transcribed from template strand of DNA and is therefore complementary to it. *The genetic code is the system of nucleotide sequences of mRNA that determines the sequence of amino acids in protein.*
Codon is a sequence of three adjacent bases that corresponds to one amino acid. *There are 64 possible codom sequences.* Because four nucleotide bases A,G, C and U are used to produce the three base codons, there are therefore 64($4^3$) possible codon sequences. Thymine is not involved in codons as mRNA does not contain thymine (codon is contained in mRNA).

## 349. True about tRNA ?

a) 80% of total RNA

b) Contains 50-60 nucleotides

c) CCA sequence is transcribed

d) Longest RNA

Correct Answer - C

*"The CCA tail is a CCA sequence at 3' end of the tRNA molecule. In prokaryotes, CCA sequence is transcribed. In eukaryotes, the CCA sequence is added during processing".*
*"tRNA is the smallest of three major species of RNAs" — Dinesh puri*
tRNA comprises 15% of total RNA in the cell. It contains 73-93 nucleotide residue.

## 350. Telomerase is ?

a) DNA dependant RNA polymerase

b) RNA dependant DNA polymerase

c) RNA dependant RNA polymerase

d) DNA dependant DNA polymerase

Correct Answer - B

**Telomers and Telomerase**

Telomers are short repeated sequences of DNA present at the end of eukaryotic chromosomes.
In normal cells, telomeres get shortened in each replicated cycle. After the telomers get shortened by a critical length, cell stops dividing and enters into Go phase (senscence).
However, germ cells, cancer cells and stem cells have an enzyme telomerase (telomerase activity) which prevents telomer shortening. Thus telomers are not shortened in these cells, and therefore these cells have ability to self replicate extensively.
Telomerase is a reverse transcriptase (RNA dependent DNA polymerase) and is responsible for telomer synthesis and maintaining the length of telomers (replication of end of chromosome).
Thus, telomerase provide longetivity to the cells which contain this enzyme.
Telomerase is absent from most of the somatic cells and hence they suffer progressive loss of telomers and they exit the cell cycle.

## 351. Nucleosome core protein is made up of

a) DNA

b) RNA

c) Histones

d) None

Correct Answer - C

**Nucleosomes**
Nucleosomes are primary structural units of chromatin. It consists of DNA bound to protein histones, i.e. core of protein histones wrapped with DNA. Histones are basic proteins rich in lysine and argininine. These positively charged amino acids interact with negatively charged phosphate group of DNA. There are five types of histones til, H2A, H2B, H3 and H4. Two molecules of each H2A, H2B, H3 and H4 associate one another to form histone octomer. Around histone octomer a segment of the DNA helix is wound nearly twice forming nucleosome core. A nucleosome associated with histone Hl is called chromatosome.
A series of nucleosome *("beads on a string")* form a polynucleosome or chromatin. The DNA connecting two nucleosomes is called linker (or spacer) DNA. To linker DNA, *H1 histone* is attached to stabilize the complex. Non-histone proteins are also attached to linker DNA. These repeating units of nucleosomes, connected with linker DNA, form chromatin fiber.

## 352. Frame shift mutation causes ?

a) Transversion

b) Transition

c) Termination of protein synthesis

d) Alteration of whole reading sequence

Correct Answer - D

Mutations

- A mutation is a *permanant change in the DNA.*
- Mutations that affect germ cells (sperm or ovum) are transmitted to progeny and may give rise to inherited disease.
- Mutations that affect somatic cells are not transmitted to progeny but are important in the genesis of cancers and congenital malformations.
- Mutations may be classified into three categories -
  1. Gene mutations
  *The vast majority of mutations associated with hereditary disease are gene mutations.*
  These may of different types depending whether it involves complete gene or single base -*(a) Point mutation*
- A single nucleotide base is subustituted by a different base.
- When a pyrimidine base is subustituted by other pyrimidine base or a purine base is substituted by other purine *Transition.*
- When a purine is substituded by a pyrimidine or vice-versa Transversion.
- This may alter the code in a triplet of bases, i.e. in codon and leads to replacement of one aminoacid by another in the gene product.
- Because these mutations alter the meaning of the genetic code, they

are often termed *missense mutation.*

- Example is *sickle mutation* in which CTC codon in 3-chain of hemoglobin that codes for glutamic acid is changed to CAC codon that codes for valine.
- Another type of point mutation is *nonsense mutation* in which a point mutation may change an amino acid codon to a stop codon.
- Example is 3-thalassemia in which CAG codon in 3-chain of hemoglobin that code for glutamin is changed to stop codon UAG after point mutation.

*Deletion and insertions*

- Deletion or insertion of one or two base lead to alterations in the reading frame of the DNA strand —> *frame shift mutation.*
- If the number of base pairs invoved is three or a multiple of three framshift does not occur (because codon is triplet), instead an abnormal protein missing one or more amino acids is synthesized.

*(c) Trinucleotide repeat mutation*

- Normally a codon is triplet ie trinucleotide.
- In this type of mutation a codon, ie trinucleotide sequence undergoes amplification and the same codon is repeated continuously so many times in the chain.
- For example in fragile X-syndrome, CGG codon is repeated 250-4000 times, ie. there are 250-4000 tandem repeater of CGG.

2.Chromosome mutation

- Result from rearrangement of genetic material that give rise to visible structural changes in the chromosome. 3.Genome mutation
- Involves loss or gain of whole chromosome, e.g. *monosomy* - Turner syndrome, *trisomy* - Down syndrome.

## 353. Splicing is a process of ?

a) Activation of protein

b) Removal of introns

c) Synthesis of protein

d) Replication of DNA

Correct Answer - B

In molecular biology and genetics, splicing is a modification of an RNA after transcription, in which introns are removed and exons are joined.
This is needed for the typical eukaryotic messenger RNA before it can be used to produce a correct protein through translation.
For many eukaryotic introns, splicing is done in a series of reactions which are catalyzed by the *spliceosome a complex of small nuclear ribonucleoproteins (snRNAs), but there are also self-splicing introns.*

## 354. Defect in Snurps causes ?

a) Defect in 5' - capping

b) Defect in addition of poly-A tail

c) Defect in Splicing

d) Defect in terminal addition of nucleotide

Correct Answer - C

**m-RNA processing**

Prokaryotic mRNA is functional immediately upon synthesis, i.e. prokaryotic primary transcript of mRNA is functional. Thus it does not require post-transcriptional modification. In Eukaryotes the primary transcript of mRNA is the hn RNA (hetrogeneous nuclear RNA). After transcription hnRNA is extensively modified to form functional mRNA. These modifications are as follows.

1) The 5'-capping :- This is the first *processing reaction.* $5^1$-end of mRNA is capped with 7-methylguansosine. This cap helps in initiation of translation (protein synthesis) and stabilizes the structure of mRNA by protecting from 5'-exonuclease.

*2)* Addition of poly 'A' tail :- As the name suggests, multiple 'A' (adenylate) residues are added at *3'end.This* poly-A tail is not transcribed from DNA, but rather added after transcription. These tails helps to stabilize the mRNA (by protecting from 3'-exonuclease), facilitate exit from the nucleus, and aid in translation. After mRNA enters the cytosol, the poly-A tail is gradually shortened. *Some mRNAs do not have poly-A tail, e.g. mRNAs of histones and some interferons.*

3) Removal of introns (splicing) :- Eukaryotic genes contain some coding sequences which code for protein and some intervening non-

coding sequences which do not code for protein. The coding sequences are called `exons' and intervening non-coding sequences are called `introns'. The process by which introns are excised and exons are linked to form functional mRNA is called *splicing.* Thus mature mRNA does not contain introns.

- Splicesome Splicesome is an assembly made up of small nuclear RNA (snRNA), some proteins and hnRNA. snRNA combines with proteins to form small nuclear ribnonucleoprotein particles (snRNPs or snurps) that mediate splicing. It is snRNA component of snurps that catalyzes splicing. Snurps are U4, U5 and U6.
- Only about 1-5% of human DNA has coding sequence (exons). Remaining is non-coding (introns).

4) Alternate splicing :- The hn-RNA molecules from some genes can be spliced in alternative way in different tissues. Thus two or more different mRNA (and therefore 2 or more proteins) can be synthesized from same hnRNA. For example, difference isoforms of tropomyosin in different tissues in due to alternate splicing.

## 355. Defect in Snurps causes?

a) Sickle cell anemia

b) Thalassemia

c) Marfan syndrome

d) EDS

Correct Answer - B

Defective splicing (defect in snurps) is the most common mutation causing thalassemia.

- Molecular defect in pathogensis of thalassemia:?
  A) β-Thalassemia
- Most common type of genetic abnormality in β-thalassemia is *point mutation i.e., nonsense.*
- Some may also occur due to deletion or insertion i.e., frame shift mutations.
- Defect may occur at different steps of β-chain synthesis:
  i) *Splicing mutations*
- Mutations leading to aberrant splicing are the most common cause of P-thalassemia.
  ii) *Chain terminator mutations*
- This cause premature termination of mRNA *translation.*
  *iii) Promoter region mutations*
- This results in *transcription defect.*
  B) α-Thalassemia
- The most common cause of reduced a-chain synthesis is deletion of a-globin genes.
- Rarely nonsense mutation may also cause a-thalassemia.

## 356. In E. coli, Arthur kornberg found which enzyme?

a) Fatty acid synthase

b) DNA polymerase

c) Topoisomerase

d) Glucose-6-phosphate dehydrogenase

Correct Answer - B

The identification and partial purification by Arthur Kornberg and his colleagues in 1956 of an enzyme - DNA polymerase I of Escherichia coli - that catalyzed the stable incorporation of deoxyribonucleotides into DNA in vitro came as a surprise.

## 357. Action of topoisomerase III ?

a) Remove positive supercoil

b) Remove negative supercoil

c) Form negative supercoid

d) Single strand break

Correct Answer - D
Ans. is 'd' i.e., Single strand break

- *Topoisomerase I* Removes negative supercoiling.
- *Topoisomerase II* Relaxes positive supercoils and forms negative supercoiling by condensation. of chromosome.
- *Topoisomerase III* Can introduce single strand breaks during recombination that are required for DNA to be exchanged by adjacent chromosome.
- *Topoisomerase IV* Acts to disentangle the replicated intertwined DNA strands by making double-strand breaks that allow one duplex to pass through the other.

## 358. Function of mitochondrial DNA ?

a) Encodes proteins of cell membrane

b) Encodes proteins of respiratory chain

c) Helps in cell replication

d) Formation of rRNA

Correct Answer - B

Human mitochondria contain two to ten copies of a small circular double-stranded DNA molecule that makes up approximately 1% of total cellular DNA.
The majority of the peptides in mitochondria (about 54 out of 67) are coded by nuclear genes.
The rest are coded by genes found in mitochondrial (mt) DNA
This mtDNA codes for mt ribosomal and transfer RNAs and for 13 proteins that play key roles in the respiratory chain.

## 359. Rapid method of chromosome identification in interphase is -

a) FISH

b) PCR

c) SSCP

d) Karyotyping

Correct Answer - A

FISH is a cytogenetic technique that can be used to detect the presence or absence of specific DNA sequences (specific gene locus) on chromosomes.
It uses fluorescent probes that bind to only those parts of the chromosome with which they show a high degree of sequence similarity.
Fluorescence microscopy can then be used to find out where the fluorescent probe bound to the chromosome.
**FISH** can be used for rapid identification of chromosome during interphase.
FISH can be used in metaphase cells to detect specific *microdeletions* beyond the resolution of routine cytogenetics or identify extra material of unknown origin.
It can also help in cases where it is difficult to determine from routine cytogenetics if a chromosome has a simple deletion or is involved in a subtle or complex rearrangement.
In addition, metaphase FISH can detect some of the specific chromosome rearrangements seen in certain cancers.

## 360. Which of the following is/are the application/s of FISH?

a) Gene mapping

b) Study of 3D chromosome organization in interphase nuclei

c) Monitoring the success of bone marrow transplantation

d) All the above

Correct Answer - D

**Diagnostic**

- The identification of specific chromosome abnormalities
- The characterization of marker chromosomes
- Interphase FISH for specific abnormalities in cases of failed cytogenetics
- Monitoring disease progression
- Monitoring the success of bone marrow transplantation

**Research**

- The identification of new non-random abnormalities (by M-FISH or SKY)
- Gene mapping
- Identification of regions of amplification or deletion by CGH
- The identification of translocation breakpoints
- The study of 3D chromosome organization in interphase nuclei

## 361. Which of the following is not a post transcriptional modification of RNA?

a) Splicing

b) 5'capping

c) 3' polyadenylation

d) Glycosylation

Correct Answer - D
D i.e. Glycosylation

- Prokaryotic mRNA is functional immediately upon synthesis, i.e. prokaryotic primary transcript of mRNA is functional. Thus it does not require post-transcriptional modification. In Eukaryotes the primary transcript of mRNA is the hn RNA (hetrogeneous nuclear RNA). After transcription hnRNA is extensively modified to form functional mRNA.
- Post-transcriptional modification of mRNA involves : (i) 5'-capping (ii) Addition of a poly-A tail (polyadenylation), and (iii) Removal of introns (splicing).

## 362. Which of the following is not used as vector in genetics ?

a) Adenovirus

b) Proteasome

c) Liposome

d) Retrovirus

Correct Answer - B

The traditional viral vectors are adenoviral vectors followed by papilloma viruses and retroviruses. *Retroviruses are the main and most commonly used viral vectors.*

**Other cloning vectors for gene delivery are :-**

i. *Plasmid*
i. *Bacteriophage*
i. *Cosmid*
*i*. *BAC (Bacterial artificial chromosome)*
*i*. *YAC (Yeast artificial chromosome).*

Liposomes or lipoplexes are also used as vector for gene delivery.

## 363. Most powerful cloning vector ?

a) Plasmid

b) Virus

c) Cosmid

d) Phage

Correct Answer - C

Most powerful cloning vector is cosmid as largest DNA can be incorporated in cosmid.
Overall, most powerful cloning vector is YAC (Yeast artificial chromosome).

## 364. Most commonly used vector for DNA cloning ?

a) Plasmid

b) Virus

c) Cosmid

d) Phage

Correct Answer - A

A cloning vector is a carrier DNA molecule to which human DNA fragment is attached. Normally, foreign DNA fragments cannot self-replicate within host cell. Therefore, they are joined to a vector DNA, that can replicate within host cell.

**The five major types of cloning vectors used are -**

i) Plasmids
ii) Viral vectors/Bacteriophages
iii) Cosmids
iv) Bacterial Artificial Chromosomes (BACs)
v) Yeast artificial chromosomes (YACs)

## 365. PRPP glutamyl amidotransferase is increased to increase purine synthesis in ?

a) Liver

b) RBC

c) Brain

d) Polymorphs

Correct Answer - A

PRPP glutamyl amidotransferase is one of the rate limiting enzyme in de novo synthesis of purines. o *The de novo synthesis of purines is most active in liver.*
*Brain, RBCs (erythrocytes) and polymorphonuclear leokocytes (polymorphs) cannot synthesize purine nucleotides by de novo pathway.*
**Biosynthesis of purine neucleotides**
Two important purine nucleotides are synthesized : *(i) adenosine monophosphate (AMP) and (ii) guanosine monophosphate (GMP).* Then AMP and GMP are converted to other purine nucleotides like ADP, ATP, GDP, GTP etc. Purine nucleotides can be synthesized by two pathways - *(I) De novo synthesis* and *(2) Salvage pathway.*
De novo pathway (De novo synthesis)
In de novo pathway, the purine nucleotides are synthesized from amphibolic intermediates. Amphibolic intermediates are the intermediary metabolites of amphibolic pathways (eg. citric acid cycle) which have dual purposes, i e. they serve in catabolism as well as in anabolism.

In de novo synthesis, purine ring is formed from variety of precursors is assembled on ribose-5-phosphate. Precursors for de novo synthesis are *?*

*i) Glycine provides C4 C5 and N7*
*ii) Aspartate provides NI*
*iii) Glutamine provides N3 and N9*
*iv) Tetrahydrofolate derivatives furnish C2 and Cs*
*v) Carbon dioxide provides C6*

## 366. Salvage pathway of purine nucleotide synthesis are used by all except ?

a) Brain

b) Liver

c) RBC

d) Leukocytes

Correct Answer - B

**Purine nucleotide synthesis occurs by two pathways :-**
1.De novo synthesis
2.Salvage pathway
Liver is the major site of purine nucleotide biosynthesis (de novo). Certain tissues cannot synthesize purine nucleotides by de novo patyway, e g. *brain, erythrocytes and polymorphonuclear leukocytes.* These are dependent on salvage pathway for synthesis of purine nucleotides by using exogenous purines, which are formed by degradation of purine nucleotides synthesized in liver.

## 367. Which vitamin is required for transfer of 1-carbon unit?

a) Vitamin A

b) Folic acid

c) Vitamin $B_{12}$

d) Niacin

Correct Answer - B

**Folic acid [Ref** *Harper 29$^{m}$/e p. 537-539, Vasudevan ele* p. *400-402]*

- Goups, containing a single carbon atom are called one carbon groups. One carbon groups are formed from following amino acids during their metabolism:- *Serine, glycine, histidine and tryptophan.* One carbon groups formed during metabolism are: **methyl ($C11_3$), methylene (CH,), methenyl (C H), formyl (CHO) and formimino (CH=NH)**

**These one carbon groups are transferred by way of tetrahydrofolate (THF), which is derivative of folic acid°.** One carbon groups carried by THF are attached either to nitrogen $N^5$ or $M^{c'}$ or to both $N^5$ and N"). Different one corbon derivatives of THF **are- $N^5$- methyl THF, $N^5$, N'°-methylene THF, $N^5$, N"-methenyl THF, $N^5$-formyl THF and $N^5$-formimino THE** These derivatives are interconvertable.

## 368. Test to diagnose thiamine deficiency ?

a) RBC transketolase

b) FIGLU excretion

c) Methyl-malunic acid in urine

d) Histidine load test

Correct Answer - A

**Ans. is 'a' i.e., RBC transketolase** ***[Ref Harper 29th/e p. 534]***

- Thiamine diphosphate is also the coenzume for transketolase, in the pentose phosphate pathway.
- Therefore, thiamine nutritional status is best assessed by erythrocyte (preferred) or whole blood transketolase activity..

## 369. Enzyme replacement therapy is not available for?

a) Gaucher's disease

b) Tay sach disease

c) Pompe's disease

d) Hurler syndrome

Correct Answer - B

Important diseases for which enzyme replacement therapy is available are :-

i. *Gaucher's disease*
i. Maroteaux Lamy syndrome (mucopolysaccharidosis VI)
i. Hurler syndrome (mucopolysaccharidosis I)
v. Fabry's disease
v. Hunter syndrome (mucopolysaccharidosis II)
i. Pompe's disease (Type II glycogenosis)

## 370. Enzyme alglucerase is used in the treatment of ?

a) Gaucher's disease

b) Galactosemia

c) Niemann Pick disease

d) Pompe's disease

Correct Answer - A
Ans. is 'a' i.e., Gaucher's disease
Alglucerase (ceredase) is used in the treatment of Gaucher's disease.

## 371. In hemoglobin, affinity for carbon monoxide is diminished by presence of ?

a) Histidine F8

b) Histidine F7

c) Histidine E7

d) Histidine E8

Correct Answer - C

Heme is a derivative of porphyrin (protoporphyrin) porphyrin is composed by fusion of four pyrrole ring linked by methenyl (=CH) bridges, i.e. tetrapyrrole ring. Since an atom of iron is present, heme is a ferroprotoporphyrin. Four methyl, two vinyl and two propionate side chain groups are attached to the porphyrin ring. The iron is held in the center of porphyrin ring in ferrous form ($Fe^{+2}$). Iron has six coordinated bonds: (i) four bonds are formed between the iron and nitrogen atoms of the porphyrin ring system; (ii) fifth bond is formed between nitrogen atoms of histidine residue of globin chain, known as proximal histidine (His F8); (iii) sixth bond is formed with oxygen. The oxygenated form of hemoglobin is stabilized by the hydrogen bond between oxygen and side chain of another histidine residue of globin chain, known as distal histidine (His E7).

## 372. Glycoproteins are ?

a) Proteins to which glucose is attached

b) Carbohydrate to which protein is attached

c) Protein to which lipid and glucose is attached

d) None of the above

Correct Answer - A

Glycoprotein are conjugated proteins. They consists of *protein to which short branched, oligosaccharides are covalently attached.* Proteoglycans *are carbohydrates* to which small amount of protein is attached. Proteoglycans consists of 95% of carbohydrate and 5. 5% of protein. To know the structure of proteoglycans, one should know the structure of glycosaminoglycans.

## 373. Sequence of amino acid in collagen ?

a) Ala-X-Y

b) Lys-X-Y

c) Gly-X-Y

d) His-X-Y

Correct Answer - C

- In order to form a triple-helix, a polypeptide chain (a-chain) must contain *glycine as every third residue* in the sequence.
- This is because only the glycine is small enough to be accommodated in the limited space available down the central core of the triple helix.
- *Each turn of polypeptide chain (a-chain) contains three amino acid residues, and glycine (Gly) is present at every third position.*
- Thus glycine constitutes 33% of the total amino acid residues.
- The repeating amino acid residues, represented as (Gly-X-Y)n, is an absolute requirement for formation of triple helix.
- X and Y can be any amino acids, but most of the time X is *proline (10% of the total amino acid residues)* and most of the time Y is *hydroxyproline.*
- Other important amino acids found in collagen are *lysine* and *hydroxylysine.*

## 374. Reduction potential of potassium ?

a) -2.93

b) -0.44

c) -0.34

d) +0.54

Correct Answer - A

## 375. Examples of metaplasia are the following except?

a) Breast enlargement at puberty

b) Barrets esophagus

c) Myositis Ossificans

d) Respiratory tract in chronic smokers

Correct Answer - A
Ans. is 'a' i.e., Breast enlargement at puberty

## 376. True about Apoptosis are all except-

a) Inflammation is present

b) Chromosomal breakage

c) Clumping of chromatin

d) Cell shrinkage

Correct Answer - A
**Ans. is 'a' i.e.,, Inflammation is present**
**The two most striking features of apoptosis are:**

- *In contrast to necrosis it does not elicit inflammation*
- *Considerable apoptosis may occur in tissues before it becomes apparent in histological section (because it occurs very rapidly).*

## 377. Not true about apoptosis ?

a) Increase in lysosomal enzyme

b) Increase in caspases

c) Phosphatidyl serine has important role

d) Internucleosomal cleavage of nucleus

Correct Answer - A

Ans. is 'a' i.e., Increase in lysosomal enzyme

***Apoptosis***

- *Caspases are central to the pathogenesis of apoptosis.*
- *The lysis in apoptosis is caused due to action of caspase.*
- *Mitochondrias are the most important organelles involved in initiation and regulation of apoptosis.*
- *Hallmark of apoptosis is permeability of the mitochondrial membrane.*
- *Normally phosphatidyl serine is located on the inner cytosolic surface of plasma membrane*
- *In apoptotic cell this phosphatidyl serine is translocated to the outer (extracellular) surface of plasma membrane.*
- *Lysosome and other organelles remain intact.*

## 378. Example ofApoptosis is?

a) Councilman Bodies

b) Gamma Gandy Body

c) Russell bodies

d) None

Correct Answer - A
Ans. is 'a' i.e., Councilman bodies
**Apoptotic body**

- One of the murphological hallmark of apoptosis is the apoptotic body which is eosinophilic and may contain some karryorhectic nuclear bebris.
- It is a result of shrinkage of cytoplasm and nuclear disruption.
- First there is surface blebbing and margination of chromatin which is followed by cell shrinkage and breakup into smaller apoptotic bodies.
- These apoptotic bodies are taken up by surrounding cells and digested.
- Since the process was seen for a long time before the mechanism was understood, apoptotic bodies in particular situations attracted specific names:

1. Civatte bodies or colloid bodies in lichen planus.
2. Kamino bodies in melanocytic lesions
3. Councilman bodies in acute viral hepatitis
4. Tingible bodies (founds in macrophages) in lymphoma
5. Sunburn cells
6. Satellite dyskeratotic cells
7. Eosinophilic globules

**379. Following are the examples of apoptosis except:**
***September 2008***

a) Graft versus host disease

b) Menstrual cycle

c) Pathological atrophy following duct obstruction

d) Tumour necrosis

Correct Answer - D
Ans. D: Tumour necrosis

**380. Metastatic calcification is seen in:**
***September 2009***

a) Cysts

b) Atheroma

c) Normal tissues

d) Infarcts

Correct Answer - C
Ans. C: Normal tissues

## 381. Extracellular hyaline change is seen in: *September 2009*

a) Arteriosclerosis

b) Chronic glomerulonephritis

c) Leiomyoma

d) Alcoholic hyaline

Correct Answer - A
Ans. A: Arteriosclerosis
Hyaline change is any alteration within cells or in the extracellular spaces or structures that gives a homogeneous, glassy pink appearance in tissue sections stained with hematoxylin and eosin
**Extracellular hyaline change:**
- Hyaline arteriolosclerosis
- Atherosclerosis
- Damaged glomeruli.

**Intracellular hyaline change:**
Intracellular hyaline change is seen in renal tubular epithelium in proteinuria.
- Russell bodies in plasma cells.

Viral inclusions in the cytoplasm or in the nucleus.
- Alcoholic hyaline.

## 382. All are features of reversible injury of cell, except?

a) Blebs

b) Amorphous densities in mitochondrial matrix

c) Loss of microvlli

d) Cellular swelling

Correct Answer - B
Ans. is 'b' i.e., Amorphous densities in mitochondrial matrix
*Formation of amorphous densities in the mitochondrial matrix is a feature of irreversible injury and not reversible injury.*

## 383. The sign of reversible injury in a case of alcoholoic liver disease

a) Loss of cell membrane

b) Nuclear karyolysis

c) Cytoplasmic vacuole

d) Pyknosis

Correct Answer - C
Ans. is 'c' i.e., Cytoplasmic vacuole

## 384. Pseudolaminar necrosis is a feature of ?

a) Cerebral infarct

b) Renal infarct

c) Hepatic infarct

d) Cardiac infarct

Correct Answer - A
Ans. is 'a' i.e., Cerebral infarct
*In the cerebral neocortex the neuronal loss and gliosis are uneven, with preservation of some lavers and destruction of others. producing a pattern of injury termed pseudolaminar necrosis.*

## 385. Diseases which show presence of fibrinoid necrosis are all except ?

a) SLE

b) PAN

c) SABE

d) Diabetic glomerulosclerosis

Correct Answer - D

**Ans. is 'd' i.e., Diabetic glomerulosclerosis**

**Fibrinoid necrosis**

- Fibrinoid necrosis is special form of necrosis usually seen in immune reactions involving blood vessels.
- This pattern of necrosis typically occurs when complexes of antigen and antibodies are deposited in the walls of arteries.
- Diseases with fibrinoid necrosis

1. *Malignant hypertension*
2. SLE
3. HBV
4. *PAN*
5. Henoch-scholein purpura
6. Near peptic ulcer
7. *Acute rheumatic fever (Aschoff's nodule)*
8. ABE
9. Malignancy
10. Rheumatoid arthritis

- In fibrinoid necrosis, tissue is no deposition.
- It is a fibrin like matter, which is deposited.

## 386. Rosette shaped cataract in

a) Senile cataract

b) Diabetic cataract

c) Traumatic cataract

d) After cataract

Correct Answer - C
**Ans. C: Traumatic cataract**
**Rosette Cataract:**
This opacity may occur as a result of concussion injury, under the anterior or posterior cortex or both and may be complete or sectored with a flower peddle or feather shape.
A very close estimation as to when the injury occurred by viewing the lens with an optic section and determining at which nucleus it appears.

## 387. Secondary granules in neutrophil is-

a) Lactoferrin

b) Proteolytic enzymes

c) Nucleotidase

d) Catalase

Correct Answer - A

Ans. is 'a' i.e., Lactoferrin

Neutrophils

- *Neutrophils or polymorphonuclear leukocytes* are the primary phagocytic cells involved in host resistance to bacterial infection.
- Neutrophils are the *major cells* in early phase of *acute inflammation.*
- During maturation these cells develop following *lysosomal* granules : ?

1. Primary (azeurophilic) granules

- Develops at *promyelocytic stage*
- It is *more destructive*
- Release their contents within the phagolysosomes.
- Do not secret their contents extracellularly readily and require high levels of agonists to do so.
- Contents are : ?

1. Myeloperoxidase
2. Lysozyme
3. Acid hydrolases
4. Elasases
5. Nonspecific collegenase
6. Bacterial permeability protein (BPI)
7. Defensin
8. Cathepsin G
9. Phospholipase A2.

2. Secondary (specific) granules

- Develops at myelocytic stage

- Less destructive
- Secrete their contents extracellularly more readily and by lower concentration of agonists.
- Contents are : *?*

1. *Lactoferrin*
2. Lysozyme
3. Alkaline phosphatase
4. Type IV Collegenase
5. Phospholipase A2
6. Leukocyte adhesion molecules
7. Plasminogen activator
8. Vit $B_{12}$ binding protein
9. Gelatinase
10. Histaminase
11. 132-miroglobulin
12. Cytochrome B

3. Teriary (C-Particle) granules (From internet)

- Develops *during chemotaxis*
- Contains gelatinase and acid hydrolases

## 388. Acute GVHD is caused by?

a) B lymphocyte

b) T lymphocyte

c) Macrophage

d) NK cell

Correct Answer - B
Ans. is 'b' i.e., T lymphocyte
**Graft versus host (gvh) diseases**
Graft versus host disease occurs in any situation in which *immunologically competent cells* or their precursors are transplanted into *immunologically crippled patients* and the transferred cells recognize *alloantigens* in the host.
Graft versus host disease occurs most commonly in the setting of *allogenic bone marrow transplantation* but may also follow transplantation of solid organs rich in lymphoid cells (e.g. the liver) or transfusion of unirradiated blood.
Recipients of bone marrow transplants are *immunodeficient because of either their primary disease or prior treatment of the disease with drugs or irradiation.*
When such recipients receive normal bone marrow cells from allogenic donors, the *immunocompetent, T cells* present in the donor marrow recognizes the *recipient's HLA antigen* as foreign *antigen* and react against them. Both $CD4^+$ and $CD8^+$T cells recognize and attack host tissues.
In clinical practice GVH can be so severe that bone marrow transplants are done only between *HLA matched donor and recipient.*

## 389. Cytokine for activating macrophage and converting to epitheloid cell or giant cell ?

a) IL2

b) IL 17

c) TNF alpha

d) IFN gamma

Correct Answer - D
Ans. is 'd' i.e., IFN gamma
Granulomatous inflammation is a form of chronic inflammation characterized by collections of activated macrophages, often with T lymphocytes, and sometimes associated with central necrosis.
These granulomas are type IV hypersensitivity reaction that involves CD4-helper T-cells.
Helper T-cells are activated by IL-2 and produce IFN-y (interferon gamma) the major cytokine of granulomatous inflammation.
*IFN-y induces formation of granuloma by conversion of activated macrophages into epitheloid cells and formation of giant cells by fusion of epithelial cells.*

## 390. Which is not the action of TGF -

a) Anti-inflammatory

b) Proliferation of fibrous tissue

c) Inhibition of metalloproteinases

d) Anaphylaxis

Correct Answer - D

**Ans. is 'd' i.e., Anaphylaxis** *[Ref Robbin's 9$^{th}$ie p. 105]*

- TGF-I3 stimulates fibroblast migration and proliferation, increased synthesis of collagen and fibronectin, and decreased degradation of ECM due to inhibition of metalloproteinases.
- TGF-I3 is involved not only in scar formation after injury but also in the development of fibrosis in lung, liver, and kidneys that follows chronic inflammation.
- TGF-13 is also an antiinflammatory cytokine that serves to limit and terminate inflammatory responses.
- It does this by inhibiting lymphocyte proliferation and the activity of other leukocytes.

## 391. Important step in activation of naïve CD 4+ T cells and initiation of cell mediated immune response is played by Interleukin?

a) 1

b) 2

c) 3

d) 4

Correct Answer - B
Ans. is 'b' i.e., 2
**Activation of CD4+ T Cells:**

- Naive CD4+ T cells recognize peptides displayed by dendritic cells and secrete IL-2, which functions as an autocrine growth factor to stimulate proliferation of the antigen- responsive T cells.
- The subsequent differentiation of antigen-stimulated T cells to $T_H1$ or $T_H17$ cells is driven by the cytokines produced by APCs at the time of T-cell acti- vation.
- In some situations the APCs (dendritic cells and macrophages) produce IL-12, which induces differentiation of CD4+ T cells to the $T_H1$ subset. IFN-y produced by these effector cells promotes further $T_H1$ development, thus amplifying the reaction.
- If the APCs produce inflammatory cytokines such as IL-1, IL-6, and a close relative of IL-12 called *IL-23,* these stimulate differentiation of T cells to the $T_H17$ subset.

## 392. Complement having cell lytic property ?

a) MAC

b) C3b

c) C3a

d) C5a

Correct Answer - A
Ans. is 'a' i.e., MAC
$C_{5-9}$ Called membrane attack complex (MAC). It forms channel in the lipid membrane and causes cell lysis (including bacteria).

**393.** **Labile cells are also known as intermitotic cells because of its characteristics. All of the following are labile cells, EXCEPT:**

a) Skin

b) Hepatocytes

c) Bone marrow

d) Gut mucosa

Correct Answer - B

**Labile Cells (Intermitotic Cells):**

- **Labile cells** normally divide actively throughout life to replace cells that are being continually lost from the body.
- They have a short G0 (resting, or intermitotic) phase.
- Continued loss of mature cells of a given tissue is a continuous stimulus for resting cells to enter the mitotic cell cycle.
- Examples of labile cells include **basal epithelial stem cells** of all epithelial linings and **hematopoietic stem cells** in bone marrow.
- Mature differentiated cells in these particular tissues cannot divide; their numbers are maintained by division of their parent **labile cells**.

**Ref:** Chandrasoma P., Taylor C.R. (1998). Chapter 6. Healing & Repair. In P. Chandrasoma, C.R. Taylor (Eds), Concise Pathology, 3e.

## 394. Pathway activated on contact with glass test tube by itself is termed ?

a) Intrinsic pathway

b) Extrinsic pathway

c) Both the above

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Intrinsic pathway**

*Contact with negatively charged surfaces activates the Intrinsic pathway of coagulation & not the Extrinsic pathway, Intrinsic pathway is also referred to as' contact pathway' and factor XII is also known as contact factor for its role in the initiation of coagulation on contact with negatively charged surfaces.*

**Activation of coagulation pathway**

Intrinsic and extrinsic pathways are activated by different mechanisms :?

1) Intrinsic pathway

*The intrinsic pathway is largely an 'in vitro'pathway of coagulation.* However, it may be activated 'in vivo' also.

*i) 'In vitro' activation :-* Intrinsic pathway may be activated 'in vitro' upon interaction of factor XII ( Hageman factor or contact factor) with *negatively charged surface* such as glass, kaolin, dextran sulphate, ellagic acid, celite, or bismuth subgallate and interaction with hydrophobic surfaces.

*ii) 'In vivo ' activation :- 'in* vivo' activation occurs as a result of contact activation of factor XII from subendothelial collagen and other components (platelets) following endothelial injury to blood vessels.

*As intrinsic pathway is largely an 'in vitro' pathway, it is important for coagulation testing.*

2) Extrinsic pathway

*The extrinsic pathway is largely an 'in vivo' pathway and accounts for majority of 'in vivo' coagulation.* It may also be activated 'in vitro' also.

i) *'In vivo ' activation :-* `in vivo' activation occurs by the expression of tissue factor at the sites of tissue injury. *In vitro' activation :-* 'in vitro' activation occurs by exposure of blood to thromboplastin reagents (tissue factor) derived from tissues.

## 395. Factor useful for clot stabilization?

a) X

b) XI

c) XII

d) XIII

Correct Answer - D
Ans. is `d i.e., XIII
**Factor XIII:**

- It is also called fibrin stabilizing factor.
- It is necessary for clot stabilization and the cross linking of the fibrin polymer in blood.
- A hallmark of this rare deficiency is poor wound healing and abnormal scar formation.

## 396. All of the following are features of stem cells except?

a) Found in yolk sac

b) Found in peripheral circulation

c) Used in gene therapy

d) Some stem cells are unipotent

Correct Answer - C
**Ans. is 'c' i.e., Used in gene therapy**
**Important uses of stem cells are :?**
**1)** The **most important use of** human stem cells is generation of cells and tissues that could be used for **cell-based therapies.** Stem cells, directed to differentiate into specific cell types, offer the possibility of a renewable source of replacement cells to treat diseases including **parkinsonism, Alzheimer's disease, spinal cord injury, diabetes, osteoarthritis, RA, and heart diseases.**
2) Stem cells are used as **bone marrow transplantation** in various types of leukemia and lymphoma.
*3)* Other uses are *production of knockout mice,* to test new drugs and to treat cancer and birth defects. o The sources of stem cells (for their use) are *bone marrow, adipose tissue, blood* and *umbilical cord.*

- Stem cells may be multipotent or unipotent.
- Stem cells are found in peripheral blood, yolk sac, liver and bone marrow.

## 397. Which of the following about totipotent stem cells is true?

a) Can differentiate into embryonic tissues

b) Can differentiate into extraembryonic tissues

c) Are descendants of pluripotent stem cells

d) Both a and b

Correct Answer - D
**Ans. is 'd' i.e., Both a and b**
**Potency** of stem cells is the potential to differentiate into different cell types :-
**i) Totipotent** stem cells - These cells are produced from fertilization of sperm and ovum and cells that are produced by first few division after fertilization are also totipotent. These cell can differentiate into all the tissues of embryonic or extraembryonic cell types.
**ii) Pluripotent** stem cells - These are descendants of totipotent stem cells and can differentiate into cells derived from any of the three germ layers.
**iii) Multipotent** stem cells - These cells can differentiate only into cells of a closely related family, e.g. **hematopoietic stem cells** differentiate into **RBC,** WBC, platelets but not into other types.
**iv) Unipotent** stem cells - Can differentiate only in to one cell type (e.g. muscle stem cell), but have property of self-renewal which distinguiches them from non-stem cells.

## 398. Stem cells are located in which of the following location in the body?

a) Retina

b) Endometrium

c) Intestine

d) Choana

Correct Answer - C
Ans. is 'c' i.e., Intestine
Stem cells are located in sites called *niches.* These include :
**Epidermal stem cells** located in the bulge area of the hair follicle serve as a stem cells for the hair follicle and the epidermis.
Intestinal stem cells are located at the base of a colon crypt, above Paneth cells.
Liver stem cells (commonly known as *OVAL cells)* are located in the canals of Hering , structures that connect bile ductules with parenchymal hepatocytes.
**Corneal stem cells** are located in the limbus region, between the conjunctiva and the cornea
The bone marrow contains *hematopoietic stem cells* as well as stromal cells capable of differentiation into various lineages.

## 399. ANCA associated with Wegner's granulomatosis?

a) cANCA

b) pANCA

c) Both

d) None

Correct Answer - A
Ans. is 'a' i.e., cANCA
**Antineutrophil cytoplasmic antibodies (ANCA)**

- ANCA are heterogenous group of autoantibodies directed against antigens which are found within the primary *granules of neutrophil* and in the *lysosomes of monocytes* and in EC's.
- The description of these autoantibodies is based on the immunofluorescence pattern of staining of ethanol fixed neutrophils. With immunofluorescence two principal patterns are recognized:

**1. Cytoplasmic (c-ANCA):**

- This shows cytoplasmic localization of the staining and the target antigen for this type of autoantibody is – *proteinase-3 (PR3), a neutrophil granule constituent.*
- *Perinuclear staining (p-ANCA):*
- This shows perinuclear staining and the target antigen here is *myeloperoxide* (MPO).
- Remember *that either of these antibodies may occur in a patient with ANCA associated small vessel vasculitis but*
- cANCA  Typically found in
- Wegener's granulomatosis
- pANCA  Typically found in
- Microscopic polyangiitis

- Churg-Strauss syndrome
- Idiopathic crescentic glomerulonephritis
- Goodpasteur's syndrome.
- pANCA's are also associated with certain non-vasculitic entities such as certain rheumatic and nonrheumatic autoimmune diseases, Inflammatory bowel diseases, certain drugs, infections such as endocarditis and
- bacterial airway infection in patients with cystic fibrosis.

## 400. All of the following are true regarding marantic endocarditis except: *March 2008*

a) Vegetation may embolize

b) Vegetations along the line of closure of leaflets

c) Affects damaged valves

d) May be associated with hypercoagulable states

Correct Answer - C
Ans. C: Affects damaged valves
Nonbacterial thrombic endocarditis (NBTE)/marantic endocarditis is most commonly found on previously undamaged valves.
As opposed to infective endocarditis, the vegetations in NBTE are small, sterile, and tend to aggregate along the edges/ line of closure of the valve or the cusps.
Also unlike infective endocarditis, NBTE does not cause an inflammation response from the body.
NBTE usually occurs during a hypercoagulable state such as system wide bacterial infection, or pregnancy, though mucinous adenocarcinoma where Trousseau syndrome can be encountered. it is also sometimes seen in patients with venous catheters. NBTE may also occur in patients with cancers, particularly Typically NBTE does not cause many problems on its own, but parts of the vegetations may break off and embolize to the heart or brain, or they may serve as a focus where bacteria can lodge, thus causing infective endocarditis.

## 401. Sjogren syndrome is characterized by all except

a) Keratoconjunctivitis sicca

b) Excessive salivation

c) Splenomegaly

d) Lymphoma

Correct Answer - B
Answer- B. Excessive salivation
Sjogren syndrome is a chronic disease characterized by dry eyes (keratoconjuctivitis sicca) and dry mouth (xerostomia) resulting from immunological mediated destruction of the lactimal and salivary gland.

**Extraglandular**

- Raynaud's phenomenon
- Vasculititis
- Arthralgia/Arthritis
- Lymphadenopathy
- lymphoma
- Splenomegaly

**Lung involvement**

- Kidney involvement
- Peripheral neuropathy

**Myositis**

- Liver involvement

## 402. Atherosclerosis initiation by fibroblast plaque is mediated by injury to ?

a) Smooth muscle

b) Media

c) Adventitia

d) Endothelium

Correct Answer - D

**Ans. is 'd' i.e., Endothelium**

- The most acceptable hypothesis for the pathogenesis of atherosclerosis is "the response to injury hypothesis".
- According to this hypothesis, atherosclerosis is a chronic inflammatory response of the arterial wall initiated by injury to endothelium.

**Pathogenesis of atherosclerosis**

- Following stages occurs in the pathogenesis of Atherosclerosis:
- Endothelial injury
- Earliest stages of the development of atherosclerosis are mediated by the *inflammatory cascade.*
- Inflammation mediated injury to endothelium is the cornestone in the development of atherosclerosis.
- After injury, endothelium is activated and there is increased expression of adhesion molecule-VCAM-1 and
- there is increased permeability to endothelium.
- TNF is the major cytokine to induce this expression.

**Migration of leukocytes**

- When VCAM-1 is expressed on endothelium, leukocytes adhere to the endothelium.
- Leukocytes than cross the endothelial barrier and begin to

accumulate in subendothelial intimal space.

- Macrophages engulf LDL cholesterol and form foam cells → *formation of earliest lesion, i.e. fatty streak.*
- Macrophages also form oxygen free radicals that cause oxidation of LDL to yield *oxidized LDL (modified **LDL).***
- Smooth muscle cell migration and proliferation
- Inflammatory cells in subendothelial intimal space secrete cytokines, mainly PDGF, TGF-ct and FGF which cause migration of smooth muscle cells from media to subendothelial intimal space as well as their proliferation.

***Maturation* of plaque**

- Smooth muscle cells synthesize extracellular matrix (especially collegen) and convert a fatty streak into a mature fibrofatty atheroma, and contribute to the progressive growth of atherosclerotic lesions.

## 403. Heart failure cells are seen in ?

a) Heart

b) Lungs

c) Kidney

d) Liver

Correct Answer - B
Ans. is 'b' i.e., Lungs
Heart failure cells (siderophages) are hemosiderin containing macrophages in alveoli that are seen in left ventricular failure and denote previous episodes of pulmonary edema.
**Left sided heart failure**
The major morphological and clinical effects of LVF are due increased back pressure in pulmonary circulation and the consequences of diminished peripheral blood pressure and flow.
The extracardiac organs involved commonly are ?
1. Lung (most common)
2. Kidney
3. Brain

**Lung**

- Pressure in the pulmonary veins increases and transmitted retrogradely to capillaries and arteries. o This results in *pulmonary congestion* and *pulmonary-edema --> Wet lung.*
- There is perivascular and interstitial transdate, particularly in the interlobular septa —> responsible for kerley's `B' lines on X-rays.
- Edematous fluid accumulates in alveoli.
- Iron containing proteins and hemoglobin leak out from the capillaries, and are phagocytosed by macrophages and converted to hemosiderin.

- Hemosiderin - containing macrophages in the alveoli (called siderophages, or heart failure cells) denote previous episodes of pulmonary edema.
- The clinical manifestations of LVF are primarily due to these changes in lungs —> Dysnea, orthopnea, paroxysomal nocturnal dysnea.

**Kidney**

- Decreased cardiac output causes a reduction in renal perfusion.
- If it is severe enough to impaire the excretion of nitrogenous product (BUN, Creatinine), Prerenal ARF (Prerenal azotemia) may be precipitated.

**Brain**

- Reduced perfusion to brain may cause hypoxic / ischemic encephalopathy.

## 404. Wiscott Aldrich syndrome commonly consists of following except?

a) Recurrent bacterial infections

b) Eczema

c) Bleeding

d) Urethritis

Correct Answer - D
Urethritis

## 405. Foamy macrophage is formed by -

a) LDL

b) HDL

c) Oxidized LDL

d) Oxidized HDL

Correct Answer - C
Ans. is 'c' i.e., Oxidized LDL
Foam cells are lipid laden cells that derive predominantly from macrophages, but smooth muscle cells can also imbibe lipid to become foam cells.
Macrophages and endothelial cells generate oxygen free radicals that induce chemical change in LDL to yield **oxidized (modified) LDL.**
**Oxidized LDL has following effects ?**
1) Ingested by macrophages through the scavenger receptor, distinct from LDL receptors, thus forming foam cells.
2) Increases monocyte accumulation in lesions.
3) Stimulates release of growth factors and cytokines.
4) Is cytotoxic to smooth muscle cells and endothelial cells. o Oxidized LDL form the core of the atheromatous plaque.

## 406. Complications of massive blood transfusion are all except

a) Hypercalcemia

b) Hyperkalemia

c) Hypokalemia

d) Hypothermia

Correct Answer - B:D

**Answer- A. Hypercalcemia**

- Hypothermia- Due to cold blood transfusion
- Hyperkalemia- K+ moves out of RBC during storage
- Hypokalemia- K+ taken back by depleted RBC

lmportant complications of massive blood transfusion

. Fluid overload
. Hypothermia
. Hyperkalemia
. Hypocalcemia
. Hypomagnesemia
. Acidosis / Alkalosis

## 407. Most common cause for complication of blood transfusion is?

a) Human error

b) Anaphylaxis

c) GVHD

d) Presensitisation

Correct Answer - A
Ans. is 'a' i.e., Human error
The most common cause resulting in complications from blood transfusion is human error
Acute hemolytic reaction resulting from ABO incompatibility is the most serious complication of blood transfusion.

## 408. Specific stain for myeloblasts is ?

a) Sudan black

b) PAS

c) Myeloperoxidase

d) LAP

Correct Answer - C
**Ans. is 'c' i.e., Myeloperoxidase**
**Myeloperoxidase stain**
*Distinguishes between the immature cells in acute myeloblastic leukemia (cells stain positive) and those in acute lymphoblastic leukemia (cells stain negative).*
**Sudan black B stain**
*This stain distinguishes between acute lymphoblastic leukemia (cells stain positive) and acute myeloblastic leukemia (cells stain negative).*
**Periodic acid-Schiff stain (PAS)**
*Is primarily used to identify erythroleukemia, a leukemia of immature red blood cells.*
***Terminal deoxynucleotidyl transferase stain (TdT)***
*Differentiates between acute lymphoblastic leukemia (cells stain positive) and acute myelogenous leukemia (cells stain negative).*
**Leukocyte alkaline phosphatase (LAP)**
*Is used to determine if an increase of cells is due to chronic myelogenous leukemia or a noncancerous reaction to an infection or similar conditions. Cells from a noncancerous reaction stain positive with many intense blue granules; cells from chronic myelogenous leukemia have few blue granules.*
**Tartrate-resistant acid phosphatase stain (TRAP)**

*Is primarily used to identify hairy cell leukemia cells.*

**Leukocyte specific esterase**

*This stain identifies granulocytes, which show red granules.*

## 409. In acute myeloid leukemia, Auer rods are numerous in:
***September 2009***

a) M2

b) M3

c) M4

d) M5

Correct Answer - B
Ans. B: M3
The diagnosis of AML is based on the presence of at least 20% myeloid blasts in the bone marrow. Myeloblast have delicate nuclear chromatin, two to four nucleoli, and more voluminous cytoplasm than lymphoblasts.
The cytoplasm often contains fine, peroxidase-positive azurophilic granules.
Auer rods, distinctive needle like azurophilic granules, are present in many cases; they are particularly numerous in AML with the t(15;17) (acute promyelocytic leukaemia-M3).

## 410. Chediak Higashi syndrome is characterisedwhich of the following defect of patelets?

a) Platelet formation

b) Platelet adhesion

c) Platelet aggregation

d) Platelet granule release

Correct Answer - D
Ans. is 'd' i.e., Platelet granule release

## 411. Bite cells are seen in?

a) G 6 PD deficiency

b) Hereditary spherocytosis

c) SCA

d) Trauma

Correct Answer - A
Ans. is 'a' i.e., G 6 PD deficiency

**412. Gene for alpha and beta globin chains of hemoglobin are located on which chromosomes?**

a) 16 and 11

b) 11 and 16

c) 9 and 11

d) 11 and 9

Correct Answer - A
Ans. is 'a' i.e., 16 and 11

## 413. Favourable prognosis for AML with ?

a) t(8,21)

b) Deletion 5q

c) Preceeding MDS

d) Age < 2years

Correct Answer - A
Ans. 'a' i.e., t(8,21)
Monsomies (eg. -5 or -7) carry poor prognosis.
**Prognostic factors of AML**

- *There are many prognostic factors for AML of particular note are : -*
- Age : - Age *greater than 65 years or less than 2 years* has been associated with *poor prognosis* independent of cytogenetics.
- AML evolving from prior myelodysplastic syndrome (MDS) is associated with poor prognosis.
- Leukocytosis and/or an elevated peripheral blast count are associated with poor prognosis.
- Cytogenetics : - AML prognosis is currently separated into three broad categories based on cytogenic results:- o *Favourable : inv (16),* t (15:17), t (8 : 21).
- *Intermediate :* Normal, + 8, + 21, +22, del (7q), del (9q), Abnormal 11 q23.
- *Unfavorable :* - -5, -7, complexes with 5 chromosomes involved, del (5q), abnormal 3q, abnormal 17p.

**414. Which of the following combinations of cytogenetic abnormality and associated leukemia/lymphoma is incorrect?**

a) t (8:14) Burkitt's lymphoma

b) t (15:17) Promyelocytic leukemia

c) t (9:18) CML

d) t (4:11)ALL

Correct Answer - C
Ans. is 'c' i.e., t (9:18) CML

## 415. Normal leucocyte count is ?

a) 8000 -15000

b) 4000 - 11000

c) 5000 - 8000

d) 7000 -14000

Correct Answer - B

**Ans. is 'b' i.e., 4000 - 11000**

- The normal range of leucocytes is 4000 - 11000 white blood cells per microliter.
- Of these, Neutrophils form 50 - 70%, lymphocytes 20 - 40%, monocytes 2 - 8%, eosinophils 1 -4%, basophils 0.4%.

## 416. Ring chromosome is a result of?

a) Deletion

b) Inversion

c) Duplication

d) Translocation

Correct Answer - A
**Ans. is 'a' i.e., Deletion**
**Ring chromosome**

- *A ring chromosome* is a special form of deletion.
- It is produced when a break occurs at both ends of a chromo- some with fusion of the damaged ends.
- If significant genetic material is lost, phenotypic abnormalities result.
- This might be expressed *as 46,XY,r (14).*
- Ring chromosomes do not behave normally in meiosis or mitosis and usually result in serious consequences.

## 417. Chromosomal non-disjunction responsible for all except

a) Down's syndrome

b) Neurofibromatosis type 1

c) Pradderwilli syndrome

d) Angleman syndrome

Correct Answer - B

**Answer- B. Neurofibromatosis type 1**

**Monosomy**

- Turner syndrome (45XO)

**Autosomal trisomy**

- Downs syndrome- Trisomy 2l
- Edwards syndrome- Trisomy 18
- Patau syndrome- Trisomy 13

**Sexchromosome aneuploidy**

- Kleinfelter syndrome
- XYY male

**Uniparentral disomy**

- Pradder willi angleman syndrome

**Mosiacism**

- Pallister killian syndrome
- Hypomelanosis of ito

## 418. Turner syndrome, true is ?

a) XYchromosomal abnormality

b) Tall stature, small testes

c) Preductalcoarctation of aorta

d) Presence of testes

Correct Answer - C

Ans. is 'c' i.e., Preductalcoarctation of aorta

**Turner's syndrome**

- Turner's syndrome is the most common sex chromosomal disorder in phenotypic females.
- Turner's syndrome results from complete or partial loss of one X chromosome (45, X) and is characterised by hypogonadism in phenotypic females

**Features of Turner syndrome in children :?**

- The most severely affected patients generally present during infancy with edema (owing to lymph stasis) of the dorsum of the hand and foot and sometimes swelling of the nape f the neck.
- **Swelling of the neck is related to markedly distended lymphatic channels, producing so called** cystic hygroma.
- As these infants develop, the swelling subsides but often leave bilateral neck webbing and persistent looseness of skin on the back of the neck.
- **Congenital heart disease** is also common, particularly preductal coarctation of Aorta and bicuspid Aortic valve.
- C. VS abnormalities are most important cause of mortality in children with Turner 's syndrome.
- *Features of Turner's syndrome in Adolescents and Adult:-*
- At puberty there is *failure to develop normal secondary sex*

*characteristics.*

- The genitalia remains *infantile,* breast development is *inadequate* and there is little pubic hair. *Nipples are widely spaced.*
- Turner syndrome is the single most important cause of primary amenorrhoea accounting for approximately $^{1}/3$ of the cases.
- *Short stature* (height rarely exceeds 150 cm).
- The mental status of these patients *is usually normal* but subtle defects in nonverbal, visual spatial information processing have been noted *(mental retardation is associated with the presence of extra chromosome* not with loss of X chromosome).
- About 50% of the patients develop autoantibodies directed to the *thyroid gland* and upto one half of these patients develop *hypothyroidism.*
- Other features include *low posterior hairline, webbing of neck, cubitus valgus, streak ovaries.* o Glucose intolerance, obesity and insulin resistance are also seen.

## 419. BRCA 1 and 2 are located in which chromosome?

a) 13 and 17

b) 17 and 13

c) 11 and 13

d) 13 and 11

Correct Answer - A
Ans. is 'a' i.e., 13 and 17

## 420. Gaucher cell which stain is used -

a) Periodic Acid Sciff

b) Von Kossa

c) Oil red O

d) Sudan Black

Correct Answer - A
**Ans. is 'a' i.e., Periodic Acid Sciff**
**Morphology of Gauchers disease:**

- Glucocerebrosides accumulate in massive amounts within phagocytic cells throughout the body in all forms of Gaucher disease.
- The distended phagocytic cells, known as Gaucher cells, are found in the spleen, liver, bone marrow, lymph nodes, tonsils, thymus, and Peyer patches. Similar cells may be found in both the alveolar septa and the air spaces in the lung.
- In contrast to other lipid storage diseases, Gaucher cells rarely appear vacuolated but instead have a fibrillary type of cytoplasm likened to crumpled tissue paper.
- Gaucher cells are often enlarged, sometimes up to 100 ?m in diameter, and have one or more dark, eccentrically placed nuclei. Periodic acid-Schiff staining is usually intensely positive.
- With the electron microscope the fibrillary cytoplasm can be resolved as elongated, distended lysosomes, containing the stored lipid in stacks of bilayers.

## 421. Crumpled paper appearance of cells is a feature of ?

a) Gaucher disease

b) Asbestosis

c) GVHD

d) Wilsons disease

Correct Answer - A
Ans. is 'a' i.e., Gaucher disease
**Morphology of Gauchers disease:**

- Glucocerebrosides accumulate in massive amounts within phagocytic cells throughout the body in all forms of Gaucher disease.
- The distended phagocytic cells, known as Gaucher cells, are found in the spleen, liver, bone marrow, lymph nodes, tonsils, thymus, and Peyer patches. Similar cells may be found in both the alveolar septa and the air spaces in the lung.

## 422. Adrenoleukodystrophy is ?

a) AD

b) AR

c) X linked dominant

d) X linked recessive

Correct Answer - D

**Ans. is 'd' i.e., X Linked recessive**

**Adrenoleukodvstrophy**

- Adrenoleukodystrophy is an X-linked recessive disease associated with mutations in a member of the ATP-binding cassette transporter family of proteins (ABCD1), which is involved in the transport of molecules into the peroxisome.
- In the typical form of the disease, young males present with behavioral changes and adrenal insufficiency.
- The disease is characterized by the inabil- ity to catabolize very-long-chain fatty acids (VLCFAs) within peroxisomes, resulting in elevated levels of VLCFAs in serum.

## 423. Which of the following is not X linked recessive?

a) Fragile X syndrome

b) Duschene muscular dystrophy

c) Diabetes incipidus

d) Spinal muscular atrophy

Correct Answer - D
**Answer- D. Spinal muscular atrophy**

## 424. Which one of the following is an Autosomal Dominant disorder :

a) Cystic fibrosis

b) Hereditary spherocytosis

c) Sickle cell anemia

d) G-6PD deficiency

Correct Answer - B

Answer is B (Hereditary Spherocytosis) :

*Hereditary spherocytosis is inherited as an autosomal dominant disorder.*

| **Autosomal dominant disorders:** | **Autosomal recessive disorders:** | **X-Linked disorders:** |
|---|---|---|
| - Familial Hypercholesterolemia | - Deafness | - Hemophilia A Q (recessive) |
| - Hereditary nonpolyposis colon | - Albinism Q | -G6PD deficiency Q (recessive) |
| cancer | - Wilson's disease Q | -Ducchene/Becker muscular dystrophy |
| - Polyposis of the colon | - Hemochromatosis Q | (recessive) |
| - BRCA 1 and BRCA 2 breast cancer | - Sickle cell anemia Q | -Fabry's disease |
| - Marfan's syndrome Q | - β thalassemia Q | -Ocular albinism |
| - Hereditary spherocytosis Q | -Cystic fibrosis Q | -Testicular feminization syndrome |
| | - Hereditary | - Chronic |

| | | |
|---|---|---|
| - Adult polycystic kidney disease | emphysema ($a_t$ | granulomatous disease |
| Q | antitrypsin deficiency) | - Hypophosphatemic rickets Q |
| - Huntington's chorea Q | -Homocystinuria Q | (dominant) |
| - Acute intermittent porphyria Q | - Freidrich's ataxia Q | -Fragile-X syndrome Q (recessive) |
| - Osteogenesis imperfecta tarda Q | -Phenylketonuria Q | -Color-blindness Q |
| - von Willebrand's disease Q | -Fanconi's Syndrome | |
| - Myotonic dystrophy Q | — | |
| - Neurofibromatosis Q | -Gaucher's Disease ? | |
| - Tuberous sclerosis Q | | |
| - Otospongiosis Q'otosclerosis | | |
| - AchondroplasiaQ | | |

## 425. In marfan syndrome, the defect is in -

a) Fibrillin I

b) Fibrillin II

c) Collegen

d) Elastin

Correct Answer - A
Ans. is 'a' i.e., Fibrillin I
Marfan syndrome
o Marfan syndrome results from inherited defect in an extracellular glycoprotein fibrillin -1 on chromosome - 15. o It has autosomal dominant inheritance.

- Pathogenesis

Defect in fibrillin affects the elastic recoil of extracellular connective tissue.

*Elastic fibres* consist of a central core made up of *elastin,* surronded by a peripheral network of *microfibrils* that consists largely *fibrillin.*

Defect in fibrillin causes defective function of elastic fibres.

*Microfibrils (containing fibrillin) are mainly distributed to Aorta, ligaments of joint and ciliary zolules of lens -4 So, in marfan syndrome these tissues are primarily affected.*

## 426. Pathological features of acute rheumatic fever include following except?

a) Aschoff bodies

b) Pancarditis

c) MacCallum patch

d) None of the above

Correct Answer - D
Ans. is 'd' i.e., None of the above

## 427. The term sentinel lymph node was first used by?

a) Gould

b) Norman

c) Giuliano

d) Cabanas

Correct Answer - A
Ans. is 'a' i.e., Gould
The sentinel lymph node is the hypothetical first lymph node or group of nodes draining a cancer.
The term sentinel lymph node was first used by Gould.

## 428. HMB 45 is a tumor marker for -

a) Neuroblastoma

b) Neurofibroma

c) Malignant melanoma

d) Angiosarcoma

Correct Answer - C
Ans. is 'c' i.e., Malignant melanoma
Markers for melanona
1. S-100 - 90% of tumors are positive
2. HM B-45 - More specific but less sensitive than S-100
3. TA-90

**Important markers**

J S-100, liMB-45
o TA-90
o NMP-22
o Neuron Specific enalase
o Chromogranin A
o Lipid associated Sialic acid (LASA-P) o CA 72-4
o CA 19-9 o CAl25
o CA 27.29 & CA 15-3

**Tumor**

Melanoma
Melanoma, colon & breast ca.
Urinary bladder ca.
Neuroendocrine tumors (small cell ca of lung, carcinoid tumor & neuroblastoma)
Ovarian Ca.
Ovarian, pancreatic & gastric Ca.
Pancreatic & colorectal Ca

Pancreatic & colorectal Ca
Epithelial ovarian tumor
Breast Cancer.

## 429. Psammoma bodies are seen in all except ?

a) Seminaoma

b) Meningioma

c) Pappilary carcinoma of thyroid

d) Pappilary serous cystadenocarcinoma of the ovary

Correct Answer - A
Ans. is 'a' i.e., Seminoma
Psammoma bodies represent a process of dystrophic calcification. Single necrotic cells may constitute seed crystals that become encrusted by the mineral deposits. The progressive acquisition of outer layers may create lamellated configurations, called psammoma bodies because of their resemblance to grains of sand.
***Psammoma bodies are seen in :***

- *Papillary cancer of thyroid*
- *Meningioma*
- *Papillary serous cystadenocarcinoma of ovary*

## 430. What is false about GIST -

a) Associated with c-kit mutation

b) Most common site is stomach

c) Associated with CD 117

d) Least common mesenchymal neoplasm of gastrointestinal tract

Correct Answer - D

**Answer- D. Least common mesenchymal neoplasm of gastrointestinal tract**

- GISTs are the most common mesenchymal neoplasm of gastrointestinal tract.
- The most useful marker of GIST is c-kit (CD-117).
- The most common site being the stomach followed by small intestine.

## 431. Which of the following is/ are seen in Hyperparathyroidism?

a) Osteitis fibrosa cystica

b) Osteoporosis

c) Dissecting osteitis

d) All the above

Correct Answer - D

**Answer- D. All the above**

**Healing response**

- Osteitis fibrosa cystica

**Other manifestations**

- Absence of lamina dura (demineralization of mandible)
- Pinhead stippling of skull
- Marrow fibrosis

**Resorption**

- Diffuse bone resorption
- Subperiostal bone resorption of phalangeal tufts
- Brown tumor of hyperparathyroidism
- Osteoporosis
- Deformity
- Pathological fractures

## 432. Alpha 1 antitrypsin deficiency is associated with?

a) Panacinar-emphysema

b) Centriacinar-emphysema

c) Paraseptal-emphysema

d) Irregular-emphysema

Correct Answer - A

**Ans. is 'a' i.e., Panacinar-emphysema**

**Emphysema**

- Emphysema is a condition of the lung characterized by abnormal permanant enlargement of the airspaces *distal to the terminal bronchioles,* accompanied by *destruction of their walls* and without obvious fibrosis. "Destruction of walls" is necessory to define emphysema. Enlargement of airspaces without destruction of their walls is termed overinflation, for example, the distention of airspaces that occurs in the remaining lung after unilateral pneumonectomy.

**Types of emphysema**

- Emphysema is classified according to its anatomic distribution within the lobule. There are four major types of emphysema ?

**1. Centriacinar (centrilobular) emphysema**

- Centriacinar emphysema is the *most common type* of emphysema seen clinically. It is chracterized by *involvement of respiratory bronchioles, i.e. central (proximal) part of the acinus.* So, both emphysematous and normal airspaces exist within the same acinus and lobule.
- The lesions are more common and more severe in the *upper lobe, particularly in the apical segments.*
- This is the type of emphysema that occurs predominantly in heavy

smokers and usually coexists with chronic bronchitis.

**2. Panacinar (Panlobular) emphysema**

- The acini are uniformly enlarged from the level of the respiratory bronchiole to the terminal blind alveoli.
- This type of emphysema tends to occur more commonly in the lower zones and in the anterior margins of the lung, and it is usually most severe at the base.
- This type of emphysema is *associated with al-antitrypsin deficiency.*

**3. Distal acinar (Paraseptal) emphysema**

- This type of emphysema involves distal part of the acinus, while proximal part is normal. It is localized adjacent to the pleura, along perilobular septa.
- The involvement is seen adjacent to areas of fibrosis, scarring, or atelectasis and is usually more severe in the *upper half of lungs.*
- This type of emphysema is a common cause of *spontaneous pneumothorax in young adults.*

**4. Irregular emphysema (Para-cicatricial emphysema)**

- The acinus is involved irregularly and is almost invariably associated with scarring. *It is the most common type of emphysema histologically.*
- *Most common type of emphysema is irregular emphysema,* but it is not clinically significant as most patients are asymptomatic and it is only an autopsy finding. *Most common type of emphysema seen clinically is centracinar emphysema.*

## 433. Mesothelioma associated with which variety of asbestos ?

a) Serpentine

b) Amphibole

c) Both the above

d) None of the above

Correct Answer - B
**Ans. is 'b' i.e., Amphibole**
**Asbestos-Related Diseases**
Asbestos is a family of proinflammatory crystalline hydrated silicates that are associated with pulmonary fibrosis, carcinoma, mesothelioma, and other cancers.
There are two distinct geometric forms of asbestos
*i) Serpentine (chrysolite) - most of the asbestos used in industry*
*ii) Amphibole (crocidolite)*
*Both serpentine and amphibole can cause all asbestos related diseases except for mesothelioma, which is usually associated with amphibole (crocidolite).*

## 434. Following is not true about the gene mutations leading to breast carcinoma -

a) Most common mutation in inherited breast carcinoma is BRCA1

b) BRCA 1 mutation is present in most of the cases of breast carcinoma

c) Inherited breast carcinomas make about 3 % of the total cases

d) p53 mutation also increases chances of colon and brain cancer

Correct Answer - B

**Answer- B. BRCA 1 mutation is present in most of the cases of breast carcinoma**

**Genetic mutations associated with breast cancer are of two types -**

i) Germline mutations (inherited mutations)

- Involved in familial cases of breast cancer.

ii) Somatic mutations (acquired mutation)

- Involved in sporadic cases of breast cancer

## 435. Mesangial deposition of electron dense substance seen in?

a) IgA nephropathy

b) Membranous nephropathy

c) Minimal change disease

d) Post streptococcal glomerulonephritis

Correct Answer - A
Ans. is 'a' i.e., IgA nephropathy
IgA Nephropathy: shows presence of electron dense deposits in the mesangium.

## 436. Most common type of carcinoma lung is?

a) Small cell carcinoma

b) Adenocarcinoma

c) Squamous cell carcinoma

d) Large cell carcinoma

Correct Answer - B
Ans. is 'b' i.e., Adenocarcinoma

## 437. The mutation in cystic fibrosis is on which chromosome ?

a) 7p

b) 7q

c) 5p

d) 5q

Correct Answer - B
Ans. is 'b' i.e., 7q
**Cystic fibrosis**
Cystic fibrosis is an inherited disease of the mucus and sweat glands.
Cystic fibrosis follows on *autosomal recessive transmission.*
There is a *defect in ion transport of epithelial cells* that affects fluid secretion in
*i) Exocrine glands (pancreas)*
*ii) Epithelial lining of respiratory, gastrointestinal and reproductive tract.*

## 438. Stain used for fatty acid ?

a) Oil red 0

b) Congo red

c) Sudan III

d) Sudan black

Correct Answer - A:C:D
**Answer- A, C & D**
**Unconjugated lipids-**

- Fatty acids
- Oil red O, Sudan black, Sudan Ill & IV

## 439. Anti transglutaminase antibody is seen in?

a) Celiac disease

b) SLE

c) Collagenous colitis

d) Tropical sprue

Correct Answer - A
Celiac disease REF: Harrisson 17th edition, Chap. 288 & Table 308-42 See APPENDIX-51 for "AUTOANTIBODIES"
Asymptomatic celiac disease with selective malabsorption is being found with increasing frequency; the diagnosis can be made by testing for antigliadin, antiendomysial, or transglutaminase antibodies but may require endoscopic biopsy. A trial of a gluten-free diet can be confirmatory.

## 440. AntiLKM antibody is seen in ?

a) Hepatitis A

b) Hepatitis C

c) Hepatitis D

d) Autoimmune hepatitis type II

Correct Answer - D
Ans. is 'd' i.e., Autoimmune hepatitis type II

## 441. Major source of collagen in cirrhosis -

a) Kupfer cells

b) Ito cell (Hepatic stellate cell)

c) Hepatocyte

d) Canalicular cell

Correct Answer - B
Ans. is 'b' i.e., Ito cell (Hepatic stellate cell)
o Perisinusoidal stellate cells (Ito cells) play a role in the storage and metabolism of vitamin A and are transformed into collegen producing myofibroblasts when there is inflamation of the liver. These cells are the major source of collegen in cirrhosis.

## 442. True for Phase IV of clinical trials: *March 2012*

a) Done for paediatric drugs

b) Done for rare drugs

c) After-marketing surveillance of drugs

d) Human pharmacology and safety

Correct Answer - C
Ans: C i.e. After-marketing surveillance of drugs
**Phases of clinical trial**

- Phase IV of clinical trial is post marketing surveillance (data collected about the efficacy, acceptability and adverse effects of the drug). Further therapeutic trials involving special groups like children, elderly, pregnant/ lactating women, patients with renal/hepatic diseases etc.(which are generally excluded from clinical trials) may be undertaken at this stage
- Phase I of clinical trial is human pharmacology and safety

## 443. Therapeutic index of a drug signifies:
***September 2005***

a) Dose which produces maximum effect

b) Safety margin

c) Efficacy

d) Maximum response that can be elicited by a drug

Correct Answer - B
Ans. B: Safety Margin
The therapeutic index/therapeutic ratio is a comparison of the amount of a therapeutic agent that causes the therapeutic effect to the amount that causes death.
It signifies safety margin.
Quantitatively, it is the ratio given by the lethal dose divided by the therapeutic dose.
A therapeutic index is the lethal dose of a drug for 50% of the population (LD50) divided by the minimum effective dose for 50% of the population (ED50).
A high therapeutic index is preferable to a low one: this corresponds to a situation in which one would have to take a much higher dose of a drug to reach the lethal threshold than the dose taken to elicit the therapeutic effect
Generally, a drug or other therapeutic agent with a narrow therapeutic range (i.e. with little difference between lethal and therapeutic doses) may have its dosage adjusted according to measurements of the actual blood levels achieved in the person taking it.

## 444. Area under time and plasma concentration curve signifies : *September 2005*

a) Potency

b) Extent of absorption of drug

c) Efficacy

d) Plasma clearance of a drug

Correct Answer - D
Ans. D: Plasma clearance of a drug
The area under the plasma concentration time curve (AUC) is very useful for calculating the relative efficiency of different drug.
It can used **to** calculate the total body clearance (CL) and the apparent volume of distribution.
The area under the plasma (serum, or blood) concentration versus time curve (AUC) has an number of important uses in toxicology, biopharmaceutics and pharmacokinetics.
Toxicology-AUC can be used as a measure of drug exposure. It is derived from drug concentration and time so it gives a measure how much - how long a drug stays in a body. A long, low concentration exposure may be as important as shorter but higher concentration.

- Biopharmaceutics-The AUC measured after administration of a drug product is an important parameter in the comparison of drug products. Studies can be performed whereby different drug products may be given to a panel of subject on separate equations.
- Pharmacokinetics-Drug AUC values can be used to determine other pharmacokinetic parameters, such as clearance or bioavailability.

## 445. Micro dosing studies done in which phase of clinical trials?

a) 0

b) 1

c) 2

d) 3

Correct Answer - A
Ans. is 'a' i.e., 0

- Phase 0 - Microdosing strategy in clinical trials
- Drug development is an activity that is long, complex and expensive.
- The concept of microdosing involves the use of extremely low, nonpharmacologically active doses of a drug to define the pharmacokinetic profile of the medication in human subjects.
- Microdosing, thus, appears as a new viable concept in the 'toolbox' of the drug development activity.

## 446. All of the following induce liver microsomal enzymes except?

a) Metyrapone

b) Glutethimide

c) Carbamazepine

d) Phenobarbitone

Correct Answer - A

**Ans. is 'a' i.e., Metyrapone**

**Drug metabolizing enzymes**

- The drug metabolizing enzymes are divided into two types :

**Microsomal**

- These are *located on smooth endoplasmic reticulum* primarily in liver, also in kidney, intestinal mucosa and lungs.
- Examples are monooxygenase, *cytochrome P450,* glucronyl transferase.
- They catalyze most of the oxidation, reduction, hydrolysis and glucuronide conjugation.
- They are *inducible* by drugs, diet and other agencies.

**Non microsomal**

- These are *present in the cytoplasm and mitochondria* of hepatic cells as well as in other tissues including plasma.
- Examples are flavoprotein oxidase, esterases, amidases and conjugases.
- They catalyze some oxidation and reduction, many hydrolysis and all conjugation except glucuronidation.
- They are not inducible but many show genetic polymorphism (acetyl transferase, pseudocholinesterase).

***Drugs that induce microsomal enzymes***

- Phenobarbitone
- Rifampin
- Isoniazid
- Phenylbutazone
- DDT
- Carbamezepine
- Clofibrate
- Ritonavir
- Chronic alcohol intake
- Cyclophosphamide
- Phenytoin
- Glucocorticoids
- Chloral hydrate
- Griseofulvin
- Omeprazole
- Meprobamate
- Glutethimide
- Cigarette smoking

**Remember**

- All Barbiturates are enzyme inducers except secobarbital, which inhibits the enzyme.
- Acutely, ritonavir is an inhibitor. while with chronic (repeated) administration it acts as an inducer.

## 447. Maintainance dose of drug is dependent on ?

a) Half life

b) Volume of distribution

c) Total body concentration

d) Loading dose

Correct Answer - A
Ans. is 'a' i.e., Half life
*Loading dose is governed by volume of distribution.*
*Maintenance dose is governed by clearance or P/2.*
The drug with *short t1/2* with loading and maintenance dose concept → *Lignocaine.*

## 448. All of the following are true about biotransformation except?

a) It means chemical alteration of the drug in body

b) The primary site for drug metabolism is liver

c) Phase I biotranformation reactions are nonsynthetic

d) Products of phase II biotransformation reactions are mostly active drug metabolites

Correct Answer - D

**Ans. is 'd' i.e., Products of phase II biotransformation reactions are mostly active drug metab liter**

- Biotransformation reactions (metabolism) of drugs can be classified :
  A) Non-synthetic (phase I) reactions
- The new metabolite may retain biological activity or it may be an inactive metabolite.
- *Oxidation is the most important metabolizing reaction.*
- *The most important enzyme for oxidation reaction is cytochrome P450.*
  B) Synthetic (phase II or conjugation) reaction
- Metabolism involves union of the drug with one of several polar (water-soluble) endogenous molecules that are products of intermediary metabolism, to form a water-soluble conjugate which is readily eliminated by kidney or, if the molecular weight exceeds 300, in the bile.
- Phase II metabolism almost invariably terminates biological activity, i.e. metabolites are usually inactive.

## 449. Glucuronidation takes place in ?

a) Liver

b) RBC

c) Pancreas

d) Thyroid

Correct Answer - A
**Ans. is 'a' i.e., Liver**
**GLUCURONIDATION**

- This is the most important synthetic reaction carried out by a group of UDP-glucuronosyl transferases (UGTs).
- Glucuronidation occurs mainly in the liver, although the enzyme responsible for its catalysis, UDP?glucuronyltransferase, has been found in all major body organs (e.g., intestine, kidneys, brain, adrenal gland, spleen, and thymus).
- Compounds with a hydroxyl or carboxylic acid group are easily conjugated with glucuronic acid which is derived from glucose.
- Examples are- chloramphenicol, aspirin, paracetamol, lorazepam, morphine, metronidazole.
- Not only drugs but endogenous substrates like bilirubin, steroidal hormones and thyroxine utilize this pathway.
- Glucuronidation increases the molecular weight of the drug which favours its excretion in bile.
- Drug glucuronides excreted in bile can be hydrolysed bybacteria in the gut-the liberated drug is reabsorbed and undergoes the same fate. This enterohepatic cycling of the drug prolongs its action, e.g. phenolphthalein, oral contraceptives.

## 450. Most common phase I biotransformation reaction is?

a) Oxidation

b) Hydrolysis

c) Cyclisation

d) Reduction

Correct Answer - A
Ans. is 'a' i.e., Oxidation
*Oxidation is the most important metabolizing reaction.*

## 451. Atropine and acetylcholine show the following type of antagonism?

a) Competitive

b) Non competetive

c) Both of the above

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Competetive

## 452. Shelf life of drug is?

a) Same as expiration dating period

b) Different from expiration dating period

c) Time in which drug is completely degraded if stored

d) Time in which the drug becomes harmful for consumption

Correct Answer - A

**Ans. is 'a' i.e., Same as expiration dating period**

**Shelf life of drug**

- It is same as expiration dating time.
- It is defined as the time at which the average drug characteristic remains within an approved specification after manufacture (FDA, 1987).
- In other words, it is the time period over which the potency, efficacy, safety and esthetics of the product can be assured.
- After the shelf life is over drug looses its therapeutic effect.

## 453. What is the advantage of fixed dose combination of drugs.

a) Increases efficacy of drug

b) Decreases adverse effects

c) Patient compliance improved

d) All of the above

Correct Answer - D
Ans. D. All of the above
**Advantages of FDC:**

- Safe and effective.
- Reduces “pill burden” à Enhancing overall treatment outcome.
- Increases efficiency.
- Reduce incidence of adverse drug effects.
- Improves patient compliance.
- Offers low cost (compared to individual components of active ingredients).

## 454. Advantages of oral controlled release drug dilivery are all except?

a) Maintanence of optimum drug concentration

b) Increased duration of therapeutic effect

c) improved efficiency of treatment

d) Lower cost of production

Correct Answer - D
Ans. is 'd' i.e., Lower cost of production

## 455. When one drug decreases or inhibits the action of other it is called?

a) Antagonism

b) Agonism

c) Inverse agonism

d) Synergism

Correct Answer - A
Ans. is 'a' i.e., Antagonism
When one drug decreases or inhibits the action of other.
Effect of drugs A + B < effect of drug A + effect of drug B.
**Antagonism may be :**
a) Physical
Based on physical property
b) Chemical
The two drugs react chemically and form an inactive product.
c) Physiological/functional
The two drugs act on different receptors or by different mechanisms, but have opposite overt effects on the same physiological function ie have pharmacological effect in opposite direction.
(E) Receptor
The antagonist interferes with binding of the agonist with its receptor or inhibits the generation of response consequent to such binding.

## 456. Renal threshold of drug means ?

a) Drug concentration above which it appears in urine

b) Drug concentration below which it appears in urine

c) Drug concentration above which it appears in blood

d) Drug concentration below which it appears in urine

Correct Answer - A

**Ans. is 'a' i.e., Drug concentration above which it appears in urine**

**Renal Threshold**

- The renal threshold is the concentration of a substance dissolved in the blood above which the kidneys begin to remove it into the urine. When the renal threshold of a substance is exceeded, reabsorption of the substance by the proximal convoluted tubule is incomplete; consequently, part of the substance remains in the urine.
- Thus renal threshold is the Drug concentration above which it appears in urine.

## 457. Therapeutic drug monitoring is used for all except?

a) Drugs with low safety margin

b) In case of poisoning

c) To check patient compliance

d) To check the therapeutic effects of drug

Correct Answer - D

**Ans. is d i.e., To check the therapeutic effects of drug**

**Therapeutic drug monitoring is Particularly useful in following situations:**

**I. Drugswith lowsafetymargin -**

- Tricyclic antidePressants
- Digoxin
- Anticonvulsants
- Antiarrythmics
- Theophylline
- Aminoglycoside antibiotics
- Lithium

## 458. Pharmacokinetics is?

a) Study of drug movement in the body

b) Study of drug effects

c) Study of drug responses, governed by heredity

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Study of drug movement in the body**

**Pharmakokinetics**

- Pharmakokinetics is the quantitative study of drug movement, in through and out of the body.
- That means, it is the study of the *effect of body on the drug.*
- So, it is also known as ADME study as it deals with Absorption, Distribution, Metabolism and Excretion of a drug.

## 459. Hoffmann's elimination is ?

a) Inactivation of drug by metabolizing enzyme

b) Unchanged excretion by kidney

c) Excretion in feces

d) Inactivation by molecular rearrangement

Correct Answer - D

**Ans. is 'd' i.e., Inactivation by molecular rearrangement**

**<u>Hofmann elimination</u>**

- This refers to inactivation of the drug in the body fluids by *spontaneous molecular rearrangement* without the agency of any enzyme.
- *Atracurium* is eliminated by this method.

## 460. Clearance -

a) Refers to the efficacy of elimination of a drug by an organ or whole body

b) Cannot be greater than blood flow to an organ

c) Determines the steady of the drug concentration

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
Clearance of a drug is the theoretical volume of plasma from which the drug is completely removed in unit time.

## 461. Which one does not match ?

a) CYP - 2C9 - Quinidine

b) CYP - 1 A2 - Warfarin

c) CYP - 3A4 -Verapamil

d) CYP - 2C19 - Diazepam

Correct Answer - A
Ans. is 'a' i.e., CYP - 2C9 - Quinidine

**462. Sympathomimietic causing increase in mean blood pressure, heart rate and cardiac output on intravenous infusion is?**

a) Adrenaline

b) Isoprenaline

c) Norepinephrine

d) Phenylephrine

Correct Answer - A
Ans. is 'a' i.e., Adrenaline

## 463. Anticholinergic which is tertiary amine is?

a) Valethamate

b) Clidinium

c) Glycopyrolate

d) Hyoscine

Correct Answer - A

**Ans. is 'a' i.e., Valethamate**

**Anticholinergic drugs**

.. *Natural alkaloids* Atropine, Hyoscine (Scopolamine).

2. *Semisvnthetic derivatives* Homatropine, Atropine methonitrate, Hyoscine butyl bromide, Ipratropium bromide, Tiotropium bromide.

3. *Synthetic compounds*

a) *Mydriatics :* Cyclopentolate, Tropicamide.

b) *Antisecretory-antispasmodics :*

i. *Quaternary compounds :* Propantheline, Oxypheonium, Clidinium, Pipenzolate methyl bromide, Isopropamide. Glycopyrolate.

i. *Tertiary amines :* Dicyclomine, Valethamate, Pirenzepine

c) *Vasicosective :* Oxbutynin, Flavoxate, Toltcrodine.

d) *Antiparkinsonian :* Trihexphenidyl (Benzhexol), Procyclidine. Biperiden.

## 464. Shortest acting anticholinesterase is ?

a) Edrophonium

b) Pyridostigmine

c) Glycopyrrolate

d) Neostigmine

Correct Answer - A
Ans. is 'a' i.e., Edrophonium

- Edrophonium is the shortest acting anti-ChE.
- When *carbamates* (other than edrophonium) and *organophophates* react with cholinesterase, they form *covalent bond* at esteratic site, which is considerably resistant to hydrolysis.
- In contrast, *edrophonium* binds *electrostatically and by hydrogen* bonds at anionic site (not at esteratic site) of cholinesterase. The enzyme inhibitor complex does not involve a covalent bond and is correspondingly short lived (2-10 minutes).
- So edrophonium is also called as *noncovalent inhibitor.*

## 465. Following features are true about lipid insoluble beta blockers except?

a) Do not cross blood brain barrier

b) Have good membrane stabilizing effect

c) Incompletely absorbed orally

d) Are long acting

Correct Answer - B

**Ans. is `b' i.e., Have good membrane stabilizing effect**

**Lipid insolubile drugs have following features *?***

- *Do not cross Blood Brain Barrier and therefore produce no CNS effects.*
- *Have good renal excretion*
- *Have no membrane stabilizing activity*
- *Are incompletely absorbed orally*
- *Are long acting*
- *Are effective in narrow dose range*

**<u>Lipid insoluble β-blockers</u>**

1. Acebutolol
2. Betoxalol
3. Atenolol
4. Carteolol
5. Bisoprolol
6. Celiprolol
7. Esmolol
8. Nodalol
9. Sotalo
10. Labealol
11. Pindolol

## 466. The most important advese effect of sotalol is?

a) Torsades de pointes

b) Heart block

c) Pulmonary fibrosis

d) Vomiting

Correct Answer - A
**Ans. is 'a' i.e., Torsades de pointes**
**Sotalol**

- It is a nonselective -blocker.
- It *prolongs the action potential* (class 3 antiarrhythmic).
- Sotalol is well absorbed orally with bioavailibility of 100%.
- *It is not metabolized in liver.*
- *Excretion is predominantly by kidney in the unchanged form.*
- *The most significant cardiac adverse effect is dose related torsade de points.* (Polymorphic ventricualr tachycardia).

## 467. Drug used to reverse the effect of d-tubocurarine is:

a) Neostigmine

b) Physostigmine

c) Dantrolene

d) Scoline

Correct Answer - A
Neostigmine

## 468. Drug that causes tachycardia, mydriasis, and urinary retention ?

a) Nicotinic agonist

b) Muscarinic agonist

c) Anticholinergic drug

d) Beta agonist

Correct Answer - C

**Ans. is 'c' i.e., Anticholinergic drug**

**ACTIONS:**

- CNS: **In toxic/high doses: Maximal excitatory effect.**
- **Eye:**
  - **Mydriasis -** Paralysis of sphincter pupillae.
  - **Cycloplegia -** Paralysis of accommodation.
  - **Increased intraocular pressure** in people with shallow anterior chamber.
  - It gives comfort & rest to eye by **relieving spasm of iris sphincter & ciliary muscle.**
  - **Prevents synechiae formation** & demolishes already formed synechiae.
  - **Increases blood supply to anterior uvea.**
    - By relieving pressure on anterior ciliary arteries.
- CVS: **Increased A-V conduction.**
- GIT: **Cause relaxation of LES.**
- Renal: Urinary retention in older males with **prostatic hypertrophy**.
- Secretions: **Reduces salivary**, **lacrimal and gastric secretions**.

**469. True regarding malathion are all of the following except:**
***March 2008***

a) Used as a spray

b) Can be used as an alternative to DDT

c) Most toxic of all members of the group

d) Belongs to organophosphorous insecticides

Correct Answer - C
Ans. C: Most toxic of *all* members of the group

## 470. Selective alpha 2 agoinst used in glaucoma ?

a) Tirriolol

b) Epinephrine

c) Dipivefrine

d) Brimonidine

Correct Answer - D
Ans. is 'd' i.e., Brimonidine

## 471. Beta2 adrenergic receptors are not found on:
***September 2010***

a) Arterioles

b) Veins

c) Adipose Tissue

d) Uterus

Correct Answer - C
Ans. C: Adipose Tissue
**Beta receptors:**

- Beta 1 - Heart, JG cells in kidney.
- Beta 2 - Bronchi, blood vessels, uterus, liver, g.i.t, urinary tract, eye
- Beta 3 - adipose tissue

## 472. True statement regarding use of adrenaline in anaphylactic shock is?

a) 0.5 mg dose is administered by s.c.route

b) 1:10,000 concentration is commonly used

c) It is repeated after every 4-6 hours

d) Same concentration can be given for s.c.as well as i.v.route

Correct Answer - A

Ans. is 'a' i.e., 0·5 mg dose is administered by s.c.route

- Adrenaline 0·5 ml of 1:1000 solution (i.e., 0·5 mg) by s.c. or i.m. route is the DOC for anaphylactic shock.
- If not responding, it can be repeated after 5 minutes.
- In desperate circumstances i.v. route can be used but it must be diluted 10 times (i.e., 1:10000 concentration).

## 473. Angiotensin II level decreased by which antihypertensive ?

a) Hydralazine

b) Enalapril

c) Methyldopa

d) Nitroglycerine

Correct Answer - B
Ans. *is* 'b' i.e., Enalapril

## 474. Class III Vaughan - Williams classification consists of?

a) Na channel blocker

b) Beta blocker

c) K channel blocker

d) Calcium channel blocker

Correct Answer - C
Ans. is 'c' i.e., K channel blocker

## 475. Tachycardia due to nitrates in a patient with angina pectoris is blocked by?

a) Digoxin

b) Dobutamine

c) Beta blocker

d) Calcium channel blocker

Correct Answer - C

**Ans. is 'c' i.e., Beta blocker**

**Use of beta blocker and long acting nitrate combination is rational in classical angina because :**

i. Tachycardia due to nitrate is blocked by beta blocker
i. The tendency of beta blocker to cause ventricular dilatation is countered by nitrate
i. The tendency of beta blocker to reduce the total coronary flow is opposed by nitrate

## 476. All of the following statements about antianginal action of nitrates are true except?

a) Myocardial O2 consumption

b) Both pre and after load

c) Total coronary flow

d) Cause favourable redistribution of coronary flow

Correct Answer - C

**Ans. is 'c' i.e., Total coronary flow**

*Mechanism of action of nitrates in Prinzmetal's angina is endothelium independent coronary vasodilation. When metabolized, organic nitrates release nitric oxide (NO) that binds to guanylyl cyclase in vascular smooth muscle cells, leading to an increase in cyclic guanosine monophosphate, which causes relaxation of vascular smooth muscle.*
***"Nitrates benefit patients with variant (also known as Prinzmetal) angina by relaxing the smooth muscle of the epicardial coronary arteries and relieving coronary artery spasm."***

**Pharmacological actions of nitrates**

- The only major action is direct nonspecific smooth muscle relaxation. Preload reduction - *Nitrates dilate veins more than arteries* decreased venous return *(preload)* → decreased end diastolic size and pressure → *decreased* ***$O_2$ consumption.***
  - *The most prominant action is exerted on vascular smooth muscles.*
- 
- Afterload reduction - Nitrates also produce some arteriolar dilatation → slightly decreased total peripheral resistance (afterload).
- Redistribution of coronary flow.
- Other smooth muscles - Nitrates cause relaxation of bronchi, biliary tract, esophagus → can be used in biliary colic and esophageal spasm.

**477. Which of the following calcium channel blocker has a predominant peripheral action:**
***September 2006***

a) Verapamil

b) Diltiazem

c) Nifidepine

d) Depranil

Correct Answer - C
Ans. C: Nifidepine
Sublingual nifedipine has previously been used in hypertensive emergencies. This was found to be dangerous, and has been abandoned.
Sublingual nifedipine causes blood-pressure lowering through peripheral vasodilation.
It can cause an uncontrollable decrease in blood pressure, reflex tachycardia, and a steal phenomenon in certain vascular beds

## 478. Which of the following is not true about bosentan

a) Used in pulmonary hypertension

b) Used in malignant hepatitis

c) Endothelin receptor antagonist

d) All are true

Correct Answer - B

**Ans. is 'b' i.e., used in malignant hepatitis**

**Endothein receptor antagonists**

- There are two endothelin receptor subtypes - $ET_A$ and and ETB.
- *Bosentan* is a nonselective endothelin antagonist - blocks both $ET_A$ and ETB.
- Bosentan is active intravenously and orally.
- Bosentan is currently approved for use in *pulmonary hypertension.*
- *Tezosentan* another nonselective antagonist is used investigation for the treatment of acute heart failure.
- *Sitaxentan* and *ambrisentan* are selective $ET_A$ antagonists.
- *Phosphoramidon* inhibits formation of endothelin by inhibiting endothelin converting enzyme. Remember
- *Bosentan* can cause severe *hepatotoxicity* - monthly liver function tests should be done.
- It is contraindicated in pregnancy.

**479. Minimum quantity of filtered Na actually excreted is by which of the following diuretic?**

a) Furesemide

b) Thiazide

c) Amiloride

d) Acetazolamide

Correct Answer - C
Ans. is 'c' i.e., Amiloride

## 480. Oral and topical drug for nasal decongestion is ?

a) Phenylephrine

b) Histamine

c) Methoxamine

d) Dopamine

Correct Answer - A
**Ans. is 'a' i.e., Phenylephrine**
**Phenylephrine**

- It is selective alpha 1 agonist.
- Topically it is used as nasal decongestant and in eye for producing mydriasis when cycloplegia is not required.
- It is also a part of oral nasal decongestant preparations.

## 481. Fosphenytoin route of administration ?

a) Intravenous

b) Subcutaneous

c) Oral

d) Intradermal

Correct Answer - A
**Ans. is `a' i.e., Intravenous**
**Fosphenvtoin:**

- Water soluble prodrug of phenytoin
- Used in status epilepticus patients
- It is available as intravenous injection. It is less damaging to intima compared to phenytoin, can be injevted at a faster rate of 150 mg/ min, can be used in glucose solution drip.
- Its infusion requires ECG monitoring.

## 482. Action of i. v. thiopentone is terminated by ?

a) Rapidly renal excretion

b) Oxidation

c) Redistribution

d) Conjugation

Correct Answer - C
Ans. is 'c' i.e., Redistribution
Three proceeses are involved in the termination of action of barbiturates: the relative importance of each varies with the compound.
Redistribution: it is important in the case of highly lipid soluble thiopentone. After iv injection the action of thiopentone is terminated in 6-10 mins by redistribution while the ultimate disposal occurs by metabolism (tl/ 2 of elimination is 9 hours).
Metabolism: drugs with intermediate lipid solubility (short acting barbiturates) are primarily metabolized in liver by oxidation, dealkylation and conjugation. Their plasma t1/2 ranges from 12 - 40 hours.
Excretion: barbiturates with low lipid solubility (long acting agents) are significantly excreted unchanged in urine. The t1/2 of phenobarbitone is 80-120 hours. Alkalinization of urine increases ionization and excretion.

## 483. Secobarbitone is ?

a) Long acting barbiturate

b) Intermediate acting barbiturate

c) Short acting barbiturate

d) Ultra short acting barbiturate

Correct Answer - C
Ans. is 'c' i.e., Short acting barbiturate
Long acting barbiturates → Phenobarbitone, Mephobarbitone.
Short acting barbiturates → Butobarbitone, *secobarbitone,* Pentobarbitone.
Ultrashort acting → Thiopentone, Methohexitone, Hexobarbitone.

## 484. Antidote for Restyl/Alprazolam is:
*March 2010, March 2013*

a) Protamine sulphate

b) Flumazenil

c) EDTA

d) BAL

Correct Answer - B
Ans. B: Flumazenil

**Pharmacokinetics of alprazolam**

- Well absorbed (90%) from the GI tract; absorption is slower with extended-release tablets
- Widely distributed, crosses blood-brain barrier. Probably crosses the placenta and enters breast milk. Accumulation is minimal
- Metabolized by the liver (CYP3A4 enzyme system) to an active compound that is subsequently rapidly metabolized
- Half life is 12 hour

**Uses of alprazolam**

- Treatment of Generalized Anxiety Disorder (GAD)
- Panic Disorder
- Management of anxiety associated with depression
- Management of symptoms of premenstrual syndrome (PMS)
- Insomnia, irritable bowel syndrome (IBS) and other somatic symptoms associated with anxiety
- Used as an adjunct with acute mania, acute psychosis.

**Actions**

- Acts at many levels in the CNS to produce anxiolytic effect

- May produce CNS depression
- Effects may be mediated by GABA, an inhibitory neurotransmitter.

**Contra-indicated in**

- Hypersensitivity
- Cross-sensitivity with other benzodiazepines may exist
- Pre-existing CNS depression
- Severe uncontrolled pain
- Angle-closure glaucoma, obstructive sleep apnea, pulmonary disease
- Pregnancy and lactation
- Concurrent itraconazole or ketoconazole.

Lactation: Use in pregnancy or lactation may cause CNS depression, flaccidity, feeding difficulties, and seizures in infant

**Use cautiously in**

- Renal Impairment, Hepatic dysfunction.
- Concurrent use with nefazodone, fluvoxamine, cimetidine, fluoxetine, hormonal contraceptives, propoxyphene, diltiazem, isoniazid, erythromycin, clarithromycin, grapefruit juice.
- History of suicide attempt or alcohol/drug dependence, debilitated patients.
- Pediatric age: Safety and efficacy not established. Decreased dosage and frequent monitoring required.
- Geriatric age: Elderly patients have increased sensitivity to benzodiazepines. Appears on Beers list and is associated with increased risk of falls and excessive CNS effects.

**Interactions**

- Alcohol, antidepressants, other benzodiazepines, antihistamines and opioid analgesics -concurrent use results in CNS depression
- Hormonal contraceptives, disulfiram, fluoxetine, isoniazid, metoprolol, propoxyphene, propranolol and valproic acid metabolism of alprazolam, blood levels and its actions (dose adjustments may be necessary)
- CYP3A4 inducers (rifampin, carbamazepine, or barbiturates)
- CYP3A4 inhibitors (erythromycin, ketoconazole, itraconazole, fluvoxamine, cimetidine, nefazodone)

**Toxicity and overdosage**

Flumazenil is the antidote for alprazolam toxicity or overdose. (Flumazenil may induce seizures in patients with a history of

(Flumazenil may induce seizures in patients with a history of seizures disorder or who are on tricyclic antidepressants.)

**485. Lithium toxicity is treated by following methods EXCEPT:**
***March 2004***

a) Acidification of urine

b) Increased hydration

c) Sodium bicarbonate

d) Hemodialysis

Correct Answer - A
Ans. A i.e. Acidification of urine

## 486. Disulfiram mechanism of action ?

a) Stimulates alcohol dehydrogenase

b) Stimulates aldehyde dehydrogenase

c) Inhibits aldehyde dehydrogenase

d) Inhibits dopamine oxidase

Correct Answer - C
Ans. is 'c' i.e., Inhibits aldehyde dehydrogenase

## 487. 55yr old man with dementia was given a natural alkaloid which of the following?

a) Tacrine

b) Donepezil

c) Galantamine

d) Rivastigmine

Correct Answer - C
Ans. is 'c' i.e., Galantamine

**488. Which of the following drug need not be stopped before surgery ?**

a) Aspirin

b) Warfarin

c) Metformin

d) Digitalis

Correct Answer - D
Ans. is 'd' i.e., Digitalis

## 489. Following is true about halothane except?

a) Volatile liquid with sweet odour

b) Sensitises heart to adrenaline

c) Constricts bronchii

d) Causes malignant hyperthermia

Correct Answer - C

**Ans. is 'c' i.e., Constricts bronchii**

**Halothane**

- It is a volatile liquid with *sweet odour, nonirritating and noninflammable.*
- It is a *potent anaesthetic with poor analgesic and muscle relaxant properties.*
- *Halothane causes direct depression of myocardial contractility by reducing intracellular Ca.*
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- *It tends to sensitize the heart to arrhythmogenic action of adrenaline* → contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi → inhalation agent of choice in asthmatics (intravaneous anaesthetic of choice in asthmatics is ketamine).
- It is a *hepatotoxic drug* and can also cause *malignant hyperthermia* (Succinylcholine accentuate it).
- Recovery is smooth and reasonably quick.
- It causes *postanaesthetic shivering and chills.*
- It inhibits intestinal and uterine contractions → agent of choice for

assisting external or internal version during late pregnancy.

- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

## 490. Shortest acting skeletal muscle relaxant is ?

a) Suxamethonium

b) Mivacurium

c) Pancuronium

d) Vecuronium

Correct Answer - A
Ans. is 'a' i.e., Suxamethonium

- Suxamethonium (succinylcholine) is the shortest acting skeletal muscle relaxant.
- Mivacurium is the shortest acting nondepolarizing skeletal muscle relaxant.

## 491. Longest acting among muscle relaxant is?

a) Doxacurium

b) Rocuronium

c) Vecuronium

d) Atracurium

Correct Answer - A
Ans. is 'a' i.e., Doxacurium

- Among the given options, only doxacurium is long acting.
- See explanation- 4 of session- 3.

## 492. treatment of withdrawal is required in ?

a) LSD

b) Opium

c) Alcohol

d) Amphetamine

Correct Answer - A
Ans. is 'a' i.e., LSD
Clinically significant withdrawal syndrome (requires treatment) :- Alcohol, opioids, amphetamines, Barbiturates, BZDs, Nicotine.
No or minimal clinically significant withdrawal syndrome (requires no treatment) :- *LSD (nil),* Cannabis (minimal).

## 493. Ketamine produces -

a) Emergence delirium

b) Hypotension

c) Bronchoconstriction

d) Depression of cardiovascular system

Correct Answer - A
Ans. is 'a' i.e., Emergence delirium

## 494. Chemically aspirin is

a) Acetyl salicylic acid

b) Para-aminosalicylic acid

c) Para-aminobenzoic acid

d) Acetaminophen

Correct Answer - A
Ans. is 'a' i.e., Acetyl salicylic acid

## 495. Dapoxetine is specifically developed for?

a) Depression

b) Psychosis

c) Premature ejaculation

d) Anxiety disorder

Correct Answer - C
**Ans. is 'c' i.e., Premature ejaculation**
**<u>Dapoxetine</u>**

- Dapoxetine is the first compound developed specially for the treatment of premature ejaculation (PE) in men 18-64 years old.
- Dapoxetine works by inhibiting the serotonin transporter, increasing serotonin's action at the post synaptic cleft, and as a consequence promoting ejaculatory delay.
- As a member of selective serotonin reuptake inhibitor (SSRI) family, dapoxetine was initially created as an antidepressant.
- However, unlike other SSRIs, dapoxetine is absorbed and eliminated rapidly in the body.
- Its fast-acting property makes it suitable for the treatment of PE but not as an antidepressant.

## 496. All are true regarding Ketorolac, EXCEPT?

a) Respiratory depression is a side effect

b) More potent than Aspirin

c) VA is 5- 6 hrs

d) This is an analgesic

Correct Answer - A

**Ans. is 'a' i.e., Respiratory depression is a side effect**

**<u>Ketorolac</u>**

- Ketorolac is a novel NSAID *(Pyrrolo-pyrole derivative)*
- It is *a* potent analgesic *(equal to morphine, more than aspirin)*
- It is free of the following side effects

1. *Respiratory depression*
2. *Hypotension*
3. *Dependence producing*
4. *Constipation*

- *Its plasma $t_{1/2}$ of ketorolac is 5-7 hrs.* So it is used in *short term management of moderate pain.*
- Ketorolac is best used in *postoperative or other acute but short lasting painful conditions with minimal inflammation.*
- *Ketorolac is the only NSA ID that can be used i.v.*

## 497. Flumazenil, false is?

a) It is specific antagonist of BZD

b) It may be used in barbiturate poisoning as it acts on the same receptor i.e. GABAA

c) Given intravenously

d) Acts on $GABA_A$ receptor

Correct Answer - B
Ans. is 'b' i.e., It may be used in barbiturate poisoning as it acts on the same receptor i.e. GABAA
Flumazenil is specfic antagonist of BZDs, i.e., it acts on BZDs binding site of $GABA_A$ receptors, which is different from Baributurate binding site.
Therefore, flumazenil does not antagonize barbiturates =, not effective in barbiturates poisoning.

## 498. True about benzodiazepines ?

a) Increased release of GABA

b) Antagonzing release of GABA

c) Lorazepam is shorter acting than temazepam

d) Atropine is its antagonist

Correct Answer - C

Ans. is 'c' i.e., Lorazepam is shorter acting than temazepam

- Lorazepam has VA 10-20 hours, while Temazepam has VA 10-40 hours.
- About other options
- BZDs do not increase or decrease the release of GABA, they bind on $GABA_A$ receptors and increase Cl- conductance → GABA facilitatory action.
- Flumazenil (not atropine) is the antagonist of BZDs.

## 499. Alcohol in substrate inducer for which gene?

a) Pol III gene

b) Myc Oncogene

c) P53

d) NF1

Correct Answer - A
Ans. is 'a' i.e., Pol III gene
Alcohol induces pol III gene (RNA polymerase III-dependent genes) transcription in vivo and in vitro. Brfl specifically regulates pol III gene transcription.
Changes in pol III gene and Brfl expression tightly link to cell transformation and tumor formation. Alcohol induced deregulation of pol III genes may be fundamental to the development of breast cancer.

## 500. Which of the following antibacterial drug is polar?

a) Ampicillin

b) Penicillin G

c) Clavulanic acid

d) Cefepime

Correct Answer - A
**Ans. is 'a' i.e., Ampicillin**
**Ampicillin:**

- It is an ionized highly polar drug.
- In the duodenum it exerts a zwitter ion effect and thus has a lower bioavailabilty.
- Though the oral absorption is incomplete it is adequate.
- It is an antibacterial drug acting both on gram positive and gram negative organisms.
- Main mode of excretion is by kidneys.
- It is partly excreted in bile and shows enterohepatic circulation.

**501. Following drugs are the first choice in treating patients with candidiasis except?**

a) Fluconazole

b) Nystatin

c) Amphotericin B

d) Caspofungin

Correct Answer - D
Ans. is 'd' i.e., Caspofungin

## 502. Tetracycline is the drug of choice for all except?

a) LGV

b) Cholerra

c) Plague prophylaxis

d) Pneumocystis carinii

Correct Answer - D
Ans. is 'd' i.e., Pneumocystis carinii

## 503. How will you decrease aminoglycoside toxicity?

a) Total dose OD

b) Total dose BD

c) Low dose OD

d) Low dose BD

Correct Answer - A
Ans. is 'a' i.e., High dose OD
Authortities recommend giving a single total daily dose regime for aminoglycosides for patients with normal renal function. This is based on the following considerations:
1) Aminoglycosides exert concentration dependent bactericidal action and a long post antibiotic effect, therefore higher plasma concentrations attained after the single daily dose will be equally or more effective than the divided doses.
2) With the single daily dose the plasma concentration will remain subthreshold for ototoxicity and nephrotoxicity for a longer period each day allowing washout of the drug from the endolymph and renal cortex, thus decreasing the toxic effects.

## 504. Chloroquine toxicity causes all except ?

a) Loss of vision

b) Lichenoid eruptions

c) Convulsions

d) Weight gain

Correct Answer - D
Ans. is 'd' i.e., Weight gain
Side effects with chloroquine administration are frequent and unpleasant and include Nausea, Vomiting, Anorexia, Uncontrollable itching, Epigastric pain, Uneasiness, Difficulty in accommodation & Headache. *Weight gain is not a feature of Chloroquine side effects.*

## 505. Fusion inhibitor is?

a) Enfuvirtide

b) Ritonavir

c) Efavirenz

d) Didanosine

Correct Answer - A
Ans. is 'a' i.e., Enfuvirtide

## 506. Moraxella catarrhalis is resistant to which antibiotic?

a) Amoxicillin

b) Clarithromycin

c) Azithromycin

d) Amoxicillin and clavulanic acid combination

Correct Answer - A
**Ans. is 'a' i.e., Amoxicillin**
**Treatment of M. caterrahlis infection:**
*M. catarrhalisrapidly* acquired -lactamases during the 1970s and 1980s; antimicrobial susceptibility patterns have remained relatively stable since that time, with >90% of strains now producing -lactamase and thus resistant to amoxicillin.
Most strains of M. *catarrhalisare* susceptible to amoxicillin and clavulanic acid combination, extended-spectrum cephalosporins, newer macrolides (azithromycin, clarithromycin), trimethoprim-sulfamethoxazole, and fluoroquinolones.

## 507. Antiretroviral drug causing increased liver enzymes is?

a) Didanosine

b) Zidovudine

c) Efavirenz

d) Tenofovir

Correct Answer - C

**Ans. is 'c' i.e., Efavirenz**

**Characteristic side effects of important antiretroviral drugs**

- Lamivudin - Nausea, headache, fatigue.
- Stavudine - *Peripheral neuropathy,* lipodystrophy, hyperlipidemia, pancreatitis, rapidly progressive ascending neuromuscular weakness.
- Didanosine - *Peripheral neuropathy,* pancreatitis, diarrhea, nausea, hyperuricemia.
- Zalcitabine - *Peripheral neuropathy,* oral ulceration, pancreatitis.
- Zidovudin - Macrocytic anemia, neutropenia, nausea, headache, insomnia, asthenia. Tenofovir - Asthenia, headache, diarrhea, nausea, vomiting, flatulance, renal insufficiency. Efavirenz - CNS effects, rash, $i^S$ liver enzymes.
- Nevirapine - Rash, hepatitis, nausea, headache.
- Indinavir - *Nephrolithiasis,* nausea, indirect hyperbilirubinemia, headache, blurred vision, asthenia.

## 508. Which AKT drug avoided in pregnancy ?

a) INH

b) Rifampicin

c) Streptomycin

d) Ethambutol

Correct Answer - C
Ans. is 'c' i.e., Steptomycin

- *Streptomycin is an aminoglycoside antibiotic contraindicated in pregnancy due to risk of fetal ototoxicity.*
- Recommended treatment in pregnancy is (2HRZ + 4HR) for 6 months by WHO and British Thoracic Society.
- Ethambutol can be added during late but not early pregnancy.
- In India, treatment for pregnant women is 21-IRE + 7 HR (Total 9 months).

**509. Which of the following is most active against slowly dividing tubercular bacilli ?**

a) Isoniazid

b) Rifampicin

c) Streptomycin

d) Ethambutol

Correct Answer - B
Ans. is 'b' i.e., Rifampicin

## 510. Tetracycline inhibits protein synthesis by?

a) Inhibiting initiation and causing misreading of mRNA

b) Binding to 30 S subunit and inhibits binding of aminoacyltRNA

c) Inhibiting peptidyltransferase activity

d) Inhibiting translocation

Correct Answer - B

**Ans. is 'b' i.e., Binding to 30 S subunit and inhibits binding of aminoacyl tRNA**

- Tetracycline interact with small ribosomal subunits, blocking access of aminoacyl- tRNA to the mRNA-ribosome complex.

## 511. Chemotherapy of Ewings sarcoma includes all except?

a) Doxorubicin

b) Dactinomycin

c) Topotecan

d) 5 FU

Correct Answer - D

**Ans. is 'd' i.e., 5 FU**

**Chemotherapy for Ewings Sarcoma:**

- Systemic chemotherapy is the mainstay of therapy, often being used before surgery.
- Doxorubicin, cyclophosphamide or ifosfamide, etoposide, vincristine, and dactinomycin are active drugs.
- Topotecan or irinotecan in combination with an alkylating agent are often used in relapsed patients.
- Targeted therapy with an anti-IGF 1 receptor antibody appears to have promising activity in refractory cases.
- Local treatment for the primary tumor includes surgical resection, usually with limb salvage or radiation therapy.

## 512. Bortezomib drug used in ?

a) Multiple myeloma

b) RCC

c) Liver cell carcinoma

d) Pancreatic carcinoma

Correct Answer - A
**Ans. is 'a' i.e., Multiple myeloma**
**Uses of bortezomib:**

- The prime indication of bortezomib is multiple myeloma, both for first line combined therapy as well as for replapsed disease.
- It is also used for refractory mantle cell lymphoma.

Note: The most prominent adverse effect of bortezomibis peripheral neuropathy. Others are diarrhea, fatigue, bone marrow depression especially thrombocytopenia.

## 513. True about Trastuzumab are all except:

a) Better combination with paclitaxel

b) Used in metastatic breast cancer

c) Causes upregulation of HER2/neu

d) No bone marrow toxicity

Correct Answer - C
Causes upregulation of HER2/neu

## 514. Antiplatelet drug which inhibits cyclo-oxygenase 1 enzyme is?

a) Aspirin

b) Clopidogrel

c) Tirofiban

d) Dipyridamole

Correct Answer - A
Ans. is 'a' i.e., Aspirin

## 515. Which of the following does not change pH of stomach:
***September 2011***

a) Sucralfate

b) H2 blocker

c) Omeprazole

d) Ranitidine

Correct Answer - A
Ans. A: Sucralfate
Sucralfate has very poor acid neutralizing capacity and it has no antisecretory property
**Sucralfate**

- It is a cytoprotective agent, primarily indicated for the treatment of active duodenal ulcers.
- Sucralfate is also used for the treatment of gastroesophageal reflux disease (GERD) and stress ulcers.
- Unlike the other classes of medications used for treatment of peptic ulcers, sucralfate is a sucrose sulfate-aluminium complex that binds to the mucosa, thus creating a physical barrier that impairs diffusion of hydrochloric acid in the gastrointestinal tract and prevents degradation of mucus by acid.
- It also stimulates bicarbonate output and acts like an acid buffer with cytoprotective properties
- Sucralfate is a locally acting substance that in an acidic environment (pH < 4) reacts with hydrochloric acid in the stomach to form a cross-linking, viscous, paste-like material capable of acting as an acid buffer for as long as 6 to 8 hours after a single dose.

It also attaches to proteins on the surface of ulcers, such as albumin

It also attaches to proteins on the surface of ulcers, such as albumin and fibrinogen, to form stable insoluble complexes.
These complexes serve as protective barriers at the ulcer surface, preventing further damage from acid, pepsin, and bile.
In addition, it prevents back diffusion of hydrogen ions, and adsorbs both pepsin and bile acids.

## 516. Best anti - Emetic for patient treated with radiotherapy -

a) Clonidine

b) Metoclopromide

c) Ondansetron

d) Cisapride

Correct Answer - C
**Ans. is 'c' i.e., Ondansetron**
**Chemotherapy induced nausea and vomiting:**
Cytotoxic drugs and radiation cause cellular damage which leads to release of 5-HT from intestine and activation of emetogenic *5-HT3 receptors. Therefore, 5-HT3 receptor antagonists (e.g. ondenstron) are the DOC for this condition.*
*Cisplatin is the most common culprit causing chemotherapy induced nausea and vomiting.*
Drugs used to treat chemotherapy induced nausea and vomiting are:
*i) 5-HT3 antagonists (drug of choice): Ondansetron,* dolasetron, *palonosetron,* granisetron.
*ii) Other drugs: Dexamethasone,* methylprednisolone, *metoclopramide,* BZDs (lorazepam) and aprepitant.
Cisplatin can induce vomiting within 24 hours or after 2 days. DOC for the early vomiting is ondensetron while for delayed vomiting is aprepitant (substant *P* antagonist).

## 517. Tadalafil acts on Phosphodiesterase 5 and causes accumulation of?

a) cAMP

b) cGMP

c) PAF

d) IL 10

Correct Answer - B
Ans. is 'b' i.e., cGMP

## 518. Gemfibrozil/produces hypolipidemic action by?

a) Increasing activity of lipoprotein lipase

b) Decreased production of VLDL

c) Increase LDL receptors on hepatocytes

d) Increased conversion of cholesterol to bile acids

Correct Answer - A
Ans. is 'a' i.e., Increasing activity of lipoprotein lipase

## 519. Warfarin embryopathy manifests characteristically as ?

a) Chondrodysplasia punctata

b) Dysplastic hips

c) Auditory sensineuronal hearing loss

d) Gastrointestinal atresias

Correct Answer - A
**Ans. is 'a' i.e., Chondrodysplasia punctata**
Ref: Nelson 2Uh/e P. 2397)

- Warfarin embryopathy is characterized by bone and cartilage abnormalities known as chondrodysplasia punctata.
- Affected infants may have nasal hypoplasia and excessive calcifications in the epiphyses and vertebrae.

## 520. Magaldrate is converted by gastric acid to ?

a) Magnesium hydroxide

b) Magnesium hydroxide and calcium carbonate

c) Magnesium hydroxide and Aluminium hydroxide

d) Calcium carbonate and aluminium hydroxide

Correct Answer - C

**Ans. is `c' i.e., Magnesium hydroxide and Aluminium hydroxide**

**Magaldrate:**

- Magaldrateis a common antaciddrug that is used for the treatment of duodenal and gastric ulcers, esophagitis from gastroesophageal reflux.
- Magaldrate is a hydroxymagnesium aluminate complex that is converted rapidly in gastric acid to Mg(OH), and $Al(OH)_3$, which are absorbed poorly and thus provide a sustained antacid effect.

## 521. Which drug is excreted unchanged in urine ?

a) Verapamil

b) Furosemide

c) Propranolol

d) Thiopentone

Correct Answer - B

**Ans. is 'b' i.e., Furosemide**

**Furosemide pharmacokinetics**

- Furosemide is rapidly absorbed orally but bioavailability is about 60%.
- Lipid solubility is low and it is highly bound to plasma proteins.
- It is party conjugated by glucuronic acid and is mainly excreted unchanged by glomerular filtration and tubular secretion.

## 522. Latest oral direct thrombin inhibitor is?

a) Ximelagatran

b) Indraparinux

c) Dabigatran

d) Fondaparinux

Correct Answer - C
Ans. is 'c' i.e., Dabigatran
*Ximelagatran* was the first oral direct thrombin inhibitor approved; however, it was subsequently withdrawn from the market because of reports of liver failure.
*Recently a new oral direct inhibitor, dabigatran,* was approved for use in Europe for prevention of various thromboembolism in patients who have undergone hip or knee replacement surgery.

## 523. Following are the uses of Polydimethylsiloxane except?

a) Antifoaming agent

b) Hydraulic fluids

c) Skin moisturizing agent

d) Hair coloring agent

Correct Answer - D

**Ans. is 'd' i.e., Hair coloring agent**

**Uses:**

- Surfactants and antifoaming agents
- Hydraulic fluids and related applications
- Soft lithography
- Medicine and cosmetics:
  - Activated dimethicone, a mixture of polydimethylsiloxanes and silicon dioxide (sometimes called simethicone), is often used in over-the-counter drugs as an antifoaming agent and carminative.
- Skin:
  - PDMS can be used in the treatment of head lice on the scalpand dimethicone is used widely in skin?moisturizing lotions where it is listed as an active ingredient whose purpose is "skin protection".
- Hair:
  - PDMS compounds such as amodimethicone, are effective conditioners
- Foods:
  - PDMS is added to many cooking oils (as an antifoaming agent) to prevent oil splatter during the cooking process.
- Domestic and niche uses

## 524. Advantage of ergotamine + caffeine ?

a) Decreased renal excretion

b) Increased renal excretion

c) Increased oral absorption

d) Decreased oral absorption

Correct Answer - C

**Ans. is 'c' i.e., Increased oral absorption**

**Current status of ergotamine as antimigraine drug**

- Because of the erratic oral absorption, frequent side effects, especially nausea and vomiting, and availability of triptans, ergot preparations are rarely used now, except for considerations of cost or when triptans fail.
- Ergot alkaloids have no prophylactic value: regular use is not justified- may itself produce a dull background headache and an attack may be precipitated on discontinuation.
- Caffeine 100 mg taken with ergotamine enhances its absorption from oral and rectal routes and adds to the cranial vasoconstricting action.

**525. Level of which clotting factor falls first after giving warfarin?**

a) V

b) VI

c) VII

d) VIII

Correct Answer - C
Ans. is 'c' i.e., VII

## 526. Mucopolysaccharide having anticoagulant action is?

a) Heparin

b) Phenindione

c) Rivoroxaban

d) Dabigatran

Correct Answer - A
**Ans. is 'a' i.e., Heparin**
**Heparin**

- It is a parenteral indirect thrombin inhibitor.
- It is a on uniform mixture of straight chain polysaccharides with molecular weight 10, 000 - 20, 000.
- It contains polymers of two sulfated disaccharide units D glucosamine L iduronic acid and D glucosamine D glucuronic acid.
- Heparin is the strongest organic acid present in the body.

## 527. Oliguria causing drug is?

a) Acyclovir

b) Diazepam

c) Aspirin

d) Montelukast

Correct Answer - A
**Ans. is 'a' i.e., Acyclovir**
**Drugs Causing Oliguria**

- Drugs causing decreased renal perfusion - diuretics.
- Drugs causing nephrotoxicity - aminoglycosides and chemotherapeutic agents.
- Urine retention - adrenergic and anticholinergic drugs.
- Urinary obstruction associated with precipitation of urinary crystals - sulfonamides and acyclovir.

## 528. Which of the following drugs cause diarrhea?

a) Morphine

b) Atropine

c) Lithium

d) Magnesium sulfate

Correct Answer - D
Ans. is 'd' i.e., Magnesium sulfate

## 529. Which drug combination is not rational for acid peptic disease ?

a) Rantidine + Al (OH)3

b) Rantidine + Sucralfate

c) Rantidine + Carbenoxolone

d) Rantidine + Colloidal bismuth subcitrate

Correct Answer - B

Ans. is 'b' i.e., Rantidine + Sucralfate

- Sucralfate is an *ulcer protective agent.*
- It preferentially and strongly adheres to the ulcer base, especially duodenal, and acts as a physical barrier preventing acid, pepsin and bile from coming in contact with the ulcer base.
- However, this protective action is attributed to sucralfate because of certain properties which are achieved only in acidic medium :
  - Acidic medium gives it a viscous consistency, also polymerizes at pH
  - Vicious and gel like that are responsible for its action.
- When antacids are given concurrently they raise the pH of gastric secretion and this interferes with the very basic mechanism of action of sucralfate (requires pH).

## 530. Sucralfate

a) Reduces gastric acid secretion

b) Neutralises gastric acid

c) Is ulcer protective

d) Is anti H. pylori drug

Correct Answer - C

**Ans. is 'c' i.e., Is ulcer protective**

**Sucralfate**

- Sucralfate is an *ulcer protective agent.*
- It preferentially and strongly adheres to the ulcer base, especially duodenal, and acts as a physical barrier preventing acid, pepsin and bile from coming in contact with the ulcer base.
- However, this protective action is attributed to sucralfate because of certain properties which are achieved only in acidic medium :
  - Acidic medium gives it a viscous consistency, also
  - It polymerizes at pH < 4 by cross linkages of molecule assuming sticky gel like consistency.
- It is this vicious and gel-like properties that are responsible for its action.
- When antacids are given concurrently they raise the pH of gastric secretion and this interferes with the very basic mechanism of action of sucralfate (requires pH < 4) and thus makes them ineffective.

## 531. The drugs which achieve concentration in bile are all except ?

a) Erythromycin

b) Tetracycline

c) Oral contraceptives

d) Alpha methyl dopa

Correct Answer - D
Ans. is 'd' i.e., Alpha methyl dopa

## 532. Which of the following is false about colchicine?

a) Used in acute gout

b) It is not an anti-inflammatory agent

c) It is antimitotic and causes telophase arrest

d) Can cause diarrohea

Correct Answer - C

**Ans. is 'c' i.e., It is antimitotic and causes telophase arrest**

**Colchicine**

- It is used in acute gout.
- It is neither analgesic nor antinflammatory, but it specifically suppresses the gouty inflammation.

**Mechanisms of action**

- Colchicine inhibits the release of glycoprotein (glycoprotein aggravates inflammation in gout).
- By binding to fibrillar protein tubulin, it inhibits granulocyte migration into the inflamed joints.
- Other actions (not related to gout)
  - Antimitotic Causes *metaphase arrest* by binding to microtubules of mitotic spindle.
  - Increases gut motility through neural mechanisms.

**Toxicity**

- Nausea, vomiting, watery or bloody diarrhea, and abdominal pain are the most common side effects.
- Accumulation of the drug in intestine and inhibition of mitosis in its rapid turnover mucosa is responsible for the toxicity.
- In overdose, colchicine produces kidney damage, CNS depression, intestinal bleeding; death is due to muscular paralysis and

respiratory failue.

- Chronic therapy with colchicine is not recommended because it causes aplastic anemia, agranulocytosis myopathy and loss of hair.

## 533. Drug of choice for choriocarcinoma is?

a) Nitrosourea

b) Gemcitabine

c) Methotrexate

d) Melphalan

Correct Answer - C
Ans. is 'c' i.e., Methotrexate

## 534. Oligomycin?

a) Blocks oxidative phosphorylation

b) Blocks protein synthesis

c) Blocks ATP uptake

d) Blocks Na uptake

Correct Answer - A
**Ans. is 'a' i.e., Blocks oxidative phosphorylation**
**Oligomycin**

- Oligomycin is an antibiotic that blocks oxidative phosphorylation by blocking flow of protons through ATP synthase.
- Oligomycin A is an inhibitor of ATP synthase.
- Oligomycin A inhibits ATP synthase by blocking its proton channel (Fo subunit), which is necessary for oxidative phosphorylation of ADP to ATP (energy production).
- The inhibition of ATP synthesis by oligomycin A will significantly reduce electron flow through the electron transport chain; however, electron flow is not stopped completely due to a process known as proton leak or mitochondrial uncoupling.
- This process is due to the facilitated diffusion of protons into the mitochondrial matrix through an uncoupling protein such as thermogenin, or UCP 1.
- Administering oligomycin to an individual can result in very high levels of lactate accumulating in the blood and urine

## 535. Which of the following is the drug of choice for Syndrome of Inappropriate Secretion ofAntidiuretic Hormone (SIADH)?

a) Demeclocycline

b) Vasopressin

c) Thiazide diuretic

d) Chlorpropamide

Correct Answer - A

**Ans. is 'a' i.e., Demeclocycline**

- No pharmacologic agent exists that is able to antagonize ADH specifically. Specific ADH antagonists are avail able only for investigational purpose
- Currently, *Demeclocycline* and *lithium* are the only pharmacological t/t effective for SIADH.
- These are *nonspecific ADH antagonists* which are of limited use in some situations
- *These two agents antagonize the action of ADH in collecting tubules by inhibiting the formation of CAMP.*

## 536. Econazole is useful for the treatment of all except

a) Tinea corporis

b) Histopiasma capsulatum

c) Cutaneous candidiasis

d) Tinea pedis

Correct Answer - B
**Ans. is 'b' i.e., Histoplasma capsulatum**
Econazole is used only topically for dermatophytosis and candida infection.

- It is not used systemically for deep infections.

## 537. Probenecid interacts with ?

a) Streptomycin

b) Ampicillin

c) Vancomycin

d) Erythromycin

Correct Answer - B

**Ans. is 'b' i.e., Ampicillin**

**<u>Interactions of probenecid</u>**

1. Probenecid inhibits urinary excretion of penicillins, cephalosporins, methotrexate, sulfonamides and indomethacin.
2. It inhibits biliary excretion of rifampicin.
3. Salicylates block uricosuric action of probenecid.
4. Probenecid inhibits tubular secretion of nitrofurantoin.
5. Pyrazinamide and ethambutol may interfere with uricosuric action of probenecid.

Note : Ampicillin is a penicillin.

## 538. Drug of choice in Theophylline poisoning?

a) Cortisone

b) Propranolol

c) Thyroxine

d) Phenobarbitone

Correct Answer - D

**Ans. is 'd' i.e., Phenobarbitone**

**Theophylline poisoning**

- Theophylline has a narrow margine of safety.
- Dose dependent toxicity starts from the upper part of therapeutic concentration range.
- Adverse effects are primarily referable to the GIT, CNS and CVS.
- Children are more liable to develop CNS toxicity.
- Treatment
- *Prophylactic administration of diazepam in combination with phenytoin or phenobarbital. - Goodman & Gilman II$^{th}$/e - 729*
- Lidocaine may be used for ventricular arrhythmia.
- Seizures refractory to anticonvulsant therapy, sometimes requiring general anaesthesia.

## 539. Antiemetic Phenothiazine with labrynthine suppressant activityused for vertigo is ?

a) Prochlorperazine

b) Cinnarazine

c) Hyoscine

d) Promethazine

Correct Answer - A
Ans. is 'A' i.e., Prochlorperazine
Labyrinthine suppressants used in vertigo
They suppress end organ receptors or inhibit central cholinergic pathways in vestibular nuclei.
**These are :?**
a. Antihistaminics (with anticholinergic action) - cinnarizine, cyclizine, dimenhydrinate, diphenhydramine, promethazine.
b. Anticholinergics- atropine, hyoscine.
c. Antiemetic phenothiazines-prochlorperazine, thiethylperazine.

## 540. Epalrestat is an ?

a) Aldolasereductase inhibitor

b) Fructose cogener

c) Glucose receptor blocker

d) Glucose reuptake activator

Correct Answer - A
Ans. is 'a' i.e., Aldolasereductase inhibitor

- Aldose reductase, is an enzyme that is normally present in many other parts of the body, and catalyzes one of the steps in the sorbitol(polyol) pathway that is responsible for fructose formation from glucose.
- Aldose reductase activity increases as the glucose concentration rises in diabetes in those tissues that are not insulin sensitive, which include the lenses, peripheral nerves and glomerulus.
- Aldose reductase inhibitors are a class of drugs being studied as a way to prevent eye and nerve damage in people with diabetes.
- **Examples of aldose reductase inhibitors include :-**
  - Tolrestat (withdrawn from market)
  - Epalrestat
  - Ranirestat
  - Fidarestat

## 541. Natural disasters are all except ?

a) Floods

b) Tornedo

c) Lightening strike

d) Accidental radioactive gas leak from factory

Correct Answer - D
Ans. is 'd' i.e., Accidental radioactive gas leak from factory
A natural disaster is a major adverse event resulting from natural processes of the Earth; examples include floods, volcanic eruptions, earthquakes, tsunamis, and other geologic processes.
Accidental radioactive gas leak from factory is most commonly a result of human or mechanical error and thus not a natural disaster.

## 542. Date rape drug are all except ?

a) Propofol

b) Gamma hydroxyl butyrate

c) Ketamine

d) Rohypnol

Correct Answer - A

**Ans. is 'a' i.e., Propofol**

**Date Rape Drug**

Any drug (either surreptitiously or openly administered) that facilitates rape could be considered a date rape drug.

The drug most commonly used to facilitate sexual assault is alcohol, consumed voluntarily.

Newer date rape drugs are rohypnol and ketamine.

**Other drugs**

i. Hypnotics such as zopiclone or the widely available zolpidem (Ambien),
i. Sedatives such as neuroleptics (anti-psychotics), chloral hydrate or some histamine H1 antagonists,
i. Commonly recreational drugs such as ethanol, marijuana, cocaine, and
v. Less common anticholinergics, barbiturates, opioids, PCP, scopolamine,nasal spray ingredient oxymetazoline,and certain solvents like Gamma-hydroxybutyrate.

## 543. Which a vehicular injury is not caused by direct contact of vehicle ?

a) Primary impact

b) Secondary impact

c) Secondary injury

d) Rolling over

Correct Answer - C

**Ans. is 'c' i.e., Secondary injury**

**Pedestrian injuries**

**Following patterns of injuries are seen :?**

1) Primary impact injuries : It is caused due to initial impact between vehicle and pedestrian. The height of the pedestrian often determines the site of impact and injuries, for example, they are usually found on head in children and on the trunk and legs in adults. Overall, the most common site is leg (85%), followed by *head (50-80%) > arms > pelvis > chest or abdomen > neck and spine.*

2) Secondary impact injuries : These are due to subsequent impact with the same vehicle, as may result from being lifted on to the vehicle after the initial impact:-

- Secondary impact injuries are also *usually seen on the same side as the primary impact injuries* (side facing the vehicle) when the body is thrown on the vehicle although they may be seen on other surfaces such as during ran over injuries.
- If the initial impact was below the centre of gravity (as occurs in adult and older child), it tends to lift the victim up onto bonnet/hood of vehicle (scooping up) or even on road behind the vehicle and cause *severe head injuries, laceration (due to secondary impact or contact with windshield) and run over by passing vehicle.*

- If the initial point of impact was at or above the centre of gravity (as occurs in children), he is directly thrown to ground (due to primary impact) and *is run over by same car* with consequent secondary impact under carriage injuries which may include *burns from hot exhaust pipe and stains from grease oil etc.*
  3) Secondary injuries : These are caused by person violently falling on ground or on stationary object. These are found *on parts opposite to primary impact or on head.* Injuries due to contact with ground include abrasion and bruises over the face, hand, hips and legs, and laceration over the bony prominences.
  *4)* Rolling/Runover (degloving injuries) : Caused by wheel of vehicle or rolling over the victim. *Children are oftenly involved.*

## 544. Injury resembling endotracheal intubation injuries ?

a) Smothering

b) Hanging

c) Manual strangulation

d) None of the above

Correct Answer - C

Ans. is 'c' i.e., Manual strangulation

Artefacts introduced between death and autopsy due to introduction of artificial airway - endotracheal tube/ laryngoscope:

i. Damage to mouth, lips, gums, palate, teeth, pharynx and larynx - especially in difficult, hurried, emergency situations.

i. Injuries to the larynx, fracture of the hyoid and thyroid corneae - may be difficult to distinguish from manual strangulation.

## 545. Declaration of Oslo deals with ?

a) Human experimentation

b) Therapeutic abortion

c) Euthnasia

d) Hunger strikers

Correct Answer - B
**Ans. is 'b' i.e., Therapeutic abortion** *[Ref Simpsons forensic medicine 13th/e* p. *15]*

## 546. Human experimentation is carried out following?

a) Helisinki declaration

b) Casper dictim

c) Geneva convention

d) Vincent Collins formula

Correct Answer - A
Ans. is 'a' i.e., Helisinki declaration

## 547. Which of the following was added to the Criminal Justice Act 2006 by the 2009 amendment?

a) Directing criminal organization

b) Participating or contributing to organized crime

c) Commission of an offence for criminal organization

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

**Following sections were added to the Criminal Justice Act 2006 by the 2009 amendment ?**

a. Directing criminal organization (Section 71).
b. Participating or contributing to organized crime (Section 72).
c. Commission of an offence for criminal organization (Section 73).

**548. A person undergone appendisectomy. On post op day 10 he died, postmortem patholigst found gossypiboma. It is a case of ?**

a) Homicide

b) Suicide

c) Criminal negligence

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Criminal negligence
A gossypiboma (textilomaor cottonoid) refers to a foreign object, such as a mass of cotton matrix or a sponge, that is left behind in a body cavity during an operation. It is an uncommon surgical complication.
Leaving a piece of gauze piece or abdominal sponge in the body is an act of criminal negligence. In such cases Resp Ipsa Loquitar(fact speaks for itself) applies. *Generally the innocence of doctor is assumed and patient has to establish the guilt.* However, it is not required to prove negligence in case where doctrine of resp ipsa loquitar applies; rather the doctor has to defend himself
Medical negligence act is covered under IPC Sec 304-A IPC.
Sec 304 A IPC pertains to *"Causing death by negligence". It is punishable up to 2 years.* It is applied, usually, in any case of death due to a rash and negligent act, e.g. death caused by rash driving.

## 549. Which is Not a medical negligence act:

a) 37 IPC

b) 304 A

c) 351 IPC

d) 312 IPC

Correct Answer - C
C i.e. 351 IPC

- Medical negligence act is covered under IPC Sec 304-A IPC.
  Sec **304 A IPC** pertains to *"Causing death by negligence". It is punishable up to 2 years.* It is applied, usually, in any case of death due to a rash and negligent act, e.g. death caused by rash driving

## 550. Surgical scissors left in abdomen is covered under which doctrine ?

a) Res ipsaloquitor

b) Medical maloccurance

c) Therapeutic misadventure

d) Novus actusinterveniens

Correct Answer - A
Ans. is 'a' i.e., Res ipsaloquitor

## 551. 412 CrPC is related to?

a) Withdrawal of cases by Session Judge

b) Withdrawal of cases by Judicial magistrate

c) Withdrawal of cases by executive magistrate

d) Reasons to be Recorded

Correct Answer - D
Ans. is 'd' i.e., Reasons to be Recorded
*Section 409 CrPC :* Withdrawal of cases and appeals by Session Judge.
*Section 410 CrPC :* Withdrawal of cases by Judicial Magistrate.
*Section 411 CrPC :* Making over or withdrawal of cases by executive magistrates.
*Section 412 CrPC :* Reasons to be recorded:- A Session judge or Magistrate making an order under section 408, 409, 410 or 411. Shall record his reasons for making it.

## 552. Injury is defined by IPC ?

a) 319

b) 44

c) 321

d) 322

Correct Answer - B

**Ans. is 'b' i.e. 44** ***[Ref Parikh 6$^{th}$ie p. 3.68]***

- Medically, injury is defined as any discontinuity or breach in the anatomy of body.
- Legally, injury is defined as any harm caused illegally to a person, i.e. to his mind, body, reputation or property (Sec 44 IPC).

## 553. IPC 321 deals with 0

a) Definition of hurt

b) Voluntarily causing hurt

c) Definition of grievous hurt

d) Voluntarily causing grievous hurt

Correct Answer - B
Ans. is 'b' i.e., Voluntarily causing hurt

## 554. All sections of IPC are related to grievous hurt, *except*
*NEET* 14

a) Sec. 320

b) Sec. 331

c) Sec. 326

d) Sec. 319

Correct Answer - D
Ans. d. Sec. 319
319. Hurt.—Whoever causes bodily pain, disease or infirmity to any person is said to cause hurt.

**555.**

## Hostile witness is covered under IPC section ?

a) 191

b) 192

c) 193

d) 194

Correct Answer - A
Ans. is 'A' i.e., 191.

- Hostility is one form of perjury.
- A hostile witness is one who's provided an eyewitness account of a criminal event or other information to help the prosecution build a case, but has later turned in court, giving a different version of events or contradictory information.
- A witness is termed hostile, when he gives a certain statement on his knowledge about commission of a crime before the police but refutes it when called as witness before the court during trial.
- IPC 191 – Giving false evidence (Perjury)

## 556. IPC 314 deals with ?

a) Causing miscarriage with consent

b) Death of patient caused by miscarriage

c) Death of child during miscarriage

d) Abondoning the child

Correct Answer - B

**Ans. is 'b' i.e., Death of patient caused by miscarriage**

**Offences related to abortion and child birth**

- *312 , 313, 314 and 315 IPC :* For causing *voluntary miscarriage (criminal abortion).*
- *312 IPC :* Causing miscarriage with consent (3 years of imprisonment ± fine).
- *313 IPC :* Causing miscarriage without consent of lady (10 years of imprisonment which can extend up to life ± fine).
- *314 IPC :* Death of patient caused by miscarriage (10 years of imprisonment + fine).
- *315 IPC :* Death of child during miscarriage (10 years imprisonment + fine).
- *316 IPC :* Death of quick unborn child by act amouting to culpable homicide (10 years imprisonment + fine).
- *317 IPC :* Abandoning a child (7 years imprisonment ± fine).
- *318 IPC :* Concealment of birth by secret disposal of dead body (2 years imprisonment + fine).

**557.**

## Punishment for criminal abortion for the women who gives consent and the performer are covered under IPC section ?

a) 312

b) 313

c) 314

d) 315

Correct Answer - A
Ans. is 'a' i.e., 312
Punishment for performing criminal abortion with the consent of women; both for the women and performer is included in IPC Section 312.

## 558. Quantum of punishment in dowry death is ?

a) 7years

b) 5 years

c) Death

d) 10 years

Correct Answer - D
Ans. is 'd' i.e., 10 years

- 304-B IPC: Dowry death : 10 years of imprisonment which can extend to life.
- 498-A IPC : Punishment for cruelty by husband or his relatives.

**Dowry death**

- In some cases newly married girls are abused, harassed, cruelly treated and tortured by the husband, in-laws and their relatives for or in connection with any demand for dowry. In extreme cases, the woman is killed by burning or some other method. Law in relation to dowry death are :

**Low prescribing punishment and definition (section 304 B IPC)**

- Husband or (his any) relative will be tried under section 304B, IPC and shall he deemed to have caused her death, if a woman dies due to bodily injury or burns or otherwise in suspicious circumstances with in 7 years of marriage and it is shown that soon before her death she was subjected to harassment or cruelty by them, in connection with, any demand for dowry. Such death shall be called dowry death. Punishment includes imprisonment of not less than 10 years, but which may extend to life imprisonment'.

**Low prescribing punishment for causing cruelty to a married women (Sec. 498A, IPC)**

Husband or (his any) relative will be tried under section 498A, IPC for causing cruelty to a married woman. Cruelty is defined as any willful conduct which drives the woman to commit suicide or grave physical or mental injury to her or harassment of the women with a view to coerce (intimidate) her for dowry. Punishment includes imprisonment which may extend upto 3 years and fine.

## 559. Following is not true regarding summons ?

a) It is a legal document

b) No conduct money is paid to the doctor in criminal cases

c) Section 61 - 69 CrPC deal with summons

d) None of the above

Correct Answer - D
**Ans. is 'd' i.e., None of the above**
**All are true.**
**Summon**

- Summon is a legal document compelling attendance of a witness in a court of law under penalty, on a particular day, time and place, for the purpose of giving evidence. It is issued by the Court in writting, in duplicate, signed by presiding officer of court and bears the seal of the court.
- Conduct money refers to the travelling and daily expences to reach the court. In civil cases, it is paid by the party calling him, at the time of serving the summon. Judge decides the conduct money in civil case. The summon in civil case can be ignored if conduct money is not sanctioned or if the amount is less, and the witness can bring the fact to notice of judge. In criminal cases, no money is paid along with summon. The witness can ask for it, after giving evidence, but he should not insist if the court is not willing to sanction, since otherwise he can be charged for *contempt of court.* To an independent doctor it is always paid (known as bhatta), while the doctor in government service, can claim from his office.
- In case, two or more summons are received for the same date and time, the principles for preference of summon are:

1. *Criminal case is preferred over civil case.*
2. *If both cases are criminal/civil, summon from higher court is preferred.*
3. *If both cases are criminal/civil and from court of same status, summon received earlier is preferred.*

However, in each situation other court is informed accordingly.

**560.**

**Punishment for rape is given under which section of IPC:**
***TN 09; FMGE 10; AI 10; Kerala 11***

a) Sec. 320

b) Sec. 375

c) Sec. 376

d) Sec. 351

Correct Answer - C
Ans. C. Sec. 376

## 561. Punishment for issuing false certificate?

a) 4 years

b) 5 years

c) 6 years

d) 7 years

Correct Answer - D
Ans. is 'd' i.e., 7 years
Issuing false certificates - issuing false, ficticious, back date certificates is an offense under section 197 IPC. Punishment is 7 years + fine.
Patient using such a certificate is punishable under section 198 IPC.

## 562. Professional misconduct ?

a) Selling drugs

b) Dichotomy

c) Issuing false certificate

d) All of the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

**There is no fixed list of conduct constituting professional misconduct, however some important examples are :?**

i. Criminal abortion
i. Treating the patient in drunk state
i. Unnecessory advertisement
v. Adultery
v. Being drug addict
i. Dichotomy (fee-sharing)
i. Avoiding consultation on religious ground viii)Issuing false certificates
i. Association with drug manufacturing firms
x. Assisting unquilified person (covering)
x. Appointing unquilified staff
i. Keeping agents to get patients
i. Neglet of patient or not attending emergency
i. Selling drugs or instruments
v. Wrong investigation or treatment
v. Not explaning the prognosis
i. Experimentation on patient.

- As per Code of Medical Ethics by MCI, every physician shall maintain the medical records of indoor patients for a period of 3

years from the date of commencement of the treatment in a standard prescribed format. If any request is made either by the patients/authorized attendants or legal authorities involved, the records shall be issued within 72 hours. If the medical records are not issue, it amounts to misconduct.

- As per MCI (3 letter word) medical record to be stored for 3 years and give within 3 days (72 Hours)

## 563. IPD records of patients are preserved for how many years ?

a) 1 year

b) 3 years

c) 5 years

d) 7 years

Correct Answer - B
Ans. is 'b' i.e., 3 years
Medical Council recommends that the medical records of the indoor patient to be aintained for atleast a period of 3 years from the date of commencement of treatment.

## 564. Legal age of consent is ?

a) 10 years

b) 12 years

c) 14 years

d) 18 years

Correct Answer - D
Ans.:D.)18 years.
India's legal age of consent and marriage is 18 years.

## 565. Doctors role in noting dying declaration is to ?

a) Ascertain compos mentis

b) Call the magistrate

c) Elicit information by leading questions

d) Ask the investiating medial officer to be there

Correct Answer - A

**Ans. is 'a' i.e., Ascertain compos mentis**

**Dying declaration**

- It is the written or verbal statement made by a person likely to die because of some unnatural act done on his body, narating the circumstances or the conditions responsible for his present state of health or the cause and manner of likely unnatural death.
- Ideally dying declaration should be recorded by executive or honorary magistrate, but can also be recorded by doctor, village head man, police or any other person, if there is no time to call a magistrate. Doctor has to certify the patient to be *compos mentis* (sound mind). It is recorded in presence of two disinterested witnesses. Relatives and police officers are not allowed to be present. No oath is administered.
- *It carries less weight than dying deposition* as no cross-examination is possible. If the patient does not die after the recording of declaration, the dying declaration loses its importance sice now he can be called to the court and his evidence can be recorded after cross-examination.

## 566. In India, magistrate inquest is done in the following cases, EXCEPT:

a) Exhumation cases

b) Murder cases

c) Dowry deaths within 5 years of marriage

d) Death of a person in police custody

Correct Answer - B

Police inquest is made by sub inspector of police (S.174,CrP.C). Police inquest is made in cases of suicide, murder, death caused by animal or machinery or by an accident.

**Magistrate's Inquest** is done by a District magistrate, Subdivisional magistrate, Tahsildar or any other Executive magistrate especially empowered by the state government. It is considered to be superior to police inquest.

Ref:The Essentials of Forensic Medicine and Toxicology By Dr KS Narayan Reddy, Pages 4-5

**567. All are related to criminal responsibility of insame except ?**

a) Currens rule

b) Durhan rule

c) Mc Naughten rule

d) Resp ispa loquitar

Correct Answer - D
Ans. is 'd' i.e., Resp ispa loquitar

## 568. Ligature material in case of hanging is kept preserved as ?

a) Ligature knot is opened completely

b) Ligature is cut at the knot?

c) Ligature is cut away from the knot

d) Ligature knot is loosened

Correct Answer - C
Ans. is 'c' i.e., Ligature is cut away from the knot
For removal and preservation of the ligature from the dead body in case of hanging it is cut away from the knot and the cut ends are tied with string or wire.

## 569. Strangulation by keeping neck between angle of elbow ?

a) Burking

b) Smothering

c) Mugging

d) Gagging

Correct Answer - C

**Ans. is 'c' i.e., Mugging**

Strangulation is the form of asphyxia caused by *constriction of neck* by ligature or some other method, but *without suspension of the body.* So the force constricting the neck is external force (not the weight of the body as occurs in hanging).

**Depending upon the method used to constrict the neck, strangulation can be divided into :**

i. Ligature strangulation : Neck is compressed by a ligature of which usually multiple rounds are given and no knot is tied.
i. Throttling (manual strangulation) : Neck is compressed by one or both hands. When neck is compressed by two palms, it is known as palmar strangulation.
i. Bansdola : Compression of neck with *one or two wooden sticks or bamboo.*
. Garrotting : It is compression of neck by a *rope thrown from behind.* Spanish windlass is a type of garrotting, which used to be the official mode of execution in spain. In this, an iron collor around the neck was tightened by a screw for strangulation.
. Mugging (choke hold) : It is compression of neck by forearm or in the bend of elbow.
i. Strangulation by knee/foot : In this, neck is compressed by knee or

foot.

## 570. All of the following can cause traumatic Asphyxia, except ?

a) Railway Accident

b) Road Traffic Accident

c) Accidental strangulation

d) Stampede in crowd

Correct Answer - C
Ans. is 'c' i.e., Accidental strangulation
Traumatic asphyxia : It is a form of asphyxia which is caused from *respiratory arrest due to mechanical fixation of chest* resulting from blunt trauma to chest or external pressure on the chest, abdomen or back which prevents normal respiratory movements of the chest wall. It may be due to :?
a) Stampede in crowd (riot crus or human pile death).
b) Crush by heavy object e.g. (i) road traffic accident, (ii) railway accident, (iii) overturn of tractor in farm and (iv) fall of earth, stone etc. in mine or in a building collapse

## 571. On external examination the classical presentation of the body of traumatic asphyxia is?

a) Facial abrasions

b) Contused chest

c) Masque ecchymotique

d) Depressed chest

Correct Answer - C

**Ans. is 'c' i.e., Masque ecchymotique**

**The characteristic external findings in case of traumatic asphyxia are :**

i) Mosque ecchymotique refers to the classical appearance of ?

a. Florid red or blue congestion of face and neck with variable involvement of the upper thorax, back and arms.

b. Deep cyanosis of face.

c. Numerous petechial hemorrhages or ecchymotique.

d. *Demarcation line :* Level of compression is indicated by a well-defined demarcating line between the discolored upper portion of body and the lower normal part.

ii) Areas of pallor seen at the level of collar of shirts, folds or creases in the garments.

iii) Facial edema.

iv) External blunt trauma injuries can be seen on the head, neck and chest along with most or other foreign material.

## 572. Judicial Hanging causes

a) C2-3 fracture dislocation

b) C4-5 fracture dislocation

c) C6-7 Fracture dislocation

d) None of the above

Correct Answer - A
**Ans. is 'a' i.e., C2-3 fracture dislocation**
**<u>Judicial hanging</u>**
In india, legal death sentence is carried out by hanging the criminal. Placement of knot beneath the chin *(submental position) is* thought to be most effective, ensuring a quicker death. However some prefer side of neck (left sub aural i.e. below angle of jaw) knot.
The preson is allowed to drop for 5-7 meters according to the weight, age and build of the person. Sudden stop causes fracture dislocation usually at level of $C_2$-$C_3$ or $C_3$-$C_4$ vertebra, and injury to spinal cord and brainstem (pons and medulla).

## 573. Ist molar tooth appears at age of ?

a) 6 - 7 months

b) 8 - 9 months

c) 10-11 months

d) 12 - 13 months

Correct Answer - D
Ans. is 'd' i.e., 12 - 13 months

## 574. Cephalic index of negros ?

a) 85-90

b) 80-85

c) 75-80

d) 70-75

Correct Answer - D
Ans. is 'd' i.e., 70-75

## 575. Which of the following is not abrasion?

a) Graze

b) Scratches

c) Impact

d) Avulsion

Correct Answer - D

**Ans. is d i.e., Avulsion**

**Types of abrasion are : ?**

1) Scratches (linear abrasion) : It is an *abrasion with legnth* but no significant width produced by a sharp object e.g., pin, needles, knife, thorn and nail etc. Point scratch is a very superficial incision produced by a sharp or pointed object not sharp enough to incise but pointed enough to produce scratch.

2) Grazes (Sliding abrasion/scraping abrasion/grinding abrasion) : It is the most common type of abrasion, produced when a broad surface of skin slides against rough surface, e.g., during vehicular accidents. Injury is due to friction. The surface of injury show irregular parallel lines, i.e., furrows or grooves. A violent lateral graze, due to rubbing of skin (as in dragging) is known as brush burn (Gravel rash). Friction burn (Scuff or brush abrasion) occur due to tangential contact with a smooth surface or when the skin is covered by clothing. It is an extensive superficial, reddened excoriated area without bleeding and with little or no linear mark.

*3)* Pressure abrasions (crushing or friction abrasions) : Though it is called friction abrasion, it results from pressure of the object on the body *with no or little friction* (it is a misnomer). It is caused by crushing of superficial epidermis due to inward directed movement of object at around 90° to skin. Example are ligature marks in

hanging/strangulation, *teeth bites and nail marks.*

4) Impact abrasion (Imprint or contact abrasion) : It is caused by impact (but not pressure) with a rough object, when the force is applied at or near 90° to skin surface. It is depressed below surface unless associated with contusion (bruise).

## 576. Black eye is a type of?

a) Patterend abrasion

b) Ectopic abrasion

c) Ectopic bruise

d) Friction abrasion

Correct Answer - C
Ans. is 'c' i.e., Ectopic bruise
Site of bruise is at the site of impact most of the time however it may be away from the site of impact due to gravity shifting of blood, i.e., ectopic bruise. So, *site of bruise does not always indicate site of violence.* o Example of ectopic bruise are : -
Black eye (or spectacle hematoma in eyes & eyelids) may be due to *fracture offloor of anterior cranial fossa* or trauma of forehead (and rarely due to direct trauma).
*Bruise behind ear indicates basal fracture* (rather than a direct blow).
Jaw fracture may produce bruise in neck; fracture pelvis my produce bruise in thigh; fracture femur may produce bruise in lower thigh or above knee; Calf injury may produce bruise in ankle.

## 577. Smokeless gun powder is composed of ?

a) $KMnO_4$

b) HCN

c) Nitrocellulose

d) Sulphur

Correct Answer - C
Ans. is 'c' i.e., Nitrocellulose

- *Smoke producing powder :-* Black powder (black gun powder), Pyrodex.
- *Smokeless powder :-* Black powder plus nitrocellulose/nitrocellulose + nitroglycerine/nitroglycerine + nitrocellulose
- nitroguanidine.
- *Semismokeless powder :-* 80% black powder plus 20% smokeless powder.

## 578. Dumdum bullet false is ?

a) Also called expanding bullet

b) Produce deep penetration

c) Produce large diameter wounds

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Produce deep penetration
Dum-dum bullets produce limited penetration:
*Dum-dum bullet (expanding bullet) :* It is a jacketed bullet with is *nose tip chiseled or cut off.* It is designed to *increase in diameter and expand upon striking* the target, thus producing larger diameter wounds of limited penetration.

## 579. Fracture ala signature is a type of ?

a) Gutter fracture

b) Depressed fracture of skull

c) Ring fracture at foramen magnum

d) Sutural separation

Correct Answer - B
Ans. is 'b' i.e., Depressed fracture of skull
Fracture -ala-signature / signature fracture is also known as depressed fracture of skull vault.
Depressed fracture (signature fracture or fracture-ala signature) :It caused by a heavy weapon with a small striking surface, e.g. hammer which causes a piece of skull bone to get depressed into the cravial cavity.

## 580. Organs mostly involved in blast injury ?

a) Solid organs

b) Hollow viscus

c) Skeletal system

d) Muscles

Correct Answer - B
Ans. is 'b' i.e., Hollow viscus
There is barotrauma to *air filled hollow organs.*

## 581. Second injury in an explosion is due to ?

a) Due to flying debris

b) Due to blast wind

c) Due to shock wave

d) Due to complication

Correct Answer - A
Ans. is 'a' i.e., Due to flying debris

## 582. Grievous hurt include the following except

a) Emasculation

b) Permanent privation of hearing

c) Privation of any member/joint

d) Disability to follow one's ordinary pursuits for a period of a week

Correct Answer - D

**Ans. is 'd' i.e., Disability to follow one's ordinary pursuits for a period of a week**

**Grievous injuries are :?**

1. Emasculation (cutting of the penis, castration; or causing loss of power of erection due to spinal injury).
2. Permanent privation of the sight of either eye.
3. Permanent privation of the hearing of either ear.
4. Privation of any member (part, organ, limb) or joint.
5. Destruction or permanent impairing of powers of any member or joint.
6. Permanent disfiguration of head or face.
7. Fracture or dislocation of a bone or a tooth.
8. Any hurt which endangerous life or which causes the sufferer to be, during the space of twenty days in severe bodily pain, or unable to follow his daily routine.

## 583. Duret hemorrhage is seen in?

a) Brain

b) Brain stem

c) Eye

d) Medulla

Correct Answer - B
Ans. is 'b' i.e., Brain stem
Duret hemorrhage is small areas of bleeding in the ventral and paramedian parts of the upper brain stem.
Causes include acute trauma, edema following trauma, abscess or tumor

## 584. In which organ putrefaction is late ?

a) Pancreas

b) Brain

c) Prostate

d) Intestines

Correct Answer - C
Ans. is 'c' i.e., Prostate
Order of putrefaction
Order of appearance of putrefaction from earliest to last is *:larynx, trachea > stomach, intestine > spleen, liver> brain, lungs > heart > kidney, bladder > uterus/prostate > bone.*
Amongst the soft tissues uterus in femaleand prostate in males are last to undergo putrefaction, as uterus and prostate resist putrefaction. Otherwise bones are last to undergo putrefaction, overall

## 585. Greenish discoloration of the body first seen in the right iliac fossa after death is due to formation of ?

a) Sulph hemoglobin

b) Meth hemoglobin

c) Sulph - meth hemoglobin

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Sulph - meth hemoglobin**

**Signs of putrefaction**

**The signs and effects of putrefaction are as follows *:?***

*1. Colour changes*

- The *earliest sign* of decomposition is greenish discoloration of body, seen in right iliac fossa externally and under liver internally. This is due to involvement of caecum. Which contains more liquid and is full of bacteria. In these areas, it appears *in 12-18 hours* and slowly spreads to *whole body in 24-48 hours. Greenish discoloration is due to formation of sulph-meth-haemoglobin.*
- *Morbling* occurs when Hb dissociates from RBCs and the colour of Hb is taken up by vessels, which are seen as prominent lines having purple or green or brown colour. Marbling occurs in 24-48 hours.

2. Formation of foul smelling gases

- Due to action of bacteria, foul smelling gases are formed, e.g. SO, , $H_2S$, ammonia, methane and CO2.

3. Effects of gases

- Bloating up of body occurs in *34-48 hours.* At the same time following changes occurs :

i) Appearance of stomach contents and froth on nose and mouth

i) Appearance of stomach contents and froth on nose and mouth.
ii) Degloving and destocking with appearance of putrefactive blisters.
iii) Emptying of heart due to pressure of gas.

- In *48-72 hours* prolapse of rectum and uterus occur and postmortem delivery may occur if the dead woman is pregnant. Color of postmortem staining also changes to brown and finally to black. False rigidity (putrefactive rigidity) may occur at this time.

4. Appearance of maggots

- Flies lay their eggs in wounds, exposed natural orifices and exposed moist parts of the body and folds of skin, e.g. neck, axilla, nostrils, mouth etc. Flies lay eggs in 6-12 hours after death and these eggs change in larva (maggot) in 1-2 days. Thus maggots appear in 2-3 days after the death. After further 4-5 days, the maggots change into pupa, which convert into adult flies in next 3-5 days. Thus *adult flies will be coming out of the body after total 8-12 days of death.* Thus appearance of maggot determine the time since death.

*5.* Other late changes

- *In 3-5 days :* Nails and teeth become loose and can be pulled out, sutures of skull may separate.
- *In 7-12 days :* Liquefaction of body (colliquative putrefaction) occurs.
- *In 1-3 months :* Skeletonization of dead body occurs.
- *Finally :* Bones also decompose : Exposed bones in 1-5 years and deep burried bone (> 2 meters) in 25-100 years.

6. Internal changes

- Liver becomes spongy and is called as foamy or *swiss cheese* or honeycombed liver.
- In 7-12 days lequefaction of internal organs occur.

*7. Floatation of body (if body is in water)*

- Floatation of body occurs due to *occumulation of sufficient putrefactive gases.* Abdomen is above (due to gases) and spine is below during floatation. Time required for floatation is ordinarily 24 hours after death in summers and 2-3 days in winter. Factors affecting floatation are :-

*i) Causing early floatation :* Newborn mature infant, females, in summer, clothed body, obese, in sea water and in still pond water.
*ii) Causing delayed floatation :* Still birth/immature newborn, male, in winter, naked body, thin built, in fresh water and in running stream

water.

- Inspiration and expiration before death has no effect on floatation as floatation is due to putrefactive gases (not due to respiratory air).

## 586. Algor mortis is ?

a) Rise of body temperature after death

b) Cooling of body

c) Persistent body spasm

d) None

Correct Answer - B

**Ans. is 'b' i.e., Cooling of body**

**ALGOR MORTIS**

After death, dead body behaves like an inert substance and therefore, if atmospheric temperature is low, *body loses its heat by conduction, covection, radiation and evoporation,* so as to attain the atmospheric temperature, i.e. the body cools. No cooling of dead body occurs if atmospheric temperature is higher than that of body.

**Cooling of body *starts 1/2 to 1 hour after death.* There are varying opinions about rate of cooling of dead body:**

i) *Most widely accepted view is that the rate of cooling in india (tropical countries) is 0.5-0.7° C/hour, so that body attains atmospheric temperature in 16-20 hours after death.* In temperate climate, the rate of fall is about 1.5° C/hour.

ii) As per another view, cooling is faster in initial period, when the temprature difference between body and atmosphere is maximum ?

a. First 30-45 minutes —> No temperature fall *(isothermic phase).*
b. First 1-6 hours —4 1.5-2° C/hour.
c. 6-12 hours 0.9-1.2° C/hour.
d. After 12 hours ---> 0.4-0.6° C/hour.

iii) Rate of cooling is related to *difference in temperature and its surroundings (environment).* In the first 2 hours average rate fall of temperature is roughly half this difference. In next 2 hours the

temperature fall is at half this rate and in subsequent 2 hours, at quarter this rate.
iv) Most common site for recording temperature is the rectum. Thermameter is inserted in rectum around 8-10 cm for 2 minutes. Other sites for recording temperture are *nose, ear (external auditory meatus), vagina and under liver.*
Medicolegal importance of algor mortis -
i) It is a sign of death.
*ii)* Time since death may be determined and *and algor mortis is the most important indicator to determine the time since death during first 24 hours.*

## 587. Minimum age at which female can give consent for sex by what age ?

a) 15 yrs

b) 18 yrs

c) 16 yrs

d) 21 yrs

Correct Answer - B
Ans:B.)18 years.
Explanation:
The Criminal Law (Amendment) Act, 2013:
The age of consent in India has been increased to 18 years, which means any sexual activity irrespective of presence of consent with a woman below the age of 18 will constitute statutory rape.

**588. Which of the following is used in rape victims to determine of rupture of hymen and whether rupture is recent or old ?**

a) Glaister Keene Rods

b) Gaba Rod

c) Gram Rod

d) Cylinder Rod

Correct Answer - A

**Ans. is 'a' i.e., Glaister Keene Rods**

**Glaister Keene Rods**

Glaister Keene Rods may be used to determine degree of rupture of hymen and whether the rupture is recent or old. These rods are bent at 150 degrees at one end.

i) These are used for close examination of the hymen.

ii) These are glass or plastic rods with a diameter of 5 mm having a globe at one end and varying in size from one to two and half cm.

iii) The rod is warmed to body temperature and passed through the hymental orifice, spherical head first.

iv) Then it is passed round the posterior surface of hymen, which is slightly stretched by separation of labia minora. In this way, the edges of the hymen become slightly everted. By slowtly rotating the sphere around the edges, natural notches are easily differentiated from tears, recent or old.

v) This method does not cause pain or injury.

## 589. Statutory rape is:
***TN 10***

a) Rape of an insane woman

b) Rape of another person's wife

c) Rape in police custody

d) Rape of < 18 years old girl

Correct Answer - D
Ans. Rape of < 18 years old girl

## 590. All of the following are indications of doing medical termination of pregnancy except ?

a) Pregnancy from rape

b) Substantial risk of delivering seriously handicapped baby

c) Very poor socio economic position of the family

d) Injury to physical and mental health of the pregnant women

Correct Answer - C

**Ans. is 'c' i.e., Very poor socio economic position of the family**

**<u>The conditions under which a pregnancy can be terminated under the MTP Act.1971</u>**

- There are 4 conditions that have been identified in the Act :

a. *Medical :-* Where continuation of the pregnancy might endanger the mother's lifeor cause grave injury to her physical or mental health.

b. *Eugenic :-* Where there is substantial risk of the child being born with serious handicaps due to physical or mental abnormalities.

c. *Humanitarian :-* Where pregnancy is the result of rape.

d. *Failure of contraceptive devices :-* The anguish caused by an unwanted pregnancy resulting from a failure of any contraceptive device or method can be presumed to constitute a grave mental injury to the health of the mother. This condition is a unique feature of the Indian law and virtually allows abortion on request, in view of the difficulty of proving that a pregnancy was not caused by failure of contraception.

## 591. Following is not a sexual perversion ?

a) Sadism

b) Masochism

c) Undinism

d) Bestiality

Correct Answer - D
Ans. is d i.e., Bestiality

## 592. Penile buccal coitus is ?

a) Sadism

b) Fetichism

c) Fellatio

d) Cunnilingus

Correct Answer - C
Ans. is 'c' i.e., Fellatio
**Buccal coitus (coitus per as/sin of gomorrah)**

- In this, the male organ is introduced into mouth, usually of a young child.
- Fellatio is oral stimulation of penis by male or female.
- Cunnilingus is oral stimulation of female genitals.

## 593. Which of the following should not be done while dealing with a patient of snake bite ?

a) Tight band applied

b) Reassuarance

c) Local incision

d) Clean with soap and water

Correct Answer - C

**Ans. is 'c' i.e., Local incision**

**Treatment of snake bite**

- Reassurance should be given to patient.
- Application of pressure over bitten area which delays absorption of venom.
- Tie a broad firm bandage (tourniquet) proximal to the bitten area and around the limb which would occlude venous and lymphatic drainage but not arterial or deep venous flow.
- Limb immobilization.
- Local incision and suction should not be done as it can cause local injury and nerve damage.
- Clean the wound with soap and water or iodine and cover with sterile dressing.
- Polyvalent snake antivenom is given. However it is given only in following situations :

i. Rapidly progressive and severe local findings.
i. There are manifestations of systemic toxicity.

## 594. Chelating agent used in mercury poisoning is

a) Calcium disodium edetate

b) Desferrioxamine

c) Penicillamine

d) BAL

Correct Answer - D
Ans. is 'd' i.e., BAL

## 595. Ilio-Pectineal line is used to determine difference in ?

a) Sex

b) Race

c) Age

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., Sex

## 596. Speedball is -

a) Opioid + cocaine

b) Opioid + antihistaminic

c) Cocaine + alcohol

d) Cocaine + marijuana

Correct Answer - A
Ans. is 'a' i.e., Opioid + cocaine
A combination of cocaine and heroin (opioid) taken by injection is called speed ball.

## 597. Following are the features of chronic arsenic poisoning except ?

a) Emaciation

b) Conjunctivitis running nose

c) Black pigmentation of skin

d) Sensory motor polyneuropathy

Correct Answer - C

Ans. is 'c' i.e., Black pigmentation of skin

There is patchy brown (not black) pigmentation of skin.

**Chronic arsenic poisoning has four stages :**

1. First stage (nutritional and gastrointestinal disturbances) : The *earliest sign is gradual emaciation.* There is loss of appetite, nausea and intermittent vomiting and diarrhea.
2. Second stage (catarrhal changes) : It resembles common cold, i.e. conjunctivitis, running nose and eyes, coughing etc.
3. Third stage (skin rash) : There is classical 'rain drop pigmentation', i.e. patchy brown pigmentation of skin. At initial stages, there is *a vesicular eruption* which may resemble nettle rash. Hyperkeratosis of palms and soles occur. There are white transverse bands crossing the nails, known as Mee's line, and indicate periods of arrested growth due to interference with normal metabolism. There is alopecia and exfoliative dermatitis.
4. Fourth stage (nervous disturbances) : There is sensory and motor (i.e. mixed) polyneuropathy, with painful paresthesia of hands and feet and muscle tenderness.

## 598. Following are the post mortem findings in carbon monoxide poisoning except ?

a) Froth at mouth and nose

b) Blue skin discoloration

c) Basal ganglia cavitation

d) Congested lungs

Correct Answer - B

**Ans. is 'b' i.e., Blue skin discoloration**

**Postmortem findings of CO-poisoning**

- Fine froth at mouth and nose.
- *Bright cherry red discolouration of skin, mucous membranes, nail-beds, blood, tissues and internal organs. Cyanide poisoning and exposure to cold causes similar redness.*
- *Blood is fluidish thin, hyperemia (congestion) is general, and serous effusion are common.*
- Skin blisters or red patches due to hypoxia in areas that contact the ground or appositional skin e.g. axilla, inner thigh, buttock, calves, knee.
- Lungs show congestion with pink fluid blood, followed by pulmonary edema and bronchopulmonary consolidation.
  Pleural and pericardial anoxic haemorrhage, tiny focal necroses in myocardium are late changes (5 days).
- Bilateral *symmetrical necrosis and cavitation of basal ganglia (esp globus pallidus and putamen) is most characteristic feature in delayed deaths* (prolonged hypoxia) may be confused with PM finding of parkinsons patient. Although cerebral cortex, cerebellum, hippocampus and substantia nigra of brain stem may also be affected. *Ring shaped punctiform haemorrhage* in white matter, wide

spread brain oedema, punctate haemorrhage in meninges, cortex and *cellular necrobiosis* of ganglionic cells in cortex are other features.

- Spectroscopic examination, *Hoppe - Seyler's test* (10% NaOH), *kunkel's (tannic acid) test* and adding water (15 ml) in 2 drops of blood can detect CO.

## 599. Parkinsonism like features are evident in surviving patients of which poisoning ?

a) CO

b) $CO_2$

c) $H_2S$

d) $N_2O$

Correct Answer - A
Ans. is 'a' i.e., CO

- In persons surviving after severe Carbon monoxide exposure and in delayed deaths from carbon monoxide poisoning bilateral symmetrical necrosis and cavitation of the basal ganglia in the brain, especially the putamen and globus pallidus, is the most characteristic lesion.
- This is similar to the degenerative findings seen in parkinsonism and thus patient with CO exposure may develop features of parkinsonism

**600. Blood examination of a worker in a welding factory shows presence of anemia and basophilic stippling. What should be suspected diagnosis ?**

a) Chronic Lead poisoning

b) Mercury poisoning

c) Copper poisoning

d) Arsenic poisoning

Correct Answer - A

Ans. is 'a' i.e., Chronic Lead poisoning

The patient works in welding factory and is in continuous contact with lead. Blood examination showing anemia and basophilic stippling are consistent with lead poisoning. So the suspected diagnosis is lead poisoning.

**Chronic Lead poisoning**

**It is characterized by :**

*i)* Facial pallor particularly around the mouth is one of the *earliest and most consistent feature.*

ii) Anemia with punctate basophilia (basophilic stippling) is also an early feature. There is reticulocytosis, poikilocytosis, anisocytosis, sideroblasts and eosinophilia.

iii) Burtonian line (stippled blue line) is seen on the gums on upper jaw. Similar blue line is also seen in poisoning with mercury (Hg), copper (Cu), silver (Ag), Bismuth (Bi) and iron (Fe).

iv) Colic (abdominal pain) and constipation (dry belly ache) : is a late manifestation.

v) Encephalopathy is more in children and in poisoning with

tetraethyl lead.
vi) Paralysis in the form of wrist and foot drop is a late manifestation, called lead palsy and is due to peripheral neuropathy. It occurs only in less than 10% of cases.
vii) Renovascular manifestations (nephropathy) : Hypertension, arteriolar degeneration and arteriosclerotic nephritis may occur. Rarely, lead poisoning may cause proximal tubular necrosis.
viii)Other features include optic atrophy, CVS and reproductive anomalies.

**Investigations include :**

A) Blood tests : (1) > 200 punctate basophilic stippling cells per $mm^3$ is diagnostic; (2) zinc protoporphyrin and free erythrocyte protoporphyrin > 50 mg/100 ml; and (3) increased lead and aminolaevulinic acid (> 25 mg/100 cc).
*B)* Urine tests : (1) Increased coproporphyrin (CPU) levels, *of 0.25 mg/L of lead is diagnostic.*
C) X-ray : (1) Radioopaque matter in GIT (if ingested within 48 hours), and (2) radioopaque lines at metaphysis oflong bones in children.
Calcium disodium edetate is *specific antidote* for treatment of lead poisoning.

## 601. Laughing gas is ?

a) $N_2O$

b) Lewisite

c) $H_2S$

d) $CO_2$

Correct Answer - A
Ans. is 'a' i.e., $N_2O$

## 602. Latte's crust method is used for ?

a) Species seminal stain

b) Nature of seminal stain

c) Species of blood stain

d) Blood grouping of blood stain

Correct Answer - D
**Ans. is 'd' i.e., Blood grouping of blood stain**
Detection of blood group of blood stain
**These tests are :**
*1) Immunological (serological) :*
i) *Aborption-elution test,* ii) *Absorption-inhibition test,* iii) Mixed agglutination test, iv) Latex test
*2) Enzymological methods.*
*3) Latte's crust method.*

## 603. Burnt rope smell is due to poisoning of ?

a) Cannabis

b) Chloral hydrate

c) Bhang

d) Charas

Correct Answer - A

**Ans. is 'a' i.e., Cannabis**

**<u>Odors associated with poisoning</u>**

- *Garlik like :* Phosphorus, arsenic, zinc phosphide, aluminium phosphide (celphos), arsine gas, tellurium, parathion, malathion, arsenic.
- *Rotten eggs :* Hydrogen sulphide, mercaptans, disulphiram.
- *Fishy or musty :* Zinc phosphide. o *Bitter almonds :* Cyanide, HCN.
- *Acrid :* Paraldehyde, chloral hydrate. o *Burnt rope :* Cannabis.
- *Kerosene like :* Kerosene and organophosphates.
- *Phenolic smell :* Carbolic acid.

## 604. Colour of crystals in postive florence test is ?

a) Yellow

b) White

c) Purple

d) Dark brown

Correct Answer - D
**Ans. is 'd' i.e., Dark brown**
**Florence Test**

- It is the chemical test for identification of semen in stains.
- The satin is extracted by 10% HCl and drop is placed on the glass slide and allowed to dry.
- A cover slip is placed over this and a drop of Florence solution (Potassium iodide, iodine and water) is allowed to run under the cover slip.
- If semen is present dark brown crystals of choline iodide appear immediately. They are rhombic or needle shaped crystals resembling haemin but are larger and arranged in clusters, rosettes, crosses etc.
- Choline originates from the seminal vesicles.
- Positive test is not a proof of seminal fluid, but only the presence of some vegetable or animal substance.
- A negative reaction is a proof that the stain is not seminal.

## 605. To notify a slide as AFB negative minimum how many fields should be checked? ?

a) 20

b) 100

c) 50

d) 200

Correct Answer - B
Ans. is `b' i.e., 100

| Number of bacilli | Results reported |
|---|---|
| No. AFB per 100 oil immersion fields<br>** ** | **0** |
| 1-9 AFB per 100 oil immersion fields<br>** ** | Scanty (or number AFB seen) |
| 10-99 AFB per 100 oil immersion fields | (1+)<br>** ** |
| 1-10 AFB per oil immersion fields | ++ (2+)<br>** ** |
| > 10 AFB per oil immersion fields<br>**** | +++ (3+) |

## 606. Genus neisseria is ?

a) Gram positive diplococci

b) Gram negative diplococci

c) Gram negative coccobacilli

d) Gram positive bacilli

Correct Answer - B
Ans. is 'b' i.e., Gram negative diplococci
The genus Neisseria consists of Gram negative aerobic nonsporulating, non motile oxidase positive cocci typically arranged in pairs (diplococci).

## 607. Antibiotic used to for sensitivity in identification of streptococcus pyogenes?

a) Bacitracin

b) Novobiocin

c) Penicillin

d) Optochin

Correct Answer - A
Ans. is 'a' i.e., Bacitracin
Senstivity to bacitracin is employed as a convenient method for differentiating str. pyogenes from other hemolytic streptococci (Maxted's observation).

## 608. Lancefield classification of beta hemolytic streptococci is based on ?

a) Protein percent

b) Cell wall carbohydrate antigen

c) Cell membrane M protein

d) Hemolytic properties

Correct Answer - B
Ans. is 'b' i.e., Cell wall carbohydrate antigen

## 609. Griffith classification is based on?

a) Cell wall carbohydrate

b) M protein

c) Hemolytic property

d) None of the above

Correct Answer - B
Ans. is b' i.e., M protein
Group 'A' strep. are subdivided into types based on the protein (M, T and **R)** antigens present on the cell surface (Griffith typing). About 80 types of str. pyogenes have been recognized

## 610. Which serum is used for testing streptococcal pyrogenic toxin?

a) Convalescent human serum

b) Serum from patient of acute scarlet fever

c) Horse serum

d) None of the above

Correct Answer - A
**Ans. is 'a' i.e., Convalescent human serum**
Tests related to pyrogenic toxin (erythrogenic /Dick toxin) of streptococcus
**There were two historical tests which were used :**
*i) Dick test :* Intradermal Injection of toxin in a child produces erythematous reaction if he/she is susceptible to scarlet fever.
*ii) Schultz scharlton reaction :* It was used as a diagnostic test for Scarlet fever. Blanching of erythematous rash is produced during scarlet fever on local injection of convalescent serum (As serum from patient in convalescent phase has antibodies against this toxin)

## 611. CDC recommended treatment for uncomplicated gonorrhea -

a) Ceftriaxone

b) Tetracycline

c) Azithromycin

d) Cootrimoxazole

Correct Answer - A

**Ans. is 'a' i.e., Ceftriaxone**

For uncomplicated gonococcal infection ceftriaxone is DOC (along with azithromycin or doxycyclin to cover chlamydial infection).

- For penicillin allergic patients quinolones are DOC.
- Person who can not tolerate both cephalosporin and quinolones, spectinomycin is DOC.

## 612. All clostridia cause myonecrosis except?

a) C septicum

b) C difficle

c) C novyi

d) C welchii

Correct Answer - B
Ans. is 'b' i.e., C difficle
C difficle *[Ref Ananthanarayan 9th ie p. 253-254, Harrison 18th/e p. 1206-1207]*

- Anaerobic myonecrosis (gas gangrene) is caused by *?*
  *i)* Cl perfringens *(Cl welch ii)* most common (80%) iii) *Cl novyi*
  *Cl Septicum* iv) *Cl histolyticum*

## 613. Most common cause of gas gangrene ?

a) Cl welchii

b) Cl septicum

c) Cl novyi

d) Cl histolyticum

Correct Answer - A
Ans. is 'a' i.e., Cl welchii
Most common cause of gas gangrene is Cl perfringens (Cl welchii) causing 80% of cases of gas gangrene.
Other causes are Cl septicum, Cl novyi and Cl histolyticum.

## 614. Dienes stain is used for?

a) Compylobactor

b) Helicobacter

c) Rickettsiae

d) Mycoplasma

Correct Answer - D
Ans. is 'd' i.e., Mycoplasma
*Dienes method (Dienes staining)* → For colonies of mycoplasma.
*Dienes phenomenon* → To eletect swarming of proteus.

## 615. Battey bacillus is ?

a) Klebsiella pneumoniae

b) Mycobacteria paratuberculosis

c) Klebsiella ozaenae

d) Mycobacteria intracellulare

Correct Answer - D
Ans. is 'd' i.e., Mycobacteria intracellulare
. *intracellulare* is commonly known as the Battey bacillus because it was first identified as human pathogen at the Battey state hospital for tuberculosis, Georgia. U.S.A.

## 616. Transport media for vibrio cholerae ?

a) Alkaline peptone water

b) Cary - Blair medium

c) TC BS medium

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Cary-Blair medium

## 617. Most common cause of artificial heart valve infection?

a) Staphylococcus aureus

b) Streptococcus mutans

c) Staph epidermidis

d) Pneumococcus

Correct Answer - C
Ans. is 'c' i.e., Staph epidermidis
Most common cause of prosthetic valve endocarditis upto 12 months is coagulase - negative staphylococci (staph. epidermidis).
**Most common causes of infective endocarditis**

- In native wall → Staphylococcus aureus.
- In early prosthetic valve (up to 12 months after valve surgery) → Staphylococcus epidermidis (coagulase negative staphylococcus).
- In late prosthetic valve (more than 12 months after valve surgery) → streptococcus viridans.
- In IV drug abusers → Staphylococcus aureus.
- In patients with intravenous catheter → coagulase negative staphylococci.
- After dental procedure (tooth extraction) → streptococcus mutans.

## 618. Streptococcus pyogenes shows pathogenicity by all except?

a) M protein

b) Pyrotoxin

c) Pili

d) Streptolysin O

Correct Answer - C
Ans. is 'c' i.e., Pili
**Virulence factors of str. pyogenes**
Str. pyogenes forms several exotoxins and enzymes which contribute to its virulence, but M protein is the most important of these.

## 619. Receptor for diphtheria toxin lies at ?

a) Cell membrane

b) Mucous membrane

c) Nucleus

d) None

Correct Answer - A

**Ans. is 'a' i.e., Cell membrane**

**Diphtheria toxin**

The diphtheria toxin acts by inhibiting protein synthesis. It inhibits polypeptide chain elongation in the presence of nicotinamide adinine dinucleotide (NAD) by inactivating elongation factor, EF - 2.

- The diphtheria toxin is a protein which consists of two fragments, A and B.
- Both fragments are necessary for the toxic effect :
- *Fragment A* - has enzymatic activity and inhibits protein synthesis by inhibiting the chain elongation by inactivating the elongation factor - 2 (Ef - 2).
- *Fragment B* - responsible for binding the toxin to the cells.
- The toxin binds to specific receptors (HB-EGF receptors) present on *susceptible cells* and enters by receptor-mediated endocytosis.
- *Toxin has special affinity for certain tissues such as myocardium, adrenals and nerve endings.*

## 620. True about chlamydia

a) Extracellular bacteria

b) HeLa cells for isolation

c) Gram positive

d) Penicillin is drug of choice

Correct Answer - B
Ans. is 'b' i.e., HeLa cells for isolation
Chlamydia is an *obligate intracellular parasite.* This means they can survive only by establishig residence inside animal cells.

- They need their host's ATP as an energy source for their own cellular activity. They are energy parasites using a cell membrane transport system that uses ATP from the host system and gives out ADP.
- This obligate intracellular existence makes it impossible to culture these organisms on nonliving artificial media. Due to their small size and failure to grow in cell - free media they were considered to be viruses.
- Chlamydiae grows in cultures of a variety of eukaryotic cell lines Mc Coy or HeLa cells. It may be necessary to treat cells with polyanionic compounds such as DEAD-dextran to reduce the electrostatic barrier to infection. Antimetabolite such as cycloheximide is added to favour competition for host cell amino acid pools. All types of chlamydiae proliferate in embryonated eggs particulary in the yolk sac.
- **The special features in structure and chemical composition of chlamydiae are :**

1. The outer cell wall resembles the cell wall of gram negative bacteria
2. It has a relatively high lipid content

3. It is rigid but it does not contain typical bacterial peptidoglycan; perhaps it contain a tetrapeptide linked matrix.
4. N Acetylmuramic acid also appears to be absent from chlamydiae cell wall.

**Antibiotic susceptibility of chlamydiae:**

- Penicillin binding proteins occur in chlamydiae cell wall and chlamydiae cell wall formation is inhibited by penicillins and other drugs that inhibit transpeptidation of bacterial peptidoglycan. But remember the important point about t/t, that cell wall inhibitors result in the production of morphologically defective forms but are not effective in clinical disease.
- Inhibitors of protein synthesis (tetracyclines, erythromycins) are effective in most clinical infections. Erythromycin or tetracyclines are considered the drug of choice for chlamydiae infections.

## 621. Which of the following is the mechanism of action of tetanospasmin ?

a) Inhibition of release of GABA and glycine

b) Inhibition of Ach release from synapse

c) Inhibition of protein synthesis

d) Activation of adenylyl cyclase

Correct Answer - A

**Ans. is 'a' i.e., Inhibition of release of GABA and glycine**

**Pathogenicity**

- *CL tetani has little invasive property and is confined to the primary site of lodgment.* Tetanus results from the action of the potent exotoxin it produces.

## 622. Pigment production by staphylococcus aureus occurs in?

a) Erythrasma

b) Bullous impetigo

c) Buruli ulcer

d) Food poisoning

Correct Answer - B
Ans. is 'b' i.e., Bullous impetigo
I am not able to understand this question. As *most of the isolates of virulent staph aureus produce golden yellow pigment* in culture. It is not disease specific.
In Bullous impetigo, there may be postinflammatory pigmentation, especially in dark-skinned patients (But this is not due to pigment produced by staph aureus. Pigment is produced in culture).
Among the given options a & c are not caused by staph aureus. So, I will go for option b.

## 623. Salmonella infection is most commonly caused by?

a) Infected water

b) Infected vegetable

c) Aerosol infection

d) a and b both

Correct Answer - D
**Ans. is 'a & b' i.e., Infected water & Infected vegetable**
**Transmission of salmonella tvphi**
Typhoid fever is transmitted via the faecal-oral route or urine-oral routes. This may take place *directly* through soiled hands contaminated with faeces or urine of cases or carriers, or *indirectly* by the ingestion of contaminated water, milk and/or food, or through files.

## 624. Enterobacteriacae is classfied based on?

a) Mannitol fermentation

b) Catalase and oxidase reaction

c) Oxygen requirment

d) Lactose fermentation

Correct Answer - D
Ans. is 'd' i.e., Lactose fermentation
Initially Enterobacteriacea was classifed on the bases of their lactose fermenting ability on *MacConkey's medium, the most popular medium for the isolation of fecal bacilli.*
Lactose fermenters produce pink/bright red colonies on MacConkey's agar , while lactose non-fermenters produce pale colonies :
*i) Lactose fermenters (rapid) :* These are Coliforms, e.g. Escherichia, Klebsiella and Enterobacter aerogenes.
*ii) Late lactose fermenters (slow) :* These are Shigella Sonnei, Serratia, Citrobacter, Arizona, Providencia and Ervinia.
*iii) Non-lactose fermenters :* Shigella except Shigella Sonnei, Salmonella, Proteus.

## 625. Quellung reaction is seen in ?

a) Group B streptococcus

b) Staphylococcus

c) Pneumococcus

d) Enterococcus

Correct Answer - C
Ans. is 'c' i.e., Pneumococcus

- A suspension of pneumococci is mixed on a slide with a drop of the type specific antiserum and methylene blue. On the presence of homologous antiserum capsule becomes apparently swollen, sharply *delineated* and refractile.
- This is called Quellung reaction.

## 626. Medusa head colonies on nutrient agar is seen in?

a) Pneumococcus

b) Legionella

c) Brucella

d) Anthrax

Correct Answer - D
**Ans. is 'd' i.e., Anthrax**
**BACILLUS ANTHRACIS**
**Morphology *?***

- *Gram positive*
- Non motile *(all other members of genus Bacillus are motile)*
- Arranged singly, in pairs or in short chains
- *Capsulated* - entire chain being surrounded by a capsule.
  - *Capsule is polypeptide*
- Sporing - *Spores are formed in culture or in soil but never in animal body during life.*
- Chain of bacilli presents a bamboo stick appearance.

## 627. Mc fayden reaction seen with which organism ?

a) Clostridium perfringens

b) Clostridium botulinum

c) Bacillus cereus

d) Bacillus anthracis

Correct Answer - D
**Ans. is `d' i.e., Bacillus antracis**
**Mc Fadvean's reaction**

- When blood films containing anthrax bacilli are stained with polychrome methylene blue for a few seconds and examined under microscope, an amorphous purplish material is noticed around bacilli. This represents the capsular material and is characteristic of the anthrax bacillus.

## 628. BCYE medium is used to culture ?

a) Mycoplasma

b) T. pallidum

c) H.pylori

d) Legionella

Correct Answer - D
Ans. is 'd' i.e., Legionella
*[Ref Ananthanarayan 9$^{th}$le p. 401 & e/e p. 400]*
**Legionella is grown on complex media such as Buffered Charcoal Yeast Extract agar (BCYE)** with alpha ketoglutarate at pH 6.9, temp 35°C and 90% humidity. Antibiotics can be added to make the medium selective for legionella

## 629. Acid fastness of tubercle bacilli is attributed to ?

a) Presence of mycolic acid

b) Integrity of cell wall

c) Both of the above

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Both of the above
Acid fastness has been ascribed variously to the presence in the bacillus of the unsaponifiable wax *(mycolic acid)* or to a semipermeable membrane around the cell. It is related to the *integrity of the cell wall* and appears to be a property of lipid-rich waxy cell wall.
*Acid fastness is not a property of lipids alone but depends also on the integrity of the cell wall. - Ananthanarayan*

## 630. Most common infection caused by streptococcus pneumonia ?

a) Otits media

b) Sore throat

c) Meningitis

d) Pneumonia

Correct Answer - A
**Ans. is 'a' i.e., Otitis media**
**Important infections caused by streptococcus pneumoniae**
*The source of human infection is the respiratory tract of carriers and less often, of patients. Pneumococci occur in the throat of approximately half of the population sampled at any time.*
*Str. pneumoniae is the most frequent cause of pneumonia.*
*The commonest pneumococcal infections are otitis media and sinusitis.*
*Meningitis is the most serious of pneumococcal infections.*
*Empyema is the most common complication of pneumococcal pneumonia.*

## 631. Causative agent of syphilis?

a) Treponema pertunae

b) Treponema endemicum

c) Treponema corateum

d) Treponema pallidum

Correct Answer - D
Ans. is 'd' i.e., Treponema pallidum

## 632. Gene expert used for getting diagnosis of TB in ?

a) 1-2 hrs

b) 5 hrs.

c) 10 hrs.

d) 20 hrs.

Correct Answer - A
Ans. is 'a' i.e., 1-2 hrs.
Results are obtained from unprocessed sputum samples in 90 minutes, with minimal biohazard and very little technical traning required to operate.

## 633. MDR TB is defined as?

a) Resistance to INH and Ethambutol

b) Resistance to Rifampicin and Ethambutol

c) Resistance to Pyrazinamide and Rifampicin

d) Resistance to INH and Rifampicin

Correct Answer - D

**Ans. is 'd' i.e., Resistance to INH and Rifampicin**

**Treatment of multidrug resistance (MDR) TB**

- MDR-TB is defined as resistance to at least both INH and rifampicin. Previously it was classified as Category IV under DOTS (DOTS-PLUS).
- The treatment is given in two phases, the intestive phase (IP) and the continuation phase (CP). *The total duration of treatment for regimen for MDR-TB is 24-27 months,* depending on the IP duration.

o Treatment regimen comprises :-

i. Intensive phase (6-9 months) : *Six drugs :* Kanamycin (Km), levofloxacin (Lvx), ethionamide (Eto), pyrazinamide (Z), ethambutol (E), and cycloserine (Cs).

i. Continuation phase (18 months) : *Four drugs :* Levofloxaxcin, ethionamide, ethambutol and cycloserine.

i. Total duration of treatment is 24-27 months.

**Treatment of extensive drug resistance (XDR) TB**

- XDR-TB is defined as *resistance to any fluoroquinolone* and *at least one of the following three second-line drugs (capreomycin, kanamycin, amikacin),* in addition to multidrug resistance.
- The Regimen for XDR-TB would be of 24-30 months duration, with 6-12 months Intensive Phase (IP) and 18 months Continuation Phase (CP).

**Regimen is :-**

i. Intensive phase (6-12 months) : *Seven drugs :* Capreomycin, PAS, moxifloxacin, high dose INH, clofazimine, Linezolid, amoxyclay.
i. Continuation phase (18 months) : Sir *drugs :* PAS, moxifloxacin, high dose NH, clofazimine, linezolid, amoxyclay.

## 634. Shiga toxin is preduced by?

a) Enteropathogenic E coli

b) Enteroinvasive E coli

c) Enterohemorrhagic E coli

d) Enterotoxigenic E coli

Correct Answer - C
Ans. is 'c' i.e., Enterohemorrhagic E coli

- Verocytotoxin (VT) or Shiga like toxin (SLT) is produced by *enterohemorrhagic Ecoli (also called verotoxigenic E coli)*
  - **Shiga like toxin** belongs to class **ribosome inactivating proteins (RIPs). It inhibits protein synthesis** by inhibiting ribosomal function.
  - **This toxin also acts on vascular endothelium to promote the synthesis of coagulation factor VIII, vWF** -> Platelet aggregation.

## 635. Coagulase test differentiates?

a) Staphylococci from streptococci

b) Streptococci from enterococci

c) Staph aureus from staph epidermids

d) Staph epidermidis from staph saprophyticus

Correct Answer - C
Ans. is 'c' i.e., Staph aureus from staph epidermidis
*[Ref Ananthanarayan 9`"/e* p. *206]*

- *Catalase test differentates* -> Staphylococci (catalase positive) form streptococci (catalase negative)
  - Coagulase test differentiates -> Staphylococcus aureus (coagulase positive) from coagulase negative staphylococci (staph epidermitis, S hemolyticus, S saprophyticus).

## 636. Which of the following infection is mainly diagnosed by serological tests?

a) Actinomycosis

b) Q Fever

c) TB

d) Leprosy

Correct Answer - B
Ans. is 'b' i.e., Q fever
The diagnosis of actinomycosis is most commonly made by microscopic identification of sulphur granules.
In most instances, *the diagnosis of Q-fever relies upon serology.*
TB is usually diagnosed by sputom microscopy and/or culture.
Leprosy is diagnosed clinically which is confirmed by histological examination of skin biopsies and by the detection of acid fast bacilli in nasal discharges, scraping from nasal mucosa and slit-skin smear.

## 637. Not true regarding the mimicry of Strpyogenes ?

a) Peptidoglycan and skin antigen

b) Cell wall protein and myocardium

c) Hyaluronic acid and synovial fluid

d) Group A carbohydrate and vascular intima

Correct Answer - D

**Ans. is 'd' i.e., Group A carbohydrate and vascular intima**

**Antigen cross-reactivity**

- Various streptococcal components (specially strep. pyogenes) exhibit antigenic cross reaction with different tissues of the human body.

## 638. Streptococcal cell wall polysaccharide cross reacts with?

a) Myocardial muscle

b) Cardiac value

c) Endocardium

d) Synovial fluid

Correct Answer - A
Ans. is 'a' i.e., Myocardial muscle
Group A carbohydrate (cell wall polysaccharide of gorup A streptococcus, i.e. streptococcus pyogenes) cross reacts with myocardium.

## 639. Dental carries is caused by?

a) Streptococcus salivarius

b) Streptococcus mutans

c) Streptococcus pyogenes

d) Streptococcus equisimulus

Correct Answer - B

**Ans. is 'b' i.e., Streptococcus mutans**

Viridans streptococci consists of multiple species of alpha hemolytic streptococci.

*Various species of viridans streptococci are -*

- *S. salivarius*
- *S. sanguis*
- *S. mitis*
- *S. mutans*

They are ordinarily nonpathogenic but can on occasion cause disease. In persons with preexisting cardiac lesions, they may cause bacterial endocarditis, Str. sanguis being most often responsible.

Str. mutans is important in causation of dental caries.

The transient viridans streptococcal bacteremia induced by eating, tooth-brushing, flossing and other source of minor trauma, together with adherence to biological surfaces, is thought to account for the predilection of these organisms to cause endocarditis.

Viridans streptococci are also isolated, often as a part of a mixed flora, from sites of sinusitis, brain abscess and liver abscess.

Viridans streptococcal bacteremia occurs relatively frequently in neutropenic patients, particularly after bone marrow transplantation or high dose chemotherapy for cancer.

Treatment of varidans streptococcal infections include :-

i. *Bacteremia in neutropenic patients* → Vancomycin.
i. *Other infection* → Penicillin.

## 640. LJ media is used for ?

a) Bacillus antracis

b) M. tuberculosis

c) Leptospira

d) Legionella

Correct Answer - B
Ans. is 'b' i.e., M tuberculosis
*The solid medium most widely employed for routine culture of tubercular is Lowenstein - Jensen Medium (L.J. medium).*

## 641. Infective dose of salmonella typhi ?

a) 10 bacilli

b) 1000 bacilli

c) $10^3$-$10^6$ bacilli

d) $10^{10}$ - $10^{12}$ bacilli

Correct Answer - C
Ans. is 'c' i.e., $10^3$-$10^6$ bacilli
In human volunteer experiments, the infective dose was found to be $10^3$-$10^6$ bacilli.

## 642. All are important causes of UTI except?

a) E coli

b) Proteus

c) Klebsiella

d) Streptococcus viridans

Correct Answer - D
Ans. is 'd' i.e., Streptococcus viridans
The dominant etiologic agents, accounting for more than 85% of cases of urinary tract infection, are the gram-negative bacilli that are normal inhabitants of intestinal tract.
By far the most common is Escherichia coli, followed by proteus, klebsiella, and Enterobacter.
*In most patients with urinary tract infection, the infecting organisms are derived from the patient's own fecal flora.* This is thus a form of endogenous infection.

## 643. Chinese letter configuration is seen in ?

a) Cl tetani

b) Cl perfringens

c) Strept salivarius

d) C diphtheriae

Correct Answer - D
Ans. is 'd' i.e. C diphtheriae
C. diphtheriae is gram positive, non motile, nonsporing, noncapsulated.

- Babes Ernest or volutin granules
- Also known as *metachromatic granules* or *polar bodies.*
- Composed of polymetaphosphate.
- Usually stained with Loeffler's methylene blue.
- Special stains for demonstration are *Albert's, Neisser 's* and *Ponder 's.*

## 644. Streptococcus pneumonia produces which type of hemolysis ?

a) Alpha

b) Beta

c) Gamma

d) Any of the above

Correct Answer - A
Ans. is 'a' i.e., Alpha
S**treptococcus pneumoniae**, or **pneumococcus**, is a Gram-positive, alpha-hemolytic (under aerobic conditions)

## 645. CAMP test is positive for?

a) Group A streptococcus

b) Group B streptococcus

c) Group C streptococcus

d) Group D streptococcus

Correct Answer - B
Ans. is 'b' i.e., Group B streptococcus
*[Ref Ananthanarayan 9th le p. 210]*

- CAMP reaction (Christine, Atkins, Munch-Petersen reaction) is positive in *Group B Streptococcus (Streptococcus agalactiae).*
- CAMP reaction is due to CAMP factor which is diffusible substance that Completes the hemolysis of sheep RBCs exposed to Sphingomyelinase-C (13-toxin of staphylococcus).

## 646. Globi in leprosy consist of ?

a) AFB + macrophages

b) neutrophils + AFB

c) Platelet plug

d) None of the above

Correct Answer - A
Ans. is 'a' i.e., AFB + Macrophages
*The bacilli are clumped together by a lipid - like substance, the glia, these masses are known as globi.*
*"In clinical material from lepromatous patient they (lepra) bacilli are typically found within the macrophages in dense clump"*

## 647. Positive tuberculin test means?

a) Resistance to TB

b) Susceptibility to TB

c) Hypersensitivity

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Hypersensitivity
A positive tuberculin test indicates hypersensitivity to tuberculoprotein, it may be due to :

- Active infection
- Subclinical infection
- Past infection
- BCG vaccination

*In overwhelming tuberculosis (fulminant cases) due to depressed cellular immunity montoux test may be false negative.*

## 648. Which of the following is false about Botulism?

a) It is a type food poisoning

b) Botulinum toxin is a potent neurotoxin

c) It is an infection and not intoxication

d) The causative organism is Clostridium botulinum

Correct Answer - C

**Ans. is 'c' i.e., It is an infection and not intoxication**

**Botulism**

- It is a form of food poisoning.
- Botulinum toxin is a potent neurotoxic protein. It paralyses the nerve endings by blocking the nerve impulses at the myoneural junction. It blocks the action of acetylcholine.
- Botulism is an intoxication, not an infection. Clostridium botulinum organism does not grow in the body.
- The causative organism is Cl. botulinum. It multiplies in food (sausages, tinned meat) before it is consumed, and produces a powerful exotoxin under suitable anaerobic conditions.

## 649. Larvae of Ascaris lumbricoidis most commonly causes?

a) Cardiac symptoms

b) Respiratory symptoms

c) Genitourinary symptoms

d) Cerebral symptoms

Correct Answer - B
**Ans. is 'b' i.e., Respiratory symptoms**
**Clinical manifestations of ascariasis can be divided into two groups :-**
*Due to adult worm :* Adult worm causes malnutrition, abdominal pain, anorexia, *intestinal obstruction, appendicitis, obstructive jaundice,* pancreatitis, intestinal perforation and allergic manifestations. in *Due to migrating larva :* Loeffler's syndrome (eosinophilic pneumonia).

## 650. Giardiasis true is all except ?

a) Diarrhea with steatosis

b) Bloody diarrhea

c) Metronidazole is the drug of choice

d) Absent fever

Correct Answer - B

**Ans. is 'b' i.e., Bloody diarrhea**

**<u>Giardiasis</u>**

- Most of the infected pateints are asymptomatic.
- Giardia causes diarrhea and **malabsorption.** Malabsortion is due to *loss of brush border enzyme activities,* which cause fat malabsorption *(steatorrhea)* and vitamin deficiency.
- There may be *abdominal pain,* bloating, *nausea & vomiting, flatulence* and flatus.
- The mechanisms by which Giardia causes alteration in small bowel function are largely unknown. Although trophozoites adhere to the epithelium, *they do not cause invasive or locally destructive alterations.*
- *Fever, the presence of blood or mucus in the stools suggest a different diagnosis as all these are absent in giardiasis.*
- *Giardia may also cause traveller's diarrhea.*
- **Predisposing conditions** to giardiasis are agammaglobulinemia, *common variable immunodeficiency,* and selective IgA-deficiency.

**Diagnosis and treatment**

- *The gold - standard for diagnosis of giardiasis is microscopic demonstration of the trophozoite, cyst or both in faeces.*
- Duodenal aspirate or jejunal biopsy may be required for diagnosis.
- In acute giardiasis trophozoites show the typical **"falling-leaf"**

motility in wet mount examination of faeces. o *Metronidazole and tinidazole are drug of choice for Giardia lambia.*

## 651. Most common clinical feature of toxoplasmosis in an immunocompetant adult?

a) Encephalitis

b) Lymphladenopathy

c) Chorioretinitis

d) Glaucoma

Correct Answer - B

**Ans. is 'b' i.e., Lymphadenopathy**

**Clinical manifestation of toxoplasmosis**

1.Adults

a) lmmunocompetant host

- *Asymptomic in 90% of patients.*
- *M.C. clinical featur is cervical lymphadenopathy.*
- Other less common manifestations are pneumonia, myocarditis, encephalitis.

b) Immunocompromised host

- *M.C. signs and symptoms are principally within CNS —> Encephalopathy, Men ingoencephalitis.*

2. Children

a) Congenital

- May present with hydrocephalus, microcephaly mental retardation, deafness, blindness, epilepsy.
- *Intracerebral calcification may occur.*

b) Acquired

- Mostly asymptomatic
- C/Fs are chorioretinitis (most common), cataract, glaucoma.

## 652. The pathogenecity of Entamoeba histolytica is indicated by -

a) Zymodeme pattern

b) Size

c) Nuclear pattern

d) ELISA test

Correct Answer - A
Ans. is 'a' i.e., Zymodeme pattern
Zymodene
. There are distinct invasive and noninvasive strains of E. histolytica. These strains vary according to their *isoenzyme patterns (zymodemes).*
. E. histolytica strains have *22 zymodemes* of *these 10 zymodemes are invasive and 12 are noninvasive.*
. Zymodemes of E. histolytica are identified according to the electrophoretic mobility of 4 enzymes.
1. L-malate : NADP+ Oxidoreductase
2. Phosphoglucomutase (PGM) ------ most important
3. Glucose-phosphate isomerase
4. Hexokinase
. Electrophoresis of PGM can show one or more of the 4 bands : a, (3, 7 and S. Strains of E. histolytica showing, an absence of a-band together with the presence of 13 band are virulent i.e., invasive.

## 653. Asteroid bodies are seen in:

a) Aspergillosis

b) Nocardiasis

c) Sporotrichosis

d) Histoplasmosis

Correct Answer - C
**Sporotrichosis:** Is caused by the fungus **sporothrix schenckii** which is a dimorphic saprophyte found on plants, throns and timber. Infection is acquired through thron pricks or minor injuries (hence known as Rose growers disease).
It is charecterized by nodules on the skin subcutaneous tissue and in the lymph nodes which soften and break down to form indolent ulcers.
**Asteroid bodies composed of a central fungus cell with eosinophilic material radiating from it is seen in the lesion.**
**Must know:**

**Dimorphic fungus** are fungus occurring in the yeast phase in tissues at 37 degree celcius and in the mycelial phase in nature and in cultures at room temperature.

**Ref:** Textbook of Microbiology, By R. Ananthanarayan, C.K. Jayaram Paniker, 7th Edition, Page 619.

## 654. Stain which differentiates cryptococcus from other fungus ?

a) Gram Stain

b) Wright-Giemsa

c) India ink

d) Toluidine blue

Correct Answer - C
Ans. is 'c' i.e., India ink
Unstained wet preperations of CSF mixed with drop of *India ink or nigrosine* demonstrate the capsule as a clear halo.
*Methenamine silver* or *periodic acid-Schiff* are used for staining a tissue sample.

## 655. Not true about viral envelop?

a) Lipid is derived from host cells

b) Protein is derived from virus itself

c) Dissolves in solvent

d) Propagates in next generation

Correct Answer - D
Ans. is 'd' i.e., Propagates in next generation
Envelope is lipoprotein in nature, lipid is derived from host cell, while protein is virus coded.
*Enveloped viruses are susceptible to the action of lipid solvents like ether, chloroform and bile salts.*
Envelop is not propagated in next generation. Rather progeny virions synthesize new envelop (by self protein and host lipid).

## 656. Paramyxoviruses enters the body via?

a) Blood

b) Respiratory route

c) Conjunctiva

d) Fecal-oral route

Correct Answer - B
**Ans. is 'b' i.e., Respiratory route**
**Myxoviruses**

- Myxoviruses are enveloped *RNA viruses.*
- They are characterized by ability to adsorb on to mucoprotein *(affinity for mucin)* on erythrocytes causing *agglutination of erythocytes.*

## 657. Influenza virus belongs to which family?

a) Paramyxovirus

b) Orthomyxovirus

c) Bunyaviridae

d) Togaviridae

Correct Answer - B
Ans. is 'b' i.e., Orthomyxovirus

- Influenza virus belongs to orthomyxoviridae.

## 658. HSV-2 (Herpes simplex) causes ?

a) Oral ulcers

b) Genital ulcers

c) U.T.I.

d) Pharyngitis

Correct Answer - B
Ans. is 'b' i.e., Genital ulcer

## 659. Which of the following is not associated EBV virus ?

a) IMN

b) Kapasi sarcoma

c) Oral hairy leukoplalkia

d) NHL

Correct Answer - B
Ans. is 'b' i.e., Kaposi sarcoma
*[Ref: Ananthanarayan 8th/e* p. *472,473; Harrison 18th/e* p. *1467-1470]*

**Important diseases/malignancies associated with EBV**

- *Infectious mononucleosis (IMN)*
- *NHL (especially Burkitti's lymphoma)*
- *Oral hairy leukoplasia in AIDS*
- Duncan's disease
- Gastric Carcinoma
- Hodgkin's disease (mixed cellularity)
- Naso pharyngeal carcinoms
- Chronic fatigue syndrome
- Tonsillar Carcinoma
- CNS lymphoma

## 660. Which of the following is a wrong association ?

a) HPV - CaCx

b) EBV - Burkitt's lymphoma

c) HHV 8 - Kaposi sarcoma

d) CMV - Nasopharyngeal carcinoma

Correct Answer - D
Ans. is 'd' i.e., CMV-Nasopharyngeal carcinoma
*[Ref Harrison's 17th Ie Chap. 105 table 105-4; Jawetz 24"/e table 43-1]*

- DNA viruses causing cancers are :?

1) Papillomaviridae (HPV) : Causes genital tumors, SCC and oropharyngeal carcinoma.
2) Herpesviridae : These viruses are :
*i) HSV-2 :* Causes cervical carcinoma.
*ii) EBV :* Causes nasopharyngeal carcinoma and Burkitt's lymphoma.
*iii) HHV-8 :* It causes Kaposis sarcoma
3) Hepadnaviridae (HBV) : It causes hepatocellular carcinoma.
4) Flaviviridae (HCV) : It causes hepatocellular carcinoma

## 661. HHV-8 causes ?

a) Burkitt's lymphoma

b) Nasopharyngeal carcinoma

c) Kaposi sarcoma

d) Hepatic carcinoma

Correct Answer - C
Ans. is 'c' i.e., Kaposi sarcoma

## 662. Forschheimer spot is seen in ?

a) Measles

b) Chicken pox

c) Erythema infectiosum

d) Rubella

Correct Answer - D
**Ans. is 'd' i.e., Rubella**
**Clinical features of rubella**
Incubation period is 2-3 weeks (14-21 days).
**Clinical features are *:?***
1. *Prodrome* (fever, sore throat, coryza)
2. Lymphadenopathy (posterior auricular, cervical, suboccipital)
3. Rash which begins on face and spreads down the body.

- Furschheimer spots is a petechial exanthem on soft palate.
- Complications include arthralgia, encephalitis and thrombocytopenia.

## 663. Hemagglutination done by all virus except

a) Influenza

b) Rubella

c) Measles

d) HPV

Correct Answer - D
Ans. is 'd' i.e., HPV
When *hemagglutinating viruses* grow in cell cultures, their presence can be indicated by the addition of guinea pig erythrocyte to culture. If the viruses are multiplying in the culture, the erythrocytes will adsorb on to the surface of cells. This is known as Hemadsorption.
**Viruses causing Hemagglutination are :**

- Influenza Virus
- *Measles*
- Rubella
- Coxsackie Virus
- RhinoVirus
- *Rabies*
- Parainfluenza Virus
- TogaVirus
- EnteroVirus
- EchoVirus
- ReoVirus

## 664. Diagnosis of Dengue fever can be made earliest by?

a) Viral culture

b) NS - 1 antigen detection

c) lgG antibody detection

d) Nucleic acid test

Correct Answer - B
Ans. is 'b' i.e., NS-1 antigen detection

## 665. Councilman body is seen in:

a) Molluscum contagiosum

b) Rabies

c) Granuloma inguinale

d) Viral hepatitis

Correct Answer - D
Ans. d. Viral hepatitis

## 666. Bollinger bodies are seen in ?

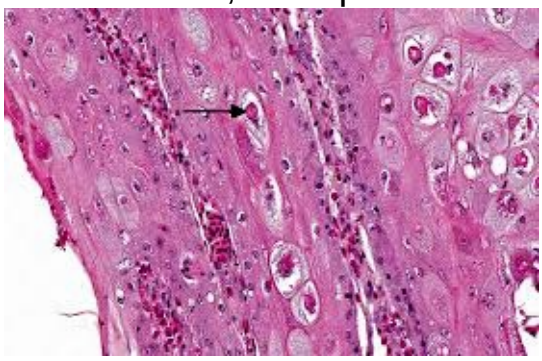
a) Chickenpox

b) Cowpox

c) Fowlpox

d) Smallpox

Correct Answer - C
Ans. is 'c' i.e., Fowl pox



## 667. E6, E7 genes of which virus are implicated in oncogenesis ?

a) EBV

b) CMV

c) HTLV- 1

d) HPV

Correct Answer - D
Ans. is 'd' i.e., HPV
HPV selectively infects the epithelium of skin and mucous membrane and may immortalize the keratinocytes leading either asymptomatic infection, or warts or neoplasia.
Products of E-genes (E6, E7) are related to immortalization or malignant transformation of keratinocytes by interfering with p53 and Rb genes, respectively.

## 668. EBV enters B-cells through?

a) CD-1

b) CD-2

c) CD-21

d) CD-19

Correct Answer - C
Ans. is 'c' i.e., CD-21
The virus enter the pharyngeal epithelial cells and B cells through *(CR 2 / or CD21) receptors.*

## 669. All are transmitted by fecal-oral route except ?

a) Polio

b) Typhoid

c) Ascaris

d) Dracunculiasis

Correct Answer - D
Ans. is 'd' i.e., Dracunculiasis

## 670. Hepatitis A virus is:

a) Flavivirus

b) Calcivirus

c) Enterovirus

d) Defective virus

Correct Answer - C
Ans. c. Enterovirus
1) Hepatitis A
2) Hepatitis B Enterovirus (Picornavirus), non- enveloped RNA virus
3) Hepadana virus, DNA virus
Hepatitis Flavivirus, enveloped RNA virus
C Defective RNA virus resembling viroids
4) Calcivirus, non-enveloped RNA virus
Hepatitis D
5) Hepatitis E

## 671. Ebola virus belongs to?

a) Picornaviridae

b) Togaviridae

c) Flaviviridae

d) Filoviridae

Correct Answer - D
Ans. is 'd' i.e., Filoviridae

## 672. Castleman disease is associated with ?

a) HSV

b) CMV

c) EBV

d) HHV- 8

Correct Answer - D
Ans. is 'd' i.e., HHV - 8
Castleman disease is group of lymphoproliferative disorders.
Disease is caused by hypersecretion of IL-6.
Release of these cytokines may be caused by HHV-8 in HHV-8 associated Multicentric Castleman Disease (MCD).

- Castleman disease (CD) has been divided into a solitary and a multicentric form.
  - The solitary form presents as a mass located most commonly in the mediastinum, neck, lung, axilla, mesentery, broad ligaments and retroperitoneum.
    Grossly, it is round, well circumscribed, with a solid gray cut surface and can measure 15 cm in diameter.
    The follicles show marked vascular proliferation and hyalinization of their abnormal or atrophic germinal centers, surrounded by concentrically arranged small lymphocytes imparting an "onion-skin" appearance.
- Remember angiolymphoid hyperplasia show thick walled blood vessels with
  prominent endothelial cells and inflammatory eosinophilia infiltrates.

## 673. Hand-foot-mouth disease is caused by?

a) Coxsackie - A virus

b) Coxsackie - B virus

c) EBV

d) CMV

Correct Answer - A
Ans. is 'a' i.e., Coxsackie- A virus

- The most well known Coxsackie A disease is hand, foot and mouth disease (unrelated to foot-and-mouth disease), a common childhood illness which affects mostly children aged 5 or under, often produced by Coxsackie A16.
- In most cases infection is asymptomatic or causes only mild symptoms. In others, infection produces short-lived (7–10 days) fever and painful blisters in the mouth (a condition known as *herpangina*), on the palms and fingers of the hand, or on the soles of the feet.
- There can also be blisters in the throat, or on or above the tonsils.
- Adults can also be affected. The rash, which can appear several days after high temperature and painful sore throat, can be itchy and painful, especially on the hands/fingers and bottom of feet.

## 674. Longest life span among following ?

a) RBC

b) Plalalets

c) Neutrophils

d) Macrophages

Correct Answer - D
Ans. is 'd' i.e., Macrophages

## 675. Byproducts of complement system Anaphylactotoxins ?

a) C3b

b) C4a

c) C5a

d) c and b both

Correct Answer - D
Ans. is 'c' i.e., C5a > 'b' i.e., C4a
$C_{5a.}$,$C_{3a.}$,to a lesser extent $C_{4a}$—> are called *anaphylotoxin* because they have effects similar to those of mast cell mediators that are involved in the reaction called anaphylaxis. These effects are *due to stimulation of histamine release by these anaphylotoxin.* The effects are *increased vascular permeability* and *vasodilatation.*

## 676. Most chemotactic property is with ?

a) C3a

b) C5a

c) C5-9

d) C3b

Correct Answer - B
Ans. is `b' i.e., C5a
C is a powerful *chemotactic agent.*

## 677. CD 3 receptor is seen in ?

a) T cells

b) B cells

c) Macrophages

d) Eosinophils

Correct Answer - A
**Ans. is 'a' i.e., T cells**
**CD marker**

- Lymphocytes and other leukocytes have a number of surface antigens or marker → *leukocyte differentiation antigen.*
- A particular leucocyte differentiation antigen has been given a *CD (cluster of differentiation)* number on the bases of its reaction with a cluster of monoclonal antibodies.
- These markers reflect the stage of differentiation and functional properties of cell.

## 678. Frei test which type of hypersensitivity ?

a) Type I

b) Type II

c) Type III

d) Type IV

Correct Answer - D
Ans. is 'd' i.e., Type IV

## 679. True about IgM is:
***September 2005***

a) Mediates Prausnitz-kustner reaction

b) Primary response

c) Transported across placenta

d) Secondary response

Correct Answer - B
Ans. **B:** Primary response
IgM is the immediate antibody that is produced once a human body is exposed to bacteria, virus or a toxin.Their demonstration in the serum indicates recent infections.
IgG is found throughout the body, mainly in most of the bodily fluids, while IgM is found mainly in the blood and lymphatic fluids.
Antibodies formed in primary response are predominantly IgM and in the secondary response is IgG. IgM is temporary and disappears after a few weeks. It is then replaced by IgG.

## 680. Immunoglobulin present in mouth local secretions?

a) IgA

b) IgM

c) IgG

d) IgE

Correct Answer - A
Ans. is 'a' i.e.,IgA
It is the second most abundant antibody (after IgG).
*It is major immunoglobulin in clostrum, saliva, tears, respiratory and gastrointestinal secretions.*

## 681. Cell wall of gram positive bacteria contains?

a) Lipids

b) Aromatic amino acids

c) Teichoic acid

d) All of the above

Correct Answer - C
Ans. is 'c' i.e., Teichoic acid

## 682. Periplasmic space is seen in ?

a) Gram positive bacteria

b) Gram negative bacteria

c) Acid fast bacteria

d) All

Correct Answer - B
Ans. is 'b' i.e., Gram negative bacteria
Periplasmic space is a narrow space between cytoplasmic membrane (plasma membrane) and cell wall.
*Periplasmic space has been more frequently and better recorded in gram-negative bacteria as compared to gram-negative.*
*"At present most gram positive bacteria are thought to have only periplasm, but not periplasmic space".*

## 683. Porin present in ?

a) Cell wall of gram positive bacteria

b) Cell membrane of gram positive bacteria

c) Cell wall of gram negative bacteria

d) Outer membrane of gram negative bacteria

Correct Answer - D

**Ans. is `d' i.e., Outer membrane of gram negative bacteria**

**Cell envelop of bacteria comprises?**

1. An outer membrane (only in gram negative bacteria).
2. A cell wall composed of peptidoglycan.
3. Periplasm (only in gram negative bacteria).
4. Cell membrane (cytoplasmic membrane), which encloses cytoplasm.

- Outer membranes, which are present only in gram negative bacteria, function as the cell's initial barrier to the environment.
- The membrane is a bilayered structure composed of lipopolysaccharide.
- Scattered throughout the lipopolysaccharide macromolecules are protein structures called porins. These control the passage of nutrients and other solutes, including antibiotics, through outer membrane.

## 684. Simple Basal media is?

a) Simple nutrient agar

b) Alkaline peptone water

c) Glucose broth

d) Blood agar

Correct Answer - A

**Ans. is 'a' i.e., Simple nutrient agar**

A culture medium is a liquid or gel designed to support the growth of microorganism or cell.

A culture medium may be liquid or solid.

A culture medium may be?

**i)** *Basal (Simple) media*

- This is simple with no added ingredients.
- It may be liquid ( peptone water) or solid **(Nutrient agar).**

ii) *Special (Complex) media*

- These have added ingredients for special purpose or for bringing out certain characteristics or providing special nutrients required for the growth of the bacterium under study.
- It may be liquid (enrichment media) or solid (selective media).

**About option b**

- Peptone water (simple peptone water) is a simple media, but not alkaline peptone water as it has added ingradient to make it alkaline.

## 685. Which of the following is an essential medium ?

a) MacConkey agar

b) Nutrient agar

c) Deoxycholate citrate agar

d) Selenite F broth

Correct Answer - B
Ans. is 'b' i.e., Nutreint agar
A minimum essential medium is a culture medium whereupon most bacteria can grow.
Examples is Nutrient agar.

## 686. Chocolate agar is an example of ?

a) Enriched medium

b) Enrichment medium

c) Selective medium

d) Transport medium

Correct Answer - A
Ans is 'a' i.e., Enriched medium

## 687. pH of sabarouds dextrose agar ?

a) 7·4

b) 7.0

c) 9·6

d) 5.6

Correct Answer - D
Ans. is 'd' i.e., 5-6
pH of sabouraud agar is 5-6 which inhibits bacterial growth and allow fungus to grow.

## 688. Which of the following is microaerophilic?

a) E coli

b) Bacteroides

c) Clostridium

d) Helicobacter pylori

Correct Answer - D
Ans. is `d' i.e., Helicobacter pylori
Microaerophiles are those groups of bacteria that can grow under reduced oxygen (5% to 10%) and increased carbon dioxide (8% to 10%).
Higher oxygen tensions may be inhibitory to them. This environment can be obtained in specially designed jars or bags.
Examples of Microaerophiles are: *Campylobacter jejuni*, *Helicobacter pylori* etc.

## 689. Dark field microscopy used in ?

a) Vibrio

b) Syphilis

c) TB

d) Brucellosis

Correct Answer - B
Ans. is 'b' i.e., Syphilis
Dark field microscopy is used for spirochetes (for example T pallidum which causes syphilis).
**Dark ground/ Dark field microscope**

- Very slender organisms such as spirochetes and filamentous organs such as flagella are not visible under ordinary illumination.
- The contrast in dark field microscopy gives an illusion of increased resolution so that these structures can be seen under the dark field mcroscope.
- In dark field microscopy reflected light is used instead of the transmitted light used in the ordinary microscope.

## 690. Hot air oven is used to sterilize ?

a) Inoculating loop or wire

b) Glassware

c) Dusting powder

d) Liquid paraffine

Correct Answer - B
Ans. is 'b' i.e., Glassware

## 691. Reidel walker test measures efficacy of disinfection by using?

a) Phenol coefficient

b) Glutaraldehyde coefficient

c) Ethanal coefficient

d) Formalin coefficient

Correct Answer - A
Ans. is 'a' i.e., Phenol coefficient
There is no reliable test available to determine the efficacy of a disinfectant.

- This is due to the number of parameters which influence disinfectant activity.
- Traditionally in such tests phenol is taken as the standard.
- Two important tests are :-
  i) Rideal-Walker test
- Suspensions containing equal numbers of typhoid bacilli are submitted to action of varying concentration of phenol and of the disinfectant to be tested.
- The dilution of test disinfectant which sterilises the suspension in given time, divided by the corresponding dilution of phenol, is stated as the phenol coefficient of disinfectant (phenol-l).
- In this test disinfectant react directly *without any organic matter* being present.
  ii) Chick-Martin test
- In this, the disinfectant *acts in the presence of organic matter* (dried yeast or feces).

## 692. Technique of sterilization was introduced by?

a) Robert Koch

b) Edwerd Jenner

c) Louis Pasteur

d) Lister

Correct Answer - C
**Ans. is 'c' i.e., Louis Pasteure**
**Louis Pasteur is associated with :**

- Development of live vaccine (first was anthrax).
- *Development of vaccine for rabies (hydrophobia).*
- Introduction of technique of sterilization.
- *Disprove the theory of spontaneous generation (abiogenesis).*
- Established the different growth need of different bacteria (helped in complex media).
- Coined the term vaccine.

## 693. Which of the following is used to increase antigenicity of vaccine ?

a) Stabilizer

b) Adjuvant

c) Preservative

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Adjuvant
Adjuvants
Any substance that *enhances the immunogenicity of an antigen.*
**Actions :**

- May confer immunogenicity on nonantigenic substances.
- Increases the concentration and presistence of the circulating antibodies.
- Enhances the degree of cellular immunity
- Leads to production of adjuvant disease such as allergic disseminated encephalomyelitis.
- The most potent adjuvant is Freund's complete adjuvant which is the incomplete adjuvant along with a suspension of killed tubercle bacilli.
- Other adjuvants.

1. Incorporation of protein antigen in the water phase of water in oil emulsion *(Freund's incomplete adjuvant)*
2. *Aluminium hydroxide and Aluminium phosphate are commonly used with human vaccines.*
3. Gram negative bacilli show an adjuvant effect due to their lipopolysaccharide (endotoxin) fraction.
4. *Bordetella pertussis acts as a good adjuvant for diphtheria and tetanus toxoid in triple vaccine.*

## 694. In PCR, DNA polymerase is derived from?

a) Experimental E coli

b) Thermus aquaticus

c) Retroviruses

d) Bacteriophages

Correct Answer - B
Ans. is 'b' i.e., Thermus acquaticus
PCR is *a* method of enzymatic amplification of a target sequence of DNA.
It is *sensitive, selective (specific) and extremely rapid* means of amplifying any desired sequence of double stranded DNA, which can be as short as 50-100 base pairs (bp) and as long as 10 kbp.
In PCR, the DNA to be amplified is replicated by DNA polymerase of Thermus aquaticus (Taq).
Taq polymerase is used because it is thermostable, not denatured at a temperature upto 95°C (in PCR DNA is to be heated to 94°-95° C for separation of strands).

## 695. Human is dead end host for?

a) Malaria

b) Typhoid

c) Bubonic plague

d) Filaria

Correct Answer - C
Ans. is 'c' i.e., Bubonic plague
A dead end host is an infected person from which infectious agents are not transmitted to other susceptible host or from which a parasite cannot escape to continue its life cycle.
The diseases in which human acts as dead end host, i.e., dead and disease : ?
1. Japanies encephalitis
2. Trichinosis
3. Bubonic plaque
4. Echynococcosis (hydatid disease)
5. Tetanus

## 696. NEERI headquarter is situated at ?

a) Delhi

b) Cuttack

c) Calcutta

d) Nagpur

Correct Answer - D
Ans. is 'd' i.e., Nagpur
National Environmental Engineering Research Institute (NEERI) Headquarter is at Nagpur.

## 697. Migration studies explains ?

a) Distribution of disease

b) Genetic factors affecting disease

c) Social status of immigrants

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Genetic factors affecting disease

## 698. Spot map was devised by ?

a) Louis pasteur

b) Ronald Ross

c) David Moley

d) John snow

Correct Answer - D
Ans. is 'd' i.e., John snow
John Snow (1813-1858) found the link between cholera and contaminated drinking water in 1854, using spot map.

## 699. An epidemiological hypothesis should specify the following except ?

a) Population

b) Time response relationship

c) Geographical trends

d) Expected outcome

Correct Answer - C

**Ans. is `c' i.e., Geographical trends**

**An epidemiological hypothesis should specify : -**

- The population
- The expected outcome
- The time response relationship
- The specific cause
- The dose response relationship

## 700. The correct sequence of phases of public health history in India is ?

a) Disease control → Health promotion → Social engineering phase → Health for All phase

b) Health promotion → Social engineering phase → Health for All phase → Disease control

c) Social engineering phase → Health for All phase → Disease control → Health promotion

d) Health for All phase Disease control → Health promotion → Social engineering phase

Correct Answer - A

**Ans. is 'a' i.e., Disease control → Health promotion → Social engineering phase → Health for All phase**

**Following is the correct sequence of correct phases of public health history in India:**

a. Disease control phase [1880-1920]
b. Health promotional phase [1920-1960]
c. Social engineering phase [1960-1980]
d. Health for All phase [1981-200 A. D.]

## 701. Using seatbelt is which level of prevention ?

a) Primary

b) Secondary

c) Tertiary

d) Rehabilitation

Correct Answer - B
Ans. is 'b' i.e., Secondary

## 702. Primordial prevention is ?

a) Early diagnosis and treatment

b) Prevention of development of disease

c) Prevention of development of risk factors

d) Rehabilitation

Correct Answer - C
Ans. is 'c' i.e., Prevention of development of risk factors

## 703. Teaching children about the side effects of taking drugs comes under: *March 2013 (e)*

a) Primary level of prevention

b) Secondary level of prevention

c) Tertiary level of prevention

d) Primordial prevention

Correct Answer - D
Ans. D i.e. Primordial prevention
**Primordial prevention**

- It consists of actions and measures that inhibit the emergence of risk factors in the form of environmental, economic, social, and behavioral conditions and cultural patterns of living etc.
- For example, many adult health problems (e.g., obesity, hypertension) have their early origins in childhood, because this is the time when lifestyles are formed (for example, smoking, eating patterns, physical exercise).
- In primordial prevention, efforts are directed towards discouraging children from adopting harmful lifestyles

**704. Which of the following is not included in the primary prevention for hypertension:**
***September 2010***

a) Exercises

b) Weight control

c) Health education

d) Early diagnosis and treatment

Correct Answer - D
Ans. D: Early diagnosis and treatment
Primary prevention strategies intend to avoid the development of disease.
Most population-based health promotion activities are primary preventive measures
Weight loss, reduced intake of dietary sodium, moderation in alcohol consumption, and increased physical activity are the best proven interventions for prevention of hypertension.

## 705. All of the following indicators are included in Physical Quality of Life Index (PQLI) except ?

a) Infant mortality rate

b) Life expectancy at age one

c) Literacy rate

d) Per capita income

Correct Answer - D
Ans. is 'd' i.e., Per capita income
The index for quality of life is *"Physical quality of life index (PQLI)".*
The PQLI is an attemt to measure quality of life or well-being of a country.
Physical quality of life index consolidates three indicators *:?*
*i) Literacy rate*
*ii) Infant mortality rate*
*iii) Life expectancy at age 1 year (LE)*
PQLI ranges from *0 to 100.*
*PQLI in India is 65.*

## 706. Dimension of HDI which is measured to check good standard of living ?

a) Income

b) Knowledge

c) Lingevity

d) Housing

Correct Answer - A

**Ans. is 'a' i.e., Income**

**HDI is a composite index combining indicators representing three dimensions *?***

i. *Longevity (life expectancy at birth)*
i. *Knowledge (Adult literacy rate and mean years of schooling, i.e. Gross enrolement ratio)*
i. *Income (real GDP per capita in purchasing power parity in US dollars)*

- Among these three, income is included in standard of living.

**Standard of living**

- It refers to the usual scale of our expenditure, goods we consume and services we enjoy.
- **It includes *:?***

i. *Income & occupation*
i. *Standards of housing, sanitation & nutrition*
i. *Level of provision of health, educational, recreational and other services.*

- Standard of living depends on ***per capita GNP***

## 707. Lead time is defined is ?

a) Time between diagnosis and treatment

b) Time between point where the diagnosis is made by screening test to usual diagnosis

c) Time between disease onset and outcome

d) Time between usual time of diagnosis and outcome

Correct Answer - B
Ans. is 'b' i.e., Time between point where the diagnosis is made by screening test to usual diagnosis
The lead time is the time period between diagnosis by early detection (i.e., earliest point of diagnosis by screening test) and diagnosis by standard diagnostic tests.
Lead time is the advantage gained by screening.

## 708. Test quoted as highly sensitive means ?

a) High false positive and high false negative

b) High false positive & low false negative

c) Low false positive & low false negative

d) Low false positive and high false negative

Correct Answer - B

Ans. is 'b' i.e., High false positive & low false negative

When a screening test is used to diagnose a disease, the test oucome can be positive (diseased) or negative (healthy), while the actual health status of the person may be different.

- **In that setting**

i. *True positive → Diseased people correctly diagnosed as diseased.*

i. *False positive → Healthy people wrongly identified as diseased.*

i. *True negative → Healthy people correctly identified as healthy.*

*. *False negative Diseased people wrongly identified as healthy.*

- There are two major statistical measures for the validity of a screening test : *?*

**Sensitivity**

- It is the ability of a test to identify correctly all those who have the disease, i.e., true positive.
- In other words sensitivity measures the precentage of sick people who are identified as having disease.
- For example if a test is 90% sensitive, that means out of 100 diseased people, it will diagnose 90 (90% of diseased people will be diagnosed). Remaining 10% will be wrongly indentified as not having the disease, i.e., false negative.

**Specificity**

- It is the ability of a test to identify correctly those who do not have

the disease i.e., true negative

- In other words specificity measures the percentage of well people who are identified as not having the disease.
- For example, a 90 percent specificity means that 90% of nondiseased people will be identified as not having the disease. The remaining 10% will be wrongly classified as diseased, i.e., false positive.

## 709. Denominator in specificity ?

a) True positive + False negative

b) True positive + False positive

c) True negative + False positive

d) True negative + False negative

Correct Answer - C
Ans. is 'c' i.e., True negative + False positive

## 710. When two tests done together what is the result?

a) Increased sensitivity and specificity

b) Decreased sensitivity and specificity

c) Increased sensitivity, decreased specificity

d) Decreased sensitivity, increased specificity

Correct Answer - C

**Ans. is 'c' i.e., Increased sensitivity, decreased specificity**

**Diognostic test in *'Series mode'***

- It means that a particular diagnostic test (or more than one diagnostic tests) are performed *sequentially.*
- *The pt. is considered positve for the diseases only when all the tests performed in the sequence give positive results.*
- Even if one of the test is negative [despite other tests being positive] the pt. is considered negative for diseases.
- Thus as quite apparent *'serial testing'* increases *specificity* but decreases the *sensitivity.*

***Parallel testing***

- In *parallel testing* multiple diognostic tests are given *concurrently* and the pt is considered positive for disease if any of the tests give positive result.
- For exmaple ECG and Echocardiography are two procedures used in the diagnosis of VSD. When used in Parallel mode the pt. will be considered to have VSD, if any of the test give positive result (even if the other test gives negative result)
- *[But if these two tests are used in 'series mode' then the pt. will be declared positive for VSD only if both the tests give positive result]*

**For example**

- Suppose 10 different diagnostic tests are used to diagnose a particular disease
- If test are used in *Series mode*
- *The pt. will be declared positive only when all the tests give positive result.*
- *Even if 9 tests give positive and one in negative pt. will be considered negative.*
- *Because even a single positive test is considered positive*
- *True positivity increases → Sensitivity increases.*
- If test are used in *Parallel Mode*
- *the pt will be declared positve if any of the tests give positive result.*
- *even if 9 tests are negative and one is positive pt. will be considered positive.*
- *As, even a single negative test rules out the disease Increase in true negative rate Specificity increases.*

## 711. Validity, if a test is ?

a) Precise

b) Reproducible

c) Repeatable

d) Accurate

Correct Answer - D
**Ans. is 'd' i.e., Accurate**
**Validity (Accuracy)**

- The validity of a test is the extent to which it *accurately measures which it purports to measure.* In other words its the *ability to show which individuals have the disease in question and which do not.*
- Validity has two components - *sensitivity & specificity.* To be truly valid, a test should be highly sensitive, specific and unbiased.

## 712. Repeatability of test refers to ?

a) Same results on repeated trials

b) Precision

c) Consistent results

d) All of the above

Correct Answer - D

**Ans. is 'd' i.e., All of the above**

**Repeatability (reliability)**

- Repeatability means, the test must give consistent results when it is repeated more than once on the same individual under same conditions.
- That means the results of test are precise (exact), So repeatability is some time called precision, reliability or reproducibility.

## 713. Reliability of screening test does not mean ?

a) Reproducibility

b) Repeatability

c) Validity

d) Precision

Correct Answer - C

**Ans. is 'c' i.e., Validity**

***Repeatability (reliability)***

- Repeatability means, the test must give consistent results when it is repeated more than once on the same individual under same conditions.
- That means the results of test are precise (exact), So repeatability is some time called precision, reliability or reproducibility.

## 714. Positive predictive value depends on all except ?

a) Sensitivity

b) Specificity

c) Prevalence

d) Incidence

Correct Answer - D

**Ans. is 'd' i.e., Incidence**

**Positive predictive value (PPV) of a screening test depends on : -**

i. *Sensitivity*
i. *Specificity*
i. *Prevalence of disease*

- As the sensitivity and specificity of a test are relatively constant, positive predictive value is mainly dependent on the prevelance of disease.

## 715. Type of study in risk factor associated with multiple diseases ?

a) Cohort study

b) Case control study

c) Ecological study

d) Clinical trial

Correct Answer - A
Ans. is 'a' i.e., Cohort study
In case control study we proceed from effect to cause by taking history. It is possible to take history of exposure of multiple risk factors → multiple risk factors can be identified for a single disease.
In cohort study we start by exposing the study cohort to a particular risk factor and then follow up the cohort for the occurence of disease. So, several possible outcomes related to exposure can be studied simultaneously → we can study the association of the suspected factor with many other disease in addition to the one under study.

- *Case control study → can identify multiple risk factors.*
- *Cohort study → can identify multiple outcome (disease).*

## 716. Observational study is all except -

a) Case control

b) Cohort

c) RCT

d) Cross-sectional

Correct Answer - C
Ans. is 'c' i.e., RCT

## 717. Statistical analysis of data of various studies done in same matter is called as ?

a) Meta analysis

b) Data review

c) Propaganda

d) Cohort study

Correct Answer - A

**Ans. is 'a' i.e., Meta analysis**

**Meta analysis**

*Meta-analysis refers to the analysis of analyses.* It is the statistical analysis of a collection of individual studies.

Meta-analysis is a statistical technique for amalgamating, summarising, and reviewing previous quantitative research. By using meta-analysis, a wide variety of questions can be investigated, as long as a reasonable body of primary research studies exist.

Selected parts of the reported results of primary studies are entered into a database, and this "meta-data" is "meta-analyzed", in similar ways to working with other data - descriptively and then inferentially to test certain hypotheses.

The appeal of meta analysis is that it in effect combines all the research on one topic into one large study with many participants. The danger is that in amalgamating a large set of different studies the construct definitions can become imprecise and the results difficult to interpret meaningfully.

In a meta-analysis, research studies are collected, coded, and interpreted using statistical methods similar to those used in primary data analysis. The result is an integrated review of findings that is

data analysis. The result is an integrated review of findings that is more objective and exact than a narrative review. By accumulating results across studies, one can gain a more accurate representation of the population relationship than is provided by the individual study estimators.

## 718. Taking history of smoking in pregnant woman and following its effect on fetus is what ?

a) Case control

b) Prospective cohort

c) Retrospective cohort

d) Case report

Correct Answer - B

**Ans. is `b' i.e., Prospective cohort**

o Prospective cohort study is one in which the outcome (e.g. disease) has not occurred at the time of investigation begins.

o In the given question, the outcome has not occurred at the time of investigation begins. Only history of risk factor exposure (smoking) is taken. Then outcome (effect on fetus) is followed in prospective.

o This is **classical prospective cohort study.**

**Types of cohort studies**

*Prospective cohort study:*

- Known as *'Current cohort study'* or *'Concurrent cohort study'*
- *Outcome has not yet occurred when the study has begun:* Only exposure has occurred; we look **for** development of same disease in both exposed and non-exposed groups

Examples :- *Framingham heart study, Doll & Hills prospective study on smoking & lung Cancer.*

***Retrospective cohort study :***

- Known as *'Historical cohort study'* or *'Non-concurrent cohort study'*
- *Combines advantages of both Cohort study and Case control study*
- *Both exposure as well as outcome have occurred when the study*

*has begun:* First we go back in time and take only exposure into consideration (cohorts identified from past hospital/ college records), then look for development of same disease in both exposed and non-exposed groups

- *Sample size required is same as that of prospective cohort study*
- Usually used in occupational cancer studies
- Examples :- Effect of fetal monitoring on neonatal death; PVC exposure and angiosarcoma of liver.
- *Combined prospective-retrospective cohort study :*
- Known as *'Mixed cohort study'*
- Combines designs of both prospective cohort study and retrospective cohort study
- *Both exposure as well as outcome have occurred when the study has begun:* First we go back in time and take only exposure into consideration (cohorts identified from past hospital/ college records), then look for development of same disease in both exposed and non-exposed groups; later cohort is followed prospectively into future for outcome
- Examples :- *Court-Brown & Doll Study on effects of radiation therapy.*

## 719. A pharma agent wants to introduce vaccine for 1 yr old and see its efficacy. The study design should be ?

a) Cohort study

b) Clinical trial

c) Field trial

d) None

Correct Answer - C

**Ans. is 'c' i.e., Field trial**

**Experimental epidemiology (Epidemiological Experiments)**

- Experimental epidemiology is also called *trial.* Broadly speaking, a trial refers to putting something to a test. This allows the term to be used in reference to a test of a treatment for the sick or a test of a preventive measure intended to avert illness, injury or disease.
- Therefore, the defining feature of an experimental study is its ability to allocate or assign interventions or treatment to experiment unit.
- In simple words, the study of a treatment (Drugs, surgical intervention) or preventive measure (e.g. vaccination) on living subjects is known as *experimental study or trial.*
- Assignment of treatments may be based on

i. *Randamization* → In randomized controlled trials

i. *Non-randmization trails*

- There are following types of experimental trials

.. *Clinical trials:* Used to evaluate treatment for people who are ill (e.g. a clinical trial of a chemotherapeutic agent)

2. *Field trails:* Used to evaluate interventions to prevent disease in healthy people (e.g. a field trial of a vaccine).

3. *Community trial:* Used to evaluate community-wide intervention (e.g. a community trail of the effects of fluoridation of public water supply).
4. *Animal Study:* When clincial trails are done on animals (instead of human) is called animal study.

- In an experimental study, the investigator assign individuals in experimental group and reference group and then follows the two groups for the outcome of interests. Therefore, *experimental study is prospective study.*
- Before starting any experimental study the approval of ethics committee is required. The portocol of study is submitted to ethics committee and ethics committee gives approval to the studies which are ethical. So, all experimental studies are considered ethical (after taking approval of ethics committee). There are fewer ethical restrains on experimental study in animals than in human.

## 720. Relative risk is define as ?

a) Incidence of disease among exposed minus incidence of disease among non-exposed

b) Incidence of disease among exposed plus incidence of disease among non-exposed

c) Incidence of disease among exposed divided by incidence of disease among non-exposed

d) None of the above

Correct Answer - C
Ans. is 'c' i.e., Incidence of disease among exposed divided by incidence of disease among non-exposed

## 721. Relative risk 2 means ?

a) Risk of developing disease is 2 times higher among nonexposed

b) 30% of disease among exposed is due to risk facter

c) 200% increase in risk of developing disease among exposed

d) Incidence rate is 2 times higher in exposed group than non-exposed

Correct Answer - D
Ans. is 'd' i.e., Incidence rate is 2 times higher in exposed group than non-exposed
It is very important to know the difference between relative risk and attributable risk.

## 722. Odds ration is designated as ?

a) ab/cd

b) ac/bd

c) bd/ac

d) ad/bc

Correct Answer - D
Ans. is 'd' i.e., ad/bc
Odds - ratio (cross product ratio)

- From a case control study odds ratio can be derived which a measure of the strength of association between risk factor and outcome.
- Odds ratio is closely related to relative risk (which is analysed in cohort study) → odds ratio represents *only an estimate of relative risk.*

**723. The study of smoking as a cause of lung cancer, 90 cases were taken, 75 were smokers and among 100 controls 40 were smokers. Calculate the odds ratio ?**

a) 2

b) 4.5

c) 7·5

d) 10

Correct Answer - C
Ans. is 'c' i.e., 7·5
Odds ratio is cross product of entries in the table.
So, it is very important to make a correct table construct ?
i) History of exposure (risk factor) is arranged on left column (row).
ii) Disease is arranged on the top ?
a) Cases in middle column (row)
b) Controls in right column (row)

## 724. Advantage of cohort study ?

a) Involves fewer number of subjects

b) Inexpensive

c) Suitable for rare disease

d) More than one outcomes can be studied

Correct Answer - D
Ans. is 'd' i.e., More than one outcomes can be studied

## 725. All of the following are true about case control study except ?

a) Rapid and inexpensive

b) No risk to subjects

c) Risk factor can be identified

d) Less prone to bias

Correct Answer - D
Ans. is 'd' i.e., Less prone to bias

**726. A village with 10000 population 250 suffered from malaria out of which 50 dead, another 100 suffered from dengue out of which 30 died in 2013 case fatality rate of dengue is ?**

a) 40

b) 80

c) 30

d) 70

Correct Answer - C
Ans. is 'c' i.e., 30

**727. Study was conducted to see for role of radiation in leukemia, 100 patients selected among which 70 given history of exposure, among 100 controls 30 giving history of exposure. What is the bias in the study ?**

a) Reporting bias

b) Recall bias

c) Interviewer bias

d) Hawthorne bias

Correct Answer - B

**Ans. is 'b' i.e., Recall bias**

**Information (Observer or misclassification bias)**

- Information bias is a type of connitive bias
- Are when proportion of subjects misclassified on exposure or disease.
- Information bias occurs due to people's curiosity and confusion of goals when trying to choose a course of action.
- It may be of following types

**i) *Reporting bias***

- Individual with severe disease tends to have complete records therefore more complete information about exposures and greater association found.

**ii) *Recall bias (memory bias)***

- Those who have disease (cases) have a greater sensitivity for recalling exposure than those who dont have disease (controls).

**iii) *Interviewer bias***

- Caused by the action of the interviewer, e.g., Interviewer generally devote more time to cases as compared to controls.

**iv) *Hawthorne bias (Attention bias)***

- It is caused by change in behavior of human subjects of an experiment, simply becasue they know that they are being observed.
- For example, if we want to study the smoking as a risk factor for lung carcinoma and we take 2 groups (50 smokers and 50 nonsmoker) and follow them for 10 years. It may be possible that over the time study subjects may change their behavior, e.g. 5 out of 50 smokers quit smoking behavior. This will cause *Hawthorne bias.*
- It is quite obvious that Hawthorne effect will occur in prospective studies (where the study subject are being observed), e.g. in ***Cohort Study.*** This bias will not occur in retrospective study as the study subjects are not observed rather their history is taken.

**728. In house with 9 susceptible individuals 1 gets infected and other two get infected after two days what is the secondary attack rate ?**

a) 25%

b) 33%

c) 50%

d) 65%

Correct Answer - A
Ans. is 'a' i.e., 25%

## 729. Association of cause and effect testing in different stting by different methods to assess

a) Coherence

b) Specificity

c) Consistency

d) Strength

Correct Answer - C

**Ans. is 'c' i.e., Consistency**

**Consistency of association**

- The association is consistent if the results are replicated when studies in different settings and by different methods.
- For example, different studies in different settings have proved smoking as one of the cause for lung cancer → Smoking has consistent association with lung cancer.

## 730. Which of the following correctly defines prevalence ?

a) New case at a time in a population

b) Old cases at a time in a population

c) All cases at a time in a population

d) Subclinical cases at a time in a population

Correct Answer - C

**Ans. is 'c' i.e., All cases at a time in a population**

**Prevalence**

Prevalence refers specifically to all current cases (old and new) existing at a given point in time or over a period of time in a given population.

*"The total number of all individuals who have an attribute or disease at a particular time (or during a particular period) divided by the population at risk of having the attribute or disease at this point in time or midway through the period".*

## 731. All of the following are components of Epidemiological triad except ?

a) Environment

b) Agent

c) Host

d) Manpower

Correct Answer - D
**Ans. is 'd' i.e., Manpower**
**Epidemiological triad**

- The occurrence and manifestations of any disease, whether communicable or noncommunicable, are determined by the interaction of following three factors.

1. *The agent*
2. *The host*
3. *The environment*

## 732. Index of operational efficiency of Malaria ?

a) API

b) ABER

c) Infant parasite rate

d) Spleen rate

Correct Answer - B
Ans. is 'b' i.e., ABER
Annual blood examination rate (ABER) is an index of operational efficiency.

## 733. Mother to child transmission in vectors is called?

a) Transovarian

b) Mechanical transmission

c) Propagative transmission

d) Cyclodevelopmental transmission

Correct Answer - A

**Ans. is 'a' i.e., Transovarian**

When the infectious agent is transmitted vertically from the infected female to her progeny in the vector, It is known as *trasnovarian transmission.*

**Transovarian transmission *is* seen in :-**

- *Scrub typhus*
- *Rickettsial pox*
- *Rocky mountain spotted fever*
- *Indian tick typhus*
- *Q. fever*
- *Yellow fever*

**Note :** In Q fever also, there is transovarial transmission in tick. (But no arthropod is involved in its transmission to man).

**Also know**

- Transmission of the disease agent from one stage of life cycle to another as for example nymph to adult is known as *trans-stadial transmission.*

## 734. Index case is the ?

a) First case in a community

b) Case getting infection from primary case

c) Case getting infection from secondary case

d) First case detected by investigator

Correct Answer - D

Ans. is 'd' i.e., First case detected by investigator

- *Primary case* → First case of communicable disease introduced into the population.
- *Index case* → First case to come to attention of the investigator.
- It is not always necessary that primary case will be index case : -

i. When the first case noticed by the investigator is also the first case of the population → Primary case and index case are the same.

i. When the first case nociced by the investigator is not the first case of the population (primary case) → Index case and primary case are different.

- *Secondary cases* → Cases those developing from contact with primary case.

## 735. Time interval between inoculation of infection to maximum infectivity is ?

a) Lead time

b) Median incubation period

c) Generation time

d) Serial inverval

Correct Answer - C
Ans. is 'c' i.e., Generation time
*Generation time* → Period from receipt of infection to maximal infectivity.
*Serial interval* → Gap between onset of primary case and secondary case.

## 736. Carriers not seen in ?

a) Rabies

b) Typhoid fever

c) Polio

d) Malaria

Correct Answer - A
Ans. is 'a' i.e., Rabies

## 737. Influenza pandemic is ?

a) Seasnal trend

b) Cyclic trend

c) Secular tred

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Cyclic trend

## 738. Incubation period of new disease determined by?

a) Lead time

b) Generation time

c) Serial interval

d) Latent period

Correct Answer - B
**Ans. is 'b' i.e., Generation time**
**<u>Generation time</u>**

- *Interval between receipt of infecton by host and maximal infectivity of the host.*
- Generation time is roughly equal to the incubation period.

## 739. Disease under international surveillance ?

a) Rabies

b) Mumps

c) Hepatitis

d) Tetanus

Correct Answer - A
**Ans. is 'a' i.e., Rabies**
**Diseases under international surveillance (WHO)**

- Rabies
- oliomyelitis
- Salmonellosis
- Louse born typhus fever
- Malaria
- Relapsing fever
- Human influenza

## 740. True about chicken pox ?

a) Caused by Human Herpes Virus-3

b) Scab is infective

c) Rash is deep seated

d) SAR is 70%

Correct Answer - A
Ans. is 'a' i.e., Caused by Human Herpes
Chickenpox is caused by varicella zoster virus (Human Herpes Virus-III or Herpes simplex type-III).

## 741. About measles true is ?

a) Incubation period is 5 days

b) Otitis media is the most common complication

c) Caused by orthomyxovirus

d) Large number of carriers

Correct Answer - B

**Ans. is 'b' i.e., Otitis media is the most common complication**

- Measles is caused by a *RNA virus* of paramyxovirus family.
- *The only source of infection is a case of measles, carriers are not known to occur.*

## 742. True about measles outbreak ?

a) Occurs if proportion of susceptible children is >20%

b) Infects 50% children in virgin community

c) Vaccination given at 6 months

d) Every 6-7 years

Correct Answer - C
Ans. is 'c' i.e., Vaccination given at 6 months
*Epidemic of measles occur if proportion of susceptible children is > 40%.*
*If measles is introduced in a virgin community, it infects > 90% of children.*
Measles vaccine is given at the age of a months, but age can be lowered to 6 months in epidemics.
Measles shows a cyclic trend with epidemic every 2-3 years.

## 743. 1st case of which of the following was found in shimoga district of Karnataka ?

a) Yellow fever

b) Japenese encephalitis

c) KFD

d) Dengue fever

Correct Answer - C
Ans. is 'c' i.e., KFD
KFD was first recognized in 1957 in Shimoga district of Karnataka State in South India. Local inhabitants called the disease "monkey disease" because of its association with dead monkeys. The disease was later named after the locality-Kyasanur Forest- from where the virus was first isolated.

## 744. WHO declared global eradication of small pox on ?

a) 26th October 1977

b) 5th July 1975

c) 17th May 1975

d) 8th May 1980

Correct Answer - D

Ans. is 'd' i.e., 8th May 1980

The world's *last case* of smallpox occurred in *somalia* on *26 October 1977* (Apart from a laboratory accident in 1978).

- The WHO declared on 8 may 1980 that smallpox had been eradicated.

***India***

- The last indigenous case in India occured on 17 May 1975 in Bihar.
- On 24 May 1975, India's last known case of smallpox, an importation from Bangladesh occured.
- In April 1977, India was declared smallpox free by an International Commission for Assessment of smallpox eradication.

## 745. Most common cause of meningococcal epidemic?

a) A

b) C

c) Y

d) W-135

Correct Answer - A

**Ans. is 'a' i.e., A**

**Meningococcal meningitis (cerebrospinal fever)**

- It is an acute communicable disease caused by N. meningitidis.
- Out of 13 serogroups, group A, B and C are most important. Group A is associated with epidemics and group C mostly with localized outbreaks, while group B causes both epidemics and outbreaks. Group 29-E, W-135 and Y also frequently cause meningitis.
- *Reservoir* → Human nasopharynx is the only reservoir
- *Source of infection → carriers are the most important source of infection, not the clinical cases.*
- *Age group* → Children between 3 months to 5 years.
- Outbreaks of meningococcal meningitis occur more frequently in the dry and cold months of the year.
- *Period of communicability* → until meningococci are no longer present in discharges from nose and throat. Cases rapidly lose their infectiousness within 24 hours of specific treatment.
- Meningococcal meningitis is a very fatal disease.
- *In untreated cases mortality is 80%.*
- *The disease is fatal in 5-10% of cases even with prompt antimicrobial treatment in good health care facility.*

## 746. Main aim for treatment of TB ?

a) Prevention of complication

b) Prevention of disease transmission

c) Complete clinical cure

d) Complete bacteriological cure

Correct Answer - D
Ans. is 'd' i.e., Complete bacteriological cure
Chemotherapy is indicated in every case of active tuberculosis.
The objective of treatment is cure-that is, the elimination of both the fast and slowly multiplying bacilli from the patient's body.
*The effects of chemotherapy are judged not by the anatomic healing of lesions, but maily by the elimination of bacilli from the patient's sputum.*

## 747. Kyasanur forest disease is transmitted by:
***September 2011***

a) Mite

b) Tick

c) Mosquito

d) None

Correct Answer - B
Ans. B: Tick
Vector for KFD in India is hard tick (Haemophysalis spinigera)
**Kyasanur Forest Disease/ KFD**

- It is a tick-borne viral hemorrhagic fever endemic to South Asia.
- The disease is caused by a virus belonging to the family flaviviridae, which also includes yellow fever and dengue fever.
- There are a variety of animals thought to be reservoir hosts for the disease, including porcupines, rats, squirrels, mice and shrews.
- The vector for disease transmission is Haemaphysalis spinigera, a forest tick.
- Humans contract infection from the bite of nymphs of the tick.
- The disease has a morbidity rate of 2-10%, and affects 100-500 people annually.
- The symptoms of the disease include a high fever with frontal headaches, followed by haemorrhagic symptoms, such as bleeding from the nasal cavity, throat, and gums, as well as gastrointestinal bleeding.
- An affected person may recover in two weeks time, but the convalescent period is typically very long, lasting for several months. There will be muscle aches and weakness during this period and the

There will be muscle aches and weakness during this period and the affected person is unable to engage in physical activities
Prophylaxis by vaccination, as well as preventive measures like protective clothing, tick control, and mosquito control are advised.

- An attenuated live vaccine is now available.
- Specific treatments are not available

## 748. The diluent used for BCG is ?

a) Distilled water

b) Normal saline

c) Dextrose solution

d) Ringer-lactate

Correct Answer - B
Ans. is 'b' i.e., Normal saline

## 749. True about DPT vaccine ?

a) > 95% Efficacy

b) Prevent development of carrier

c) Prevent development of Diphtheria

d) Stored at -4° C

Correct Answer - B
Ans. is 'b' i.e., Prevent development of carrier
Diphtheria toxoid (in DPT) prevents development of disease by inducing antibody formation against diphtheria toxin (exotoxin) which is responsible for disease. But, it does not prevent carrier state as antibodies are not produced against organism and it can reside in nasopharynx.

## 750. True about mumps vaccine ?

a) Killed vaccine

b) Efficacy 95%

c) Only one dose is given

d) Not combined with other vaccines

Correct Answer - B

**Ans. is 'b' i.e., Efficacy 95%**

**Mumps vaccine**

- Highly effective live attenuated vaccine is now available for the prevention of mumps.
- Widely-used live attenuated mumps vaccine strains include the Jeryl-Lynn, RIT 4385, Leningrad-3, L-Zagreb and Urabe strains.
- Live attenuated mumps vaccine strains used only on a limited scale include the Hoshino, Torii and NKM-46 strains.
- The WHO recommends that the Rubini mumps vaccine strain should not be used in national immunization programmes because of its demonstrated low effectiveness.
- A single dose (0-5 ml) intramuscularly produces detectable antibodies in 95% of vaccines.
- The duration of long-term immunity is not known.
- It is recommended for routine immunization for children over 1 year of age, either alone or in combination with other virus vaccines, e.g. in MMR vaccine or as a quadrivalent vaccine with varicella.
- A second dose is recommended for children at 4-6 years of age i.e., before starting the school.
- The current mumps strain (Jeryl Lynm) has the lowest associated incidence of post vaccine aseptic meningitis (from 1 in 150,000 to 1 in 1·8 million).

- There are no known case of long-term sequelae associated with mumps vaccination.

## 751. OKA strain is used to produce vaccine for ?

a) Mumps

b) Measles

c) Japanese encephalitis

d) Chickenpox

Correct Answer - D
Ans. is 'd' i.e., Chickenpox

## 752. For survey of immunization by WHO age group selected is ?

a) 12 - 23 months

b) 0 - 6 months

c) 6 - 12 months

d) 2 - 5 years

Correct Answer - A

**Ans. is 'a' i.e., 12 - 23 months**

In the Expanded programme on Immunization (EPI) cluster technique, a simplified cluster sampling method is used.

- *It is based on ranodm selection of 210 children who are 12-23 months of age.*
- *These patients are selected in 30 clusters of 7 children each to estimate immunization coverage levels.*

## 753. Immunization schedule after dog bite ?

a) 0, 7, 21

b) 0, 3, 7, 14, 28, 90

c) 0, 3

d) None

Correct Answer - B
Ans. is 'b' i.e., 0, 3, 7, 14, 28, 90

**754. As per ICDS the recommended nutrition for 3 ?6 yrs age is_____ kcal and_____gm of proteins ?**

a) 200/10

b) 300/10

c) 250/10

d) 500/15

Correct Answer - D
Ans. is 'd' i.e., 500/15

## 755. Food standards for international food market utilizes?

a) ISI

b) AGMARK

c) Codex alimentarius

d) Bureau of India standards

Correct Answer - C
Ans. is 'c' i.e., Codex alimentarius

## 756. Richest source of vitamin B12 ?

a) Meat

b) Green leafy vegetables

c) Corn oil

d) Sunflower oil

Correct Answer - A
Ans. is 'a' i.e., Meat

**757. A child requires how much energy per day (Kcal/ day)?**

a) 1000-1500

b) 1600-2000

c) 2000-2500

d) 2500-3000

Correct Answer - A
Ans. is 'a' i.e., 1000-1500

## 758. Carbohydrate requirement in ideal balanced dict?

a) 10-20% of total energy intake

b) 20-30% of total energy intake

c) 40-50% of total energy intake

d) 50-70% of total energy intake

Correct Answer - D
Ans. is 'd' i.e., 50-70% of total energy intake

## 759. The reference protein is ?

a) Fish

b) Egg

c) Rice

d) Lemon

Correct Answer - B
Ans. is 'b' i.e., Egg
Eggs are used in nutrition studies as a "reference protein" as eggs proteins are considered to be the best among food proteins because of their high biological value and digestibility.
So NPU is also high because it is the product of biological value and digestibility cofficient divided by 100.

## 760. Pulse proteins are deficient in?

a) Methionine

b) Lysine

c) Threonine

d) All

Correct Answer - A
Ans. is 'a' i.e., Methionine

## 761. Cereals are rich in which amino acid ?

a) Lysine

b) Threonine

c) Tiyptophan

d) Methionine

Correct Answer - D
Ans. is 'd' i.e., Methionine
*"Pulses have high lysine content and are deficient in methionine; on the other hand cereals have an abundance of methionine"*

## 762. Cereal protein is deficient in which amino acid

a) Leucine

b) Lysine

c) Phenylalanine

d) Tryptophan

Correct Answer - B
**Ans. is 'b' i.e., Lysine**
**<u>Supplementary action of proteins</u>**

- Cereals are deficient in essential amino acid *Lysine & threonine.*
- Pulses are deficient in essential amino acid Methionine.
- *So if cereals are eaten with pulses, their proteins complement each other & provide a more balanced and complete protein intake.*

## 763. Gomez classification is based on ?

a) Weight retardation

b) Height retardation

c) Mid arm circumference

d) Stunting

Correct Answer - A
Ans. is 'a' i.e., Weight retardation

## 764. Village Health Guide measures the state of malnutrition in an under 5 child by using -

a) Mid arm circumference

b) Weight for age

c) Skin fold thickness

d) Height for age

Correct Answer - A
Ans. is 'a' i.e., Mid Arm Circumference
Midarm circumference is an *age independent,* easy, measure of the state of malnutrition, for children between the age group of *1-5 years.*
A circumference less than 12·5 cm is suggestive of moderate to severe malnutrition.
The use of Shakir's Tape has further simplified assessment of midarm circumference at the village level. This tape has shading in the three different colours, which indicate different levels nutrition : (M.A.0 = Mid arm circumference)
Red shading signifies M.A.0 < 12·5 and is an index of malnutrition
Yellow shading signifies M.A.0 = 12-5 to 13-5 and sets forth a warning Green shading signifies M.A.0 > 13-5 and is indicative of adequate nutrition.

## 765. Contraception of choice for lactating mothers ?

a) OC pills

b) Progesterone only pills

c) Natural method

d) c and b both

Correct Answer - D

**Ans. is 'c > b' i.e., Natural method > Progesterone only pills**

Natural method (breast feeding) is best contraception during lactation.

**Contraception during lactation**

- Preferred methods of contraception during breast feeding are those that do not interfere with lactation.
- Methods are :

1) Lactational amenorrhea method (LAM)

- The probability of pregnancy is very small for first 6-8 months after pregnancy, if the mother is fully breast-feeding her infant, is still amenorrhoeic and the child does not receive additional food.
- Under these conditions there is only 2% chance of pregnancy.
- So breast - feeding is a very important and efficient contraceptive method during *early puerperium* Reffered to as *lactation amenorrhea method.*

2) Alternative methods

- *Barrier methods, IUD and progesteron only hormonal methods (minipills, implants, injectables) are the primary contraceptive alternatives during breast feeding.*
- They have no adverse effects on lactation, the condition of the infant or maternal ovarian function.

- *Sterilization* is only a good alternative only if the family wants a permanent method of contraception.
- *Combined oral contraceptives (estrogen + progesteron) diminish milk production and therefore are not recommended during lactation.*

## 766. Billing method of contraception is synonymous for ?

a) Rhythm method

b) Basal body temperature method

c) Cervical mucus method

d) Abstinence

Correct Answer - C
Ans. is 'c' i.e., Cervical mucus method

## 767. Failure rate of female condom ?

a) < 1 per 100 women-years

b) 1-5 per 100 women years

c) 5-20 per 100 women years

d) 20-40 per 100 women years

Correct Answer - C

**Ans. is 'c' i.e., 5-20 per 100 women years**

***Female* condom**

- The female condom is a pouch made of polyurethane, which lines the vagina.
- An internal ring in the close end of the pouch covers the cervix and an external ring remains outside the vagina.
- It is prelubricated with silicon, and a spermicide need not be used.
- It is an effective barrier to STD infection.
- However, high cost and acceptability are major problems.
- The failure rates during the first year use vary from 5 per 100 women-years pregnancy rate to about 21 in typical users.

## 768. The single most common cause of maternal mortality is?

a) Anemi

b) Sepsis

c) Obstetric hemorrhage

d) Obstructed labor

Correct Answer - C
Ans. is 'c' i.e., Obstetric hemorrhage

## 769. Registration of birth & death with a 6 monthly survey is done in ?

a) National sample survey

b) Vital statistical system

c) Census

d) Sample registration system

Correct Answer - D

**Ans. is 'd' i.e., Sample registration system**

**Sample registration system**

Sample registration system (SRS), initiated in mid 1960s provides reliable estimates of birth (fertility) and death (mortality) rates at state and national levels.

It is a *dual record* system,consisting of continuous enumeration of birth and death by an enumerator and an independent survey every 6 months by an investigator supervisor.

Main objective of SRS is to provide reliable estimates of birth rate, death rate and infant mortality rate at the natural division level for rural areas and at state level for urban areas.

*Infant mortality rate is the decisive indicator for estimation of sample size at natural division.*

Sample design for SRS is *unistage stratified simple random sample.*

SRS now covers entire country.

*Finding of recent SRS (2013),*

**According to 23rd/e of Park :-**

i) Crude Birth Rate (CBR) : 21·6 per 1000 mid-year population.

ii) Crude Death Rate (CDR) : 7·0 per 1000 mid-year population.

iii) Natural Growth Rate : 14·5 per 1000 mid-year population.

iv) Infant Mortality Rate (IMR) : 42 per 1000 live births.

## 770. Not included in numerator of dependency ratio?

a) 5 years age group

b) 10 years age group

c) 20 years age group

d) 70 years age group

Correct Answer - C
Ans. is 'c' i.e., 20 years age group

## 771. Denominator in dependency ratio ?

a) 0-5 years

b) 5-14 years

c) > 65 years

d) 15-65 years

Correct Answer - D
Ans. is 'd' i.e., 15-65 years

## 772. Denominator in general fertility rate is ?

a) All women between 15-45 year age

b) All married women between 15-45 year age

c) Total number of live births

d) Total number of all births

Correct Answer - A
Ans. is 'a' i.e., All women between 15-45 yr age

## 773. Gross fertility rate is ?

a) Number of children a women has during reproductive period

b) Number of female children a woman has during reproductive period

c) Number of male children a woman has during reproductive period

d) Total number of live birth per 1000 women 1544 years age

Correct Answer - B

**Ans. is 'b' i.e., Number of female children a woman has during reproductive period**

**Gross reproduction rate (GRR) :**

Average number of girls that would be born to a married woman if she experiences the current fertility pattern throughout her reproductive span (15-44 or 49 year) assuming no mortality.

## 774. Not true about population pyramid ?

a) India has broad base

b) India has narrow base

c) India has narrow apex

d) Developing countries have bulge in the center

Correct Answer - B
Ans. is 'b' i.e., India has narrow base
In countries with high birth rates as ours, population pyramid is broad based conical (narrow apex) because of high birth rate and tapering of population with increase in age.
The pyramid of developing country (e.g. India) has a broad base and a tapering top.
In developed countries, the pyramid generally shows a bulge in the middle and has a narrower base (as in figure given in the question).

## 775. High stationary stage of Demography cycle is characterized by ?

a) High birth rate, low death rate

b) Low birth rate, high death rate

c) Low birth rate, low death rate

d) High birth rate, high death rate

Correct Answer - D
**Ans. is 'd' i.e., High birth rate, high death rate**

## 776. Current infant mortality rate in India ?

a) 29 per 1000 live births

b) 42 per 1000 live births

c) 50 per 1000 live births

d) 20 per 1000 live births

Correct Answer - B
Ans. is 'b' i.e., 42 per 1000 live births

## 777. Sex ratio in India is ?

a) 970

b) 960

c) 930

d) 940

Correct Answer - D
Ans. is 'd' i.e., 940

## 778. Which is not a criteria for overcrowding ?

a) No. of persons

b) Sex separation

c) Door and window

d) Floor space

Correct Answer - C
Ans. is 'c' i.e., Door and window

## 779. Soiling index is measure for ?

a) Air pollution

b) Water pollution

c) Faecal contamination

d) Milk contamination

Correct Answer - A
**Ans. is 'a' i.e., Air pollution**
**Monitoring of air pollution**

- Monitoring of air pollution is done by : -
- Sulphur dioxide.
- Gritt and dust measurement.
- Co-efficient of haze.
- Air pollution index.
- *Smoke or soiling index*

**780. Which of the following is a differentiating feature of anopheles from aedes mosquito ?**

a) Pupa has broad siphon

b) Eggs are oval shaped

c) Wings unspotted

d) Popi are short

Correct Answer - A
Ans. is 'a' i.e., Pupa has broad siphon

## 781. Kata Thermometer is used to measure ?

a) Maximum temperature

b) Minimum temperature

c) Radiant heat

d) Cooling power of air

Correct Answer - D
Ans. is 'd' i.e., Cooling power of air

## 782. Residual chlorine level after disaster like flood ?

a) 0·7 mg/litre

b) 1·5 mg/litre

c) 2 mg/litre

d) 3 mg/litre

Correct Answer - A

**Ans. is 'a' i.e., 0·7 mg/litre**

**Principles of chlorination**

- Water should be clear and free from turbidity. Turbidity impedes efficient chlorination.
- The chlorine demand of the water should be estimated. *It is the amount of chlorine that is needed to destroy bacteria and to oxidize all the organic matter and ammoniacal substances present in water.* Chlorine demand of water is the difference between the amount of chlorine added to the water and the amount of residual chlorine remaining at the end of specific period of contact (usually 60 minutes) at a given temperature and pH of the water.
- *The point at which the chlorine demand of the water is met is called break point chlorination. If further chlorine is added beyond break point, free chlorine begins to appear in water.*
- The presence of free residual chlorine for a contact period of at least one hour is esential to kill bacteria and virus.
- The minimum recommended concentration of free chlorine is 0.5mg/1 for one hour. *This free residual chlorine provides margin of safety against subsequent microbial contamination.*
- The sum of the chlorine demand of the specific water plus the free

residual chlorine of .5 mg/L constitutes the correct does of chlorine to be applied.

- It is worth noting here that recommended residual chlorine level for drinking water is 0.5 mg/ litre, while *for swimming pool sanitation it is 1.0 mg/ litre and for water bodies & post disaster it is 0.7 mg/litre.*

## 783. Louse transmits ?

a) Epidemic typhus

b) Endemic typhus

c) Murine typhus

d) Rickettsial pox

Correct Answer - A
Ans. is 'a' i.e., Epidemic typhus

## 784. Tiger mosquito is ?

a) Anopheles

b) Mansonia

c) Aedes

d) Culex

Correct Answer - C
Ans. is 'c' i.e., Aedes

## 785. Body mass index (BMI) is a ratio of body weight to ?

a) Height

b) Square root of height

c) Square of height

d) Cube of height

Correct Answer - C
**Ans. is 'c' i.e., Square of height**
**Body mass index**
Body mass index (BMI) is a simple index of weight for height that is commonly used to classify underweight, overweight and obesity in adults.
It is defined as the weight in kilograms divided by the squire of height in metres.

## 786. Formula for Quetelet's index ?

a) Weight divided by height

b) Height divided by cube root of weight

c) Height minus 100

d) Weight divided by square of height

Correct Answer - D
Ans. is 'd' i.e., Weight divided by square of height

**787. Calculate BMI if weight in kilograms is 98 and hight in centimeters is 175 ?**

a) 28

b) 32

c) 36

d) 40

Correct Answer - B
**Ans. is 'b i.e., 32**

## 788. Most common carcinoma in female worldwide ?

a) Cervix

b) Lung

c) Breast

d) Kidney

Correct Answer - C
Ans. is 'c' i.e., Breast

## 789. Which is not true about attitude ?

a) Adjustment

b) Knowledge

c) Cognition

d) Affect

Correct Answer - A

**Ans. is 'a' i.e., Adjustment**

**Attitudes**

- An attitude is a hypothetical construct that represents an individual's degree of like or dislike for an item.
- In simple words, *attitude means how a person expresses his/her likes and dislikes towards particular people, things, and occurences.*
- Attitude can be positive, negative, or neutral.
- It is also common to have more than one of these feelings towards something → When that happens, for example, in the case of a person both likes and dislikes something at once, it is referred to as *ambivalent attitude.*
- An attitude includes three components :-

1. Cognitive (knowledge) element
2. *Affective (emotional or feeling) element*
3. A tendency to action

## 790. Which is not true about learning ?

a) Conscious

b) Temporary change in behaviour

c) Acquiring new fears

d) Formation of habits

Correct Answer - B

**Ans. is 'b' i.e., Temporary change in behaviour**

**Learning**

- Learing is any relative permanent change in behaviour that occurs as a result of practice of experience.
- It means acquiring something new- new knowledge, new techniques, new skills, new fears and new experiences.
- Learing is necessary for man's survival and for human progress.
- It includes not only acquiring knowledge but also skills and formation of habits, and development of perception.
- Learing depends largely upon intelligence.
- Learing also depends upon motivation, and motivation depends on the need sutdents feel to learn.
- Learing is a continuous process. It is both conscious and unconscious.

## 791. Not true about IDSP ?

a) TB under regular surviellance

b) HIV under sentinal surveillance

c) Syndromic diagnosis by medical officer

d) Presumptive diagnosis by medical officer

Correct Answer - C

**Ans. is 'c' i.e., Syndromic diagnosis by medical officer**

**Integrated disease surveillance project (IDSP)**

- IDSP is a decentralized *state based* surveillance system intended to detect early warning signals of impending outbreaks and helps initiate an effective response in a timely manner in urban and rural areas.
- It will also provide essential data to monitor progress of on-going disease control programme and help allocate health resources more efficiently.
- It is a 5 years project and was launched in November 2004.

## 792. In malaria control, insecticide used for insectiside treated bed nets (ITBN)-

a) Deltamethrin

b) Malathion

c) Lindone

d) Fenitrothion

Correct Answer - A
Ans. is 'a' i.e., Deltamethrin
Insecticide Treated Bed Nets (ITBN) Programme (esp. deltamethrin) has resulted in significant decline in malaria incidence and API
1. Average decline in anopheline mosquito density - 68%
2. Average decline in cuicine mosquito density - 50%
3. Chemicals used in ITBN Programme : Synthetic pyretheroids
Deltamethrin : 2.5% in dosage of 25 mg/m2
1. Cyfluthrin: 5% in dosage of 50 mg/m2
2. Other insecticides used : Permethrin, Lambdacyhalothrin, Etofenprox, Cypermethrin

- Effectiveness of pyrethroids: For 6-12 months (Retreatment every 6 months)
- Long-lasting insecticidal mosquito nets (LLINs) : Also use pyrethroid insecticides, and a chemical binder that allows the nets to be washed > 20 times, allowing use for > 3 years.

## 793. All are true of Reduced osmolarity ORS except?

a) Sodium 75 mmol/litre

b) Potassium 20 mmol/litre

c) Chloride 45 mmol/litre

d) Osmolarity 245 mmol/litre

Correct Answer - C
Ans. is 'c' i.e., Chloride 45 mmol/litre
Because of the improved effectiveness of reduced osmolarity ORS solution, WHO and UNICEF are recommending that countries manufacture and use the following formulation in place of the previously recommended ORS solution.

## 794. Suicide rate in India ?

a) 20 per 10000 population

b) 36 per lac population

c) 108 per lac population

d) 20 per 1000 population

Correct Answer - B
Ans. is 'b' i.e., 36 per lac population
Suicides have been increasing at an alarming rate in SEAR countries.
Incidence rates of 11 per lac population in Bangladesh, 36 per lac population in India, 8 per lac in Sri Lanka, and 22 per lac in Thailand; per year have been reported.
Nearly 70% of suicides in all countries have been reported in the age group of 15-34 years with male-female ratio of 1:1·2 to 1:3 from different countries.
Position, hanging, self-immolation and drowing are the most commonly reported methods of suicide.
In India, an average of 369 suicides take place every day, out of these 248 are committed by males and 121 by females (62 are house wives). Family problems (89) and illness (72) are the main cause of suicides. o Majority cases are below 29 years of age (136) followed by 30-44 years of age group (125).

## 795. Main recommendation of Jungalwalla committe?

a) Creation of multipurpose worker

b) Health survey and planning

c) 1 PHC for 50000 population

d) Integration of health services

Correct Answer - D
**Ans. is 'd' i.e., Integration of health services**
**Health Planning in India**
The guide lines for national health planning were provided by a number of committees.
These committees were appointed by the Government of India from time to time to review the existing health situation and recommend measures for further action.

## 796. Primary Health Care includes all, except ?

a) Proper housing

b) Equitable distribution

c) Intersectoral coordination

d) appropriate technology

Correct Answer - A
**Ans. is 'a' i.e., Proper housing**
**Primary heath care**

- "Primary *health care is essential health care made universally accessible to individuals and acceptable to them, through their full participation and at a cost the community and country can afford."*
- There are *4 main principles of primary health care :*

1. Equitable distribution
2. Community participation
3. Intersectorial coordination
4. Appropriate technology

- Primary health care involves: health care of mother and child, immunization, prevention and control of locally endemic diseases, as well as appropriate treatment of common diseases and injuries. However, it is not essential to deliver these elements throught the agencies of doctors under the primary health care. Root level workers, such as village health guides, are appropriately trained to deliver these elements, at the village level.

## 797. A factory of 30 persons has monthly wage bill of Rs 30000. According to ESI act they will pay for insurance every month ?

a) 1425 Rs

b) 525 Rs

c) 2000 Rs

d) 5000 Rs

Correct Answer - A

**Ans. is 'a' i.e., 1425 Rs**

**Finance of ESI scheme**

The scheme is run by contribution by employees and employers and grants from central and state governments?

i. Employers contribution → 4·75% of total wages bills
i. Employee contribution → 1·75% of total wages bills
i. The state government's share of expenditure on medical care is $^{7}/_{8}$ of total cost of medical care.

- Factory will give 4·75% of 30000 (1425 Rs).

## 798. Not true about iodophores ?

a) Inorganic compounds

b) Release iodine

c) Surfactants

d) Disifectant

Correct Answer - A

**Ans. is 'a' i.e., Inorganic compounds**

**<u>Iodine</u>**

- Iodine is *more sporicidal than chlorine.*
- Iodine is often used in aqueous and alcoholic solution as *skin disinfectant.*
- Aqueous and alcohol based *povidone iodine preparations (Betadine) are best and safe skin disinfectants (antiseptics).*
- *Iodophores* are organic compounds that slow the release of iodine.
- The iodophores additionally serve as surfactants, thus increasing penetration while simultaneous steadily supplying iodine over long periods.
- So, iodophores are more active.

## 799. Kanawati index is used for ?

a) Air population

b) PEM

c) Obesity definition

d) Infectivity

Correct Answer - B
Ans. is 'b' i.e., PEM
Kanawati index is used to classify protein energy malnutrition (PEM).

## 800. NRHM was started by ?

a) Ministry of Education

b) Ministry of Finance

c) Ministry of Home affairs

d) Government of India

Correct Answer - D

**Ans. is 'd' i.e., Government of India**

**National Rural Health Mission (NRHM)**

- Government of **India** launched NRHM on 5th April, 2005 for a period of 7 years (2005-2012).
- The mission seeks to improve rural health care delivery system.
- The main aim of NRHM is to provide accessible, affordable, accountable, effective and reliable primary health care and bridging the gap in rural health care through creation of a cadre of *Accredited Social Health Activist (ASHA).*
- The schedule of implementation of major components of NRHM are as following (40) :

1. Merger of multiple societies and constitution of district/state mission.
2. Provision of additional generic drugs at SC/PHC/CHC level.
3. Operational programme management units.
4. Preparation of village health plans.
5. *ASHA at village level (with drug kit)*
6. Upgrading of rural hospital
7. Operationalising district planning
8. Mobile medical unit at district level
9. The Goals to be achieved by NRHM (40)

**A. National level**

- Infant mortality rate reduced to 30/1,000 live births.

- Maternal mortality ratio reduced to 100/100,000.
- Total fertility rate reduced - 50% by 2010, additional 10% by 2012.
- Malaria mortality rate reduction -50% by 2010 additional 10% by 2012.
- Kala-azar mortality rate reduction - 100% by 2010 and sustaining elimination until 2012.
- Filarial/microfilaria rate reduction - 70% by 2010, 80% by 2012 and elimination until 2015.
- Dengue mortality rate reduction - 50% by 2010 and sustaining at that level until 2012.
- Japanese encephalitis mortality rate reduction - 50% by 2010 and sustaining at that level until 2012.
- Cataract operation : increasing to 46 laths per year by 2012.
- Leprosy prevalence rate : from 1.8/10,000 in 2005 to less than 1/10,000 thereafter.
- Tuberculosis DOTS services : maintain 85% cure rate through entire mission period.
- Upgrading community health centres to Indian public health standards.
- Increase utilization of first referral units from less than 20% to 75%.
- Engaging 250,000 female accredited social health activists (ASHA) in 10 states.

**B. At community level**

- Availability of trained community level worker at village level, with a drug kit for general ailments.
- Health day at anganwadi level on a fixed day/month for provision of immunization, ante/post natal checkups and services related to mother and child healthcare, including nutrition.
- Availability of generic drugs for common ailments at subcentre and hospital level.
- Good hospital care through assured availability of doctors, drugs and quality services under the programme.
- *Improved facilities for institution deliver through* provision of referral, transport, escort and improved hospital care subsidized under the janani suraksha yojana for the below poverty line families.
- Availability of assured healthcare at reduced financial risk through pilots of community health insurance under the mission.

- Provision of household toilets.
- Improved outreach services through mobile medical unit at district level.

## 801. The law stating that "the relative frequency of each gene allele tend to remain constant from generation to generation" is known as ?

a) Mendel's law

b) Hardy-Weinberg law

c) David-Morgan's law

d) Lamarck's law

Correct Answer - B
**Ans. is 'b' i.e., Hardy-Weinberg law**
**Hardly-Weinberg law**

- The hardly-weinberg law states that *"The relative frequencies of each gene allele tends to remain constant from generation to generation".*
- Thus, the study of gene frequencies, and the influences which operate to alter the "gene pool" and their long term consequences is the central theme in *population genetics.*

## 802. Correlation coefficient +1 means ?

a) Very weak positive correlation

b) Moderate positive correlation

c) Very strong positive correlation

d) Strong positive correlation

Correct Answer - C
Ans. is 'c' i.e., Very strong positive correlation
A correlation simply expresses the strength and direction of the relationship between two variables in terms of a correlation coefficient, signified by 'C.
Values of r varies from -1 to +1.;
The strength of the relationship is indicated by the size of the coefficient , whereas its direction is indicated by the sign (+ or -)
*A plus sign (+) means : That there is a positive correlation between the two variables - high values of one variable (such as salt intake ) are associated with high value of the other variable ( such as blood pressure) i.e salt intake is directly proportional to blood pressure.*
*A negative sign (-) means : That there is a negative correlation between the two variables - high values of one variables (such as cigarette consumption ) are associated with low values of the other ( such as life expectancy).* Cigarette consumption is inversely proportional to life expectancy
If there is a perfect linear relationship between the two variables so that it is possible to know the exact value of one variable from the knowledge of other variable, the correlation coefficient ( r) will be exactly + or - 1.00 ( +1 or -1 ).
If there is absolutely no relationship between the two variables so that it is impossible to know anything about one variable on the basis of knowledge of the other variable. Then the coefficient will be 0

of knowledge of the other variable. Then the coefficient will be 0.

## 803. False rejection of a true null hypothesis is due to?

a) Type II error

b) Type I error

c) Beta error

d) Error of second kind

Correct Answer - B
**Ans. is 'b' i.e., Type I error**
**Statistical errors**

- Statistical errors are used to describe possible errors made in statistical decision.
- Before reading about the types of error you must know null hypothesis because these tests are related to null hypothesis.
- *Null hypothesis says* → Any kind of difference or significance you see in a set of data is due to chance and not significant that means there is no variation (difference) exists between variables.
- Null hypothesis testing (e.g., in Chisquare test) is used to make a decision about whether : -
  *i) The data contradict the null hypothesis → That means there is true difference (which is significant) between variables and it is not due to chance.*
  Or
  *ii) The data approve the null hypothesis There is no difference between variables and the difference you see is due to chance.*
  Now see types of error :?
- There are two basic type of statistical errors : *?*

1. *Type I error*
2. *Type II error*

**Type I error**

- It is also known as an *error of first kind or a-error* or *false positive.*
- This type of error rejects null hypothesis when it is true → *False rejection of null hypothesis.*
- That means in real there is no difference (as null hypothesis says) but we observe a difference (by rejecting the null hypotesis due to error).
- In very simple words "we observe a difference when it is not true" → *false positive.*
- One of the simplest example of this would be if a test shows that a women is pregnant when in reality she is not, i.e., she is false positive for pregnancy.
- *Probability* of type-I error is given by *'P-value'* (probability of declaring a significant difference when actually it is not present).
- *Significance* (a) *level* is the maximum tolerable probability of type I error.
- *Significance* (a) *level is fixed in advance* and calculation of *P* value (probability of type I error) can be less than, equal to or greater than the significance (a) level.
- If the probability of type I error *(P* -value) is less than significance (a) level, the results are declared statistically significant.
- Therefore, to declare the results statistical significant, type I error (a-level) should be kept to minimum [below significance (a) level].
- Type I error is more serious that type II error.

**Type II error**

- It is also known as an error or *second kind or A-error* or *false negative.*
- This type of error accept/fail to reject the null hypothesis when it is false *False acceptance of null hypothesis.*
- That means we fail to observe a difference when in truth there is one → *False negative.*
- An example of this would be if a test shows that a woman is not pregnant when in reality she is i.e., she is false negative.

## 804. Median is ?

a) Middle most value in sequentially arranged data

b) Most frequently occuring value in a data set

c) Highest value in a data

d) Lowest value in a data

Correct Answer - A

**Ans. is 'a' i.e., Middle most value in sequentially arranged data**

**The median**

A median is described as the value separating the higher half of a data set from the lower half. o It does not depend on the total, and number of items.

To obtain the median, the data is first arranged in an ascending or distending order of magnitude, and then the value of the middle observation is located, which is called median.

For example, diastolic BP of 9 individuals was as follows ?

83, 75, 81, 79, 71, 95, 75, 77, 84

Now data is arranged in ascending order ?

71, 75, 75, 77, 79, 81, 83, 84, 95

Here, 79 is the middle observation that is separating the upper four values from lower four values, so it is the median.

If there are two values in the middle instead of one, the median is worked out by taking the average of the two middle values.

For example, If diastolic BP of 10 individuals is as follows :?

83, 75, 81, 79, 71, 95, 75, 77, 84, 90

Data is arranged in ascending order -

71, 75, 75, 77, 79, 81, 83, 84, 90, 95

**805. Mean, Median and mode all are zero. The type of distribution is ?**

a) Standard normal

b) Negatively skewed

c) Positively skewed

d) J shaped

Correct Answer - A
Ans. is 'a' i.e., Standard normal

**806. Normal body temperatures is 98° F. Standard deviation is 1. For 95% of persons lower limit of body temperature ?**

a) 97° F

b) 96° F

c) 95° F

d) 94° F

Correct Answer - B
Ans. is 'b' i.e., 96° F

**807. The data of distribution of mortality in a specific geographical area in single year is depicted by ?**

a) Scatter diagram

b) Line diagram

c) Pictogram

d) Histogram

Correct Answer - D
**Ans. is 'd' i.e., Histogram**

## 808. Standard deviation is measured in ?

a) Distribution

b) Dispersion

c) Mean-deviation

d) All of the following

Correct Answer - B
Ans. is 'b' i.e., Dispersion

## 809. Two groups are tested for anemia. Which test should be used ?

a) Paired T-test

b) Unpair T-test

c) Chi-square test

d) ANOVA

Correct Answer - C
Ans. is `c' i.e., Chi-square test
Observations in the given question are in the form of qualitative data (anemia present or not).
Thus Chi-square test should be used.

**Chi square test**

- Is used when the *observation are in the form of proportions* (for qualitative data)
- The outcome are in clear cut answers; *yes or no.* As in the example *the HBsAg is either present or not present.* In contrast when the observation is normally distributed in the population e.g blood pressure, blood sugar ; student test is used.
- In the example comparing the occurence of hepatitis B surface antigen in medical and dental students, use of chi square analysis is appropriate because the outcome variables are dichomatous. *Students are classified by the presence or absence of HBsAg.*

**Student t test**

- is used *when the outcome variable is normally distributed in population* (for quantitative data) e.g blood pressure, blood glucose.
- In the example student t test is used to assess the difference between mean systolic pressure of pregnant and non pregnant women ( to know the effect of pregnancy on mean systolic blood

pressure) because *mean systolic blood pressure is normally distributed in the population.* Every single lady has a mean systolic blood pressure. It may be low or high , but she has a value of mean systolic blood pressure.

**Students t test may be following types:**

i. *Unpaired t test (Independent t test) :* It compares the mean of two small samples: The data is unpaired from two *independent sample.* for example, blood sugar concentration is measured in two different group (A group of 10 patients and other group of 8 patient). To test the significance of difference between the means of the two groups, unpaired *t* test is used.

i. *Paired t test :* It compares the mean in *paired data, before and after the intervention from same sample.* For example, Blood sugar level in a sample of 10 patients is measure before giving and after giving the oral hypoglycemic. In this condition paired *t* test is used.

**<u>Chi-square test Vs Student t test</u>**

- In the example student t test is used to assess the difference between mean systolic pressure of pregnant and non pregnant women ( to know the effect of pregnancy on mean systolic blood pressure) because *mean systolic blood pressure is normally distributed in the population.* Every single lady has a mean systolic blood pressure. It may be low or high , but she has a value of mean systolic blood pressure.
- But suppose we change the example in a way that we make a clear cut definition of hypertension ( such as mean systolic blood pressure over 140 mm of Hg will be taken to be hypertension) and then look for hypertension among pregnant and non-pregnant women.
- The test now used to analyse the outcome will be *chi square test* since the outcomes are now in the form of *dichomatous data* i.e yes or no *(a woman is either hypertensive or not hypertensive. This is in contrast to mean systolic blood pressure which was normally distributed among ladies; every lady had one value of mean systolic blood pressure).*

**<u>Analysis of Variance (ANOVA) (F test/ F ratio)</u>**

- ANOVA is considered as an extension of the student t test for the significance of the difference between two sample means. The student *t* test can be used only for making just one comparison

(between two sample means), or between a sample mean and hypothesized population mean. *ANOVA is used when more than one comparison is to be made (When means of more than two groups are being compared).*

- For example, BP is measured in more than two groups of men (married, unmarried, widowed, separated and divorced). In this situation ANOVA test is best.

**810.**

# ICD - 10 chapter 1 describes ?

a) Poisoning and consequences

b) Diseases of the nervous system

c) Infectious and parasitic diseases

d) Psychiatric diseases

Correct Answer - C

**Ans. is 'c' i.e., Infectious and parasitic diseases [Ref ICD- 10 classification online resource]**

- The ICD-10 is arranged in 21 major chaptors.

**21 Chapters and their contents**

- Chapter I includes 'Infectious and parasitic diseases'
- Chapter II includes Weoplams'
- Chapter III includes 'Diseases of blood & immune system'
- Chapter IV includes 'Endocrine, nutritional and metabolic disorders'
- Chapter V includes 'Mental & behavioral disorders'
- Chapter VI includes 'Diseases of nervous system'
- Chapter VII includes 'Diseases of eye'
- Chapter VIII includes 'Diseases of ear and mastoid'
- Chapter IX includes 'Diseases of CVS'
- Chapter X includes 'Diseases of respiratory system'
- Chapter XI includes 'Diseases of digestive system'
- Chapter XII includes 'Diseases of skin & subcutaneous tissue'
- Chapter XIII includes 'Diseases of musculoskeletal system'
- Chapter XIV includes 'Diseases of genitourinary system'
- Chapter XV includes 'Pregnancy childbirth and perperium'
- Chapter XVI includes 'Conditions of perinatal period'

- Chapter XVII includes 'Congenital malformation and genetic disorders'
- Chapter XVIII includes 'Clinical and laboratory findings not included elsewhere'
- Chapter XIX includes Injury, poisoning and other consequences of external causes.
- Chapter XX includes 'External causes of morbidity and mortility'
- Chapter XXI (21) includes Factors influencing health status and contact with health services

## 811. In cervical lymph node classification, grade VI is marginated at which level?

a) Submandibular

b) Anterior compartment

c) Upper jugular

d) Posterior triangle

Correct Answer - B

Division of Lymph Nodes by Levels

**812.**

# Radical neck dissection involves all except ?

a) Sternocleidomastoid muscle

b) Internal jugular vein

c) Vagus nerve

d) Spinal Accessory nerve

Correct Answer - C

**Radical neck dissection**

During radical neck dissection, **following are removed**.

Lymph nodes of submental, submandibular, upper, middle and lower jugular, and lateral (posterior) triangle regions, i.e. Level I to V along with its fibrofatty tissue.

- Sternomastoid muscle.
- Internal jugular vein.
- Spinal accessory nerve.
- Submandibular salivary gland.
- Tail of the parotid.
- Omohyoid muscle.
- **Following structures are saved ?**

.. Carotid artery

2. Brachial plexus, phrenic nerve, vagus nerve, cervical sympathetic chain, marginal mandibular branch of facial, lingual and hypoglosal nerve.

**Modified neck dissection**

- It is similar to radical neck dissection but with preservation of one or more following structures ?

.. Spinal accessory nerve

2. Internal jugular vein

3. Sternocleidomastoid muscle
- Thus, both radical neck dissection and modified radical neck dissection remove level I to V neck nodes.

## 813. Name of the curved laryngoscope ?

a) Miller

b) Macintosh

c) Muller

d) Merkel

Correct Answer - B

Laryngoscopy (larynx + scopy) is a medical procedure that is used to obtain a view of the vocal folds and the glottis.
**Following are the types of the available laryngoscopes :-**
i) Straight blade: Miller
ii) Curved blade: Macintosh

## 814. Muller's manoeuver is used ?

a) To findout opening of mouth

b) To remove laryngeal foreign body

c) To find degree of obstruction in sleep disordered breathing

d) To remove foreign body from ear

Correct Answer - C

Ans. is 'c' i.e., To find degree of obstruction in sleep disordered breathing

**Muller's manoeuvre**

- **Used to find the level and degree of obstruction in sleep-disordered breathing.**
- It is performed while using flexible nasopharyngoscope.
- First the examiner sees the upper airways at rest and then during the time when patient makes maximal inspiratory effort with nose and mouth closed.
- Base of tongue, lateral pharyngeal wall and palate are examined for collapsibility and then rated form 0 (minimal collapse) to 4+ (complete collapse).

## 815. Blomsingher prosthesis is used for production of?

a) Voice

b) Image

c) Radiowaves

d) Light

Correct Answer - A
**Ans. is 'a' i.e., Voice**
**Blom-singher Prosthesis**

- In 1978, Drs. Singer and Blom pioneered the methods of tracheoesophageal puncture and valved silicone voice prostheses that over the past 30 years have become the international standard for voice restoration, allowing thousands of patients worldwide to regain their ability to speak.
- By creating a small surgical passage just inside the stoma, from the back wall of the trachea into the esophageal wall, a voice prosthesis can be placed into this passage to enable tracheoesophageal speech.
- Voice is produced by temporarily blocking the stoma so that exhaled air from the lungs can be directed from the trachea through the prosthesis into the esophagus and then out through the mouth. Fluent, conversational speech may be acquired within just a few days.

## 816. Fracture mandible occurs most common in ?

a) Body

b) Angle

c) Condylar process

d) Coronoid process

Correct Answer - C
Ans. is 'c' i.e., Condylar process
Condylar process fractures of the mandible are most common account for 35% of all the fractures of mandible. They are followed by angle, body and symphysis in decreasing order of frequency.
Mnemonic CABS: condylar process >angle >body >symphysis decreasing order of frequency of fracture mandible.

## 817. Ideal hearing aid for patient with anotia is

a) Incanal

b) Bone anchored hearing aid

c) Vestibular

d) Transcutaneous

Correct Answer - B

Anotia ("no ear") describes a rare, congenital deformity, that involves the complete absence of the pinna, the outer projected portion of the ear, and narrowing or absence of the ear canal.
A *bone-anchored hearing aid* is an implantable device that allows the listener to hear by bone conduction without the inconvenience of a traditional bone conduction hearing aid. It's more comfortable, and the sound quality is better, partly because the device stays in place. Unlike a middle ear implant, which requires a normally functioning middle ear, this type of hearing aid is typically used by listeners who have conductive or mixed hearing loss. Bone conduction hearing aids have traditionally been used by people born without ear canals or with small, misshapen ears that can't support conventional hearing aids, or by people who have chronic middle ear disease that's aggravated by wearing a hearing aid or earmold in the ear canal (for example, people with draining ears).

## 818. Acoustic neuroma causes ?

a) Cochlear deafness

b) Retrocochlear deafness

c) Conductive deafness

d) None of the above

Correct Answer - B

**The clinical features depend on the extent of tumor and involved structure :?**

1) When tumor is still confined to the internal auditory canal

- Cochleovestibular symptoms are the earliest symptoms of acoustic neuroma when tumour is still confined to internal auditory canal. The commonest presenting symptoms are unilateral deafness or tinnitus, or a combination of both.
- Hearing loss is **retrocochlear sensorineural type**. There is marked difficulty in understanding speech, out of proportion to the pure tone hearing loss, a characteristic feature of **acoustic neuroma.**
- Vestibular symptoms are imbalance or unsteadiness. True vertigo is very rare.

2) When tumor extends beyond IAC and involves other structures
$V^{th}$cranial nerve :- It is the earliest nerve to be involved. There is reduced corneal sensitivity and loss of corneal reflex which is the earliest sign of acoustic neuroma. Numbness or paresthesia of face may occur. Involvement of Vth nerve indicates that tumor is roughly 2.5 cm in diameter and occupies the CP angle.
VIP nerve :- Sensory fibres of facial nerve are involved. There is hypoesthesia of posterior meatal wall (Hitzelberg's sign), loss of taste, and loss of lacrimation on Schirmer's test. Motor fibres are more resistant

more resistant.
$IX^{th}$ and $X^{th}$ nerves :- Dysphagia and hoarseness due to palatal, pharyngeal and laryngeal paralysis.
Brainstem :- Ataxia, weakness, numbness of arms & legs, exaggerated tendon reflexes.
Cerebellum :- Ataxia, Dysdiadochokinesia, Nystagmus.
Due to raised ICT :- Headache, neusea, vomiting, diplopia due to VI nerve involvement, and papilloedema.

## 819. Most common cerebellopontine angle tumour is:

a) Acoustic neuroma

b) Cholesteastoma

c) Meningioma

d) All of the above

Correct Answer - A

- Cerebellopontine angle (CPA) tumors are the most common neoplasms in the posterior fossa, accounting for 5-10% of intracranial tumors.
- Most CPA tumors are benign, with over 85% being vestibular schwannomas (acoustic neuromas), lipomas, vascular malformations, and hemangiomas

## 820. Antral sign is seen in ?

a) Juvenile angiofibroma

b) CSOM

c) Sinusitis

d) Otoscelrosis

Correct Answer - A

Investigations of JNA
**Following investigations are used in JNA :-**
i) Soft tissue lateral film of nasopharynx :- shows soft tissue mass in the nasopharynx.
ii) X-rays paranasal sinus and base of skull :- findings have been explained in previous explanation.
iii) CT scan of head with contrast :- is the investigation of choice. It shows the extent of tumour, bony destruction, or displacement. Anterior bowing of the posterior wall of maxillary sinus (antral sign or Hohnan-Miller sign) is pathgnomonic of JNA.
iv) MR1 complementory to CT when soft tissue extensions are present intracranially, in infratemporal foss or in orbit.
v) Carotid angiography :- shows extension of tumor, its vascularity and feeding vessels.

- Biopsy should be avoided as it can cause severe bleeding.

## 821. Anterior bowing of the posterior maxillary wall is described as

a) Holman miller sign

b) Hennebert sign

c) Holsky sign

d) Honeybell sign

Correct Answer - A

Anterior bowing of the posterior wall of maxillary sinus (antral sign or Holman-Miller sign) is pathognomic of Juvenile Nasopharyngeal Angiofibroma.

**822. In Ramsay Hunt syndrome, most commonly involved nerve is ?**

a) V

b) VII

c) VIII

d) IX

Correct Answer - B

# Ramsay Hunt syndrome

Ramsay Hunt syndrome (RHS) is a complication of shingles. It is the name given to describe the symptoms of a shingles infection affecting the **facial nerve**.

It is lower motor neuron type of facial palsy due to Varicella (herpes) zoster. Pain is often a prominent feature and vesicles are seen in the ipsilateral ear, on the hard palate and/or on anterior two third of tongue.

It may involve other cranial nerves-V, VIII, IX and X and cervical branches ($C_2$, $C_3$ & $C_4$) that have anastomotic communications with facial nerve.

This results in features like :

- Anaesthesia of face
- Giddiness
- Hearing impairment along with VII nerve palsy.

The mechanism of disease is reactivation of the latent varicella zoster virus in the geniculate ganglion. The onset of palsy is preceeded by pain which may persist & become excruciating. When the rash is absent it is known as zoster sine herpete.

The prognosis of Ramsay Hunt syndrome is worse than Bell's palsy. Persistent weakness is observed in 30-50% of patients and only 10% recover completely after complete loss of function without treatment. Treatment recommended is prednisone (steroid) combined with acyclvir.

## 823. Masculine voice in females is treated by

a) Thyroplasty type 1

b) Thyroplasty type 2

c) Thyroplasty type 3

d) Thyroplasty type 4

Correct Answer - D

## 824. Treatment of Puberphonia is ?

a) Thyroplasty type I

b) Thyroplasty type II

c) Thyroplasty type III

d) Thyroplasty type IV

Correct Answer - C

**Ans. is `c' i.e., Thyroplasty type III**

**Puberphonia (Mutational falset to voice)**

- In males at the time of puberty, the voice normally drops by an octave and becomes low pitch. It occurs because vocal cords lengthen.
- Failure of this change leads to persistence of childhood high pitched voice and is called as puberphonia.
- It is seen in boys who are emotionally insecure and show excessive attachment to their mothers. Their physical and sexual development is normal.
- So the surgical treatment of puberphonia is lengthening of vocal cord i. e. Thyroplasty type III

**THYROPLASTY**

- Isshiki divided thyroplasty procedures into 4 categories to produce functional alteration of vocal cords : -

i. *Type 1:* Medial displacement of vocal cord (done by injection of gel foam/Teflon paste)

i. *Type 2 :* Lateral displacement of cord (done to improve the airway).

i. *Type 3 :* Lengthening (relax) the cord, to lower the pitch (gender transformation from female to male).

*Type 4 :* Shortening (tightening) the cord, to elevate the pitch (gender transformation from male to female), for example as a

treatment of androphonia.

## 825. Common site for CSF Rhinorrhoea is ?

a) Ethmoidal sinus

b) Frontal sinus

c) Petrous

d) All

Correct Answer - A

- **The cribriform plate and air cells of the ethmoid sinus account for maximum number of CSF leaks**, i.e., through anterior cranial fossa.
- Other sites are frontal sinus, area of sellatursica and sphenoid sinus.
- Rare sites of leak are middle or posterior cranial fossa and CSF can reach the nasal cavity by way of the middle ear and Eustachian tube.
- Traumatic leak → Cribriform plate and ethmoidal air cells.
- Spontaneous (non-traumatic) leak → Cribriform plate.

## 826. CSF otorrhoea is caused by ?

a) Rupture of tympanic membrane

b) Fracture of cribriform plate

c) Fracture of parietal bone

d) Fracture of petrous temporal bone

Correct Answer - D

**CSF otorrhea**

- CSF otorrhea, i.e., leakage of cerebrospinal fluid through ear structure, is a rare but potentially life threatening situation that requires rapid intervention.
- The underlying etiology of spinal fluid leak through temporal bone is a violation of the bony and meningeal barriers that separate the subarachoid space from the middle ear and mastoid.
- This means that a defect must exist not only in the bone, but also in the dura matter.
- Causes of CSF otorrhea are : ?
  1) Congenital : - Defect in otic capsule.
  2) Acquired : - More common than congenital and cause are : -

i. Surgery : - Post-operative leakage is the most common cause of CSF otorrhea. Surgical causes are acoustic neuroma removal, skull base surgeries and sometimes mastoid surgery.

i. Trauma : - Fracture of petrous part of temporal can lead to CSF otorrhea.

i. Infection

3) Spontaneous : - It is without an obvious antecedent pathology. There may be some defect in the temporal bone.

**827. A 12 year old presents with fever, unilateral post auricular pain, mastoid bulging displacing the pinna forward and outwards with loss of bony trabeculae. This patient has history of chronic persistent pus discharge from same ear. Treatment of choice is?**

a) Antibiotics only

b) Incision and drainage

c) Antibiotics, incision and drainage

d) Mastoidectomy with incision, drainage and antibiotics

Correct Answer - D

The patient is presenting with features of postauricular subperiosteal abscess. Treatment for this is antibiotics along with drainage of abscess and cortical mastoidectomy.
This patient has developed this abscess as a complication of CSOM (History of chronic ear discharge) for which he requires meastoidectomy.

## 828. Frey's syndrome is caused by ?

a) Post traumatic nerve fibres of facial nerve with parasympathetic of auriculotemporal nerve

b) Greater auricular with auriculotemporal nerve

c) Facial nerve with greater auricular nerve

d) None

Correct Answer - A

Ans. is 'a' i.e., Post traumatic nerve fibres of facial nerve with parasympathetic of auriculotemporal nerve

**Frey's syndrome (gustatory sweating)**

- Gustatory sweating or Frey's syndrome involves post-parotidectomy facial sweating and skin flushing while eating.
- The symptoms usually occur several months or even years after parotid surgery.
- The likely pathophysiology is aberrant regeneration of postganglionic secretomotor parasympathetic nerve fibres (originating from the otic ganglion) misdirected through several axonal sheaths of post-ganglionic sympathetic fibres feeding the sweat glands. These sympathetic fibres are to the sweat glands of the skin in the dissected field.
- The frey's syndrome is likely due to injury to auriculotemporal nerve with faulty regeneration, therefore Frey's syndrome is also known as Auriculotemporal syndrome.
- A variant of Frey's syndrome in which there is gustatory facial flushing but not sweating, occurs following facial paralysis due to faulty regeneration following injury to the facial nerve. So, Frey's syndrome is not limited to parotid surgery with injury to auriculotemporal nerve.

## 829. SNHL is seen in all except

a) Nail patella syndrome

b) Distal RTA

c) Barter syndrome

d) All of the above

Correct Answer - D

## 830. Wave II in BERA originates from ?

a) Cochlear nucleus

b) Lateral laminiscus

c) Proximal eighth nerve

d) Distal eighth nerve

Correct Answer - C

**Waves of BERA**

- Anatomical site from where the waves arises are:

1. Wave I- distal part of 8th nerve
2. **Wave II - proximal part of 8th nerve**
3. Wave III- cochlear nucleus
4. Wave IV- superior olivary complex
5. Wave V- lateral lemniscus
6. Waves VI & VII- inferior colliculus

## 831. Trismus in CA of temporal bone occurs due to involvement of ?

a) Dura

b) Temporo mandibular joint

c) Mastoid

d) Eustachian tube

Correct Answer - B

**Clinical Assessment of Temporal bone Tumors**

- A long history of ear discharge suggests cancer associated with inflammatory ear disease (Marjolins ulcer)
- Pulsatile tinnitus suggests tumor of vascular origin such as glomus tumor or a middle ear vascular anamoly, or a duralarteriovenous abnormality.
- Deep headache raises the suspicion of dural involvement.
- Facial weakness indicates invasion of the facial nerve
- Onset of vertigo and sensineuronal hearing loss indicates involvement of the labyrinth and the development of speech and swallowing problems heralds involvement of the lower cranial nerves in the jugular foramen.
- The onset of trismus due to the involvement of **temporomandibular joint**, pterygoid muscles or mandible suggests advanced disease that has spread anteriorly. Also the appearance of preauricular and parotid swelling is a grave sign.

## 832. Most common cause of nasal polyp in children is?

a) Human papilloma virus

b) Allergic rhinitis

c) Inverted papilloma

d) Rhinosporidiosis

Correct Answer - B
**Ans. is'b'i.e., Allergic rhinitis**
Re/ BRS Gross Anatomy p' 405)

- The most common cause of nasal polyp is allergic rhinitis'
- Nasal polyps are not particularly common in children.
- Occasionally so-called "allergic PolyPs" are encountered' and occasionally recurrent bouts of allergy and infection lead to chronic hypertrophic polypoid rhinosinusitis.
- However' most commonly when nasal polyps are encountered in children, the underlying problem is cystic fibrosis'

## 833. Following is/ are the causes of chronic cough with noncontributory chest radiograph?

a) Asthma

b) Post nasal drip

c) GERD

d) All the above

Correct Answer - D

90% of patients who have chronic cough and a normal or noncontributory chest radiograph belong to one of the following causes:
i) Use of an angiotensin-converting enzyme inhibitor
ii) Post-nasal drainage
iii) Gastroesophageal reflux and
iv) Asthma.

## 834. Failure of rupture of bucconasal membrane leads to?

a) Choanal atresia

b) Rhinophyma

c) Crooked nose

d) Epistaxis

Correct Answer - A

**Ans. is 'a' i.e., Choanal atresia**

**<u>Choanal atresia</u>**

- *Choana, also called posterior nares,* is an opening in the posterior part of each nasal cavity, through which nasal cavity communicates with nasopharynx. Choanal atresia is a congenital anomaly characterized by closure of one or both posterior nasal cavities (i.e., choana). It is due to persistence of bucconasal membrane. Approximately 6070% of cases are unilateral and are *more common on right side.* Bilateral cases occurs in 20-30% of patients and 50% of these patients are associated with other congenital anomaly, i.e., CHARGE syndrome → Coloboma, Heart defects, Choanal atresia, Retraded growth, Genitourinary abnormalities and Ear defects.

**Diagnosis**

- Unilateral lesions go unnoticed until the child presents with persistent unilateral nasal discharge. There is absence of air bubbles in nasal discharge. A simple test for unilateral choanal atresia is to have the child attempt nose blowing with opposite nostril occluded by external pressure. Failure to detect any air movement is suspicious for complete obstruction. *Bilateral choanal atresia presents as respiratory distress in newborn* and requires support immediately after birth.

## 835. Paroxymal sneezing on getting up early in morning from bed is associated with ?

a) Vasomotor rhinitis

b) Perineal rhinitis

c) Seasonal rhinitis

d) Allergic rhinitis

Correct Answer - A

**<u>Vasomotor Rhinitis</u>**

- It is a non allergic rhinitis clinically simulating nasal allergy.

**Symptoms**

- Paroxysmal sneezing : Bouts of sneezing start just after getting out of the bed in the morning.
- Excessive rhinorrhoea : This accompanies sneezing and may be the **only predominant symptom**. It is profuse and watery and may even wet several handkerchiefs. The nose may drip when the patient leans forward, and this may need to be differentiated from CSF rhinorrhoea.
- Nasal obstruction : This alternates from side to side. Usually more marked at night. It is the dependent side of nose which is often blocked when lying on one side.
- Postnasal drip.

## 836. In allergic pharyngitis, granularity in posterior pharynx is due to ?

a) Hyperplasia of mucous membrane

b) Hyperplasia of sebaceous glands

c) Hyperplasia of submucosal lymphoid tissue

d) Inspisated mucous

Correct Answer - C

**Clinical Features of Allergic Pharyngitis**

Frequent colds, persistently stuffy nose, pale edematous nasal mucosa, loss of sense of smell due to mucosal edema, post nasal drip, chronic cough and hearing impairment due to Eustachian tube blockade or fluid in the middle ear.

Nasal signs: Transverse nasal crease, Turbinates are usually swollen, Thin watery mucoid discharge.

Ocular signs: edema of lids, congestion and cobblestone appearance of conjunctiva, dark circles under the eyes (allergic shiners).

Otologic signs: retracted tympanic membrane, serous otitis media, Eustachian tube blockade

Pharyngeal signs: granular pharyngitis due to hyperplasia of submucosal lymphoid tissue. Child with prolonged symptoms have mouth breathing

Laryngeal signs: hoarseness of voice and edema of vocal cords.

## 837. Allergic salute is seen in

a) Allergic rhinitis

b) Chronic sinusitis

c) Nasal Myiasis

d) Chronic conjunctivitis

Correct Answer - A
**Allergic salute**: The characteristic gesture of a person with **allergic rhinitis:** rubbing his or her nose with the index finger.

## 838. Cottle test is used for ?

a) Septal perforation

b) Rhinophyma

c) Choanal atresia

d) DNS

Correct Answer - D
Ans. is 'd' i.e., DNS

- **Cottle test :** It is used to test nasal obstruction due to abnormality of nasal valve as in case of deviated nasal septum.
- In this test, cheek is drawn laterally while the patient breathes quietly. If the nasal airway improves on the test side, the test is positive, and indicates abnormality of the vestibular component of nasal valve.

## 839. Rhinolith can cause

a) Nasal obstruction

b) Epistaxis

c) Epiphora

d) All of the above

Correct Answer - D

- A rhinolith is a calculus present in the nasal cavity.
- The word is derived from the roots rhino- and -lith, literally meaning "nose stone".
- A rhinolith usually forms around the nucleus of a small exogenous foreign body, blood clot or secretion by slow deposition of calcium and magnesium salts.
- Over a period of time, they grow into large irregular masses that fill the nasal cavity.
- **They may cause pressure necrosis of the nasal septum or lateral wall of nose leading to nasal obstruction, epistaxis, headache, sinusitis and epiphora.**

## 840. Preferred imaging modality for choanal atresia is

a) X ray

b) CT SCAN

c) MRI

d) PET SCAN

Correct Answer - B

**CT SCAN in choanal atresia**
CT SCAN in coronal and saggital projections provides a thorough evaluation of choanal atresia and adjescent structures.
The axial views supply fundamental information including site of obstruction, composition of atretic plate and unilateral or bilateral involvement.
Thus CT SCAN is the preferred imaging modality.

## 841. Commonest site of Ivory osteoma ?

a) Frontal-Ethmodial region

b) Mandible

c) Maxilla

d) Sphenoid

Correct Answer - A

**Osteoma**

Osteoma is a slow growing tumor formed by mature bone tissue. Osteoma are commonly seen in fronto-ethmoid region.

The most common sites of osteomas are the frontal sinus followed by ethmoid and maxillary sinuses. They are rare in the sphenoid sinus and extremely rare on temporal and occipital squama.

**Three histological patterns are recognised : -**

i) Ivory osteoma (i.e., iburnated osteoma) : - Most common and composed of dense, compact and lamellar bone with lack of Haversion system.

ii) Mature (osteoma spongiosum) : - Resembles normal bone, including trabecular bone often with marrow.

iii) Mixed type : Mixed elements of above two.

## 842. Tripod fracture is the name given for

a) Zygomatic fracture

b) Maxillary fracture

c) Mandibular fracture

d) Temporal fracture

Correct Answer - A

Zygoma fracture is also known as tripod fracture.

**Clinical features of zygoma fracture**

- Considerable swelling over zygomatic arch is common and makes clinical diagnosis more difficult.
- Flattening of malar prominence.
- Step-deformity of infraorbital margin.
- Anaesthesia in the distribution of infraorbital nerve.
- Trismus, due to depression of zygoma on the underlying coronoid process.
- Oblique palpebral fissure, due to the displacement of lateral palpebral ligament.
- Restricted ocular movement, due to entrapment of inferior rectus muscle. It may cause diplopia.
- Periorbital emphysema, due to escape of air from the maxillary sinus on nose-blowing.
- The mucosa of the maxillary sinus may be lacerated and cause epistaxis on that side.
- Fracture of the zygoma may or may not be painful to palpation and running a finger along the zygomatic arch may give a feel of a depressed fracture or a small dimple. The cheek may appear flattened compared to symmetry with the opposite side. This may be

obvious immediately following trauma or several days later once swelling has subsided.

## 843. Pyramidal fracture of maxilla is

a) Le Fort-1

b) Le Fort-2

c) Le Fort-3

d) Craniofacial disruption

Correct Answer - B

**Fracture of maxilla**

**It is classified into 3 types : ?**

1. Le Fort I (transverse) fracture runs above and parallel to the plate. It crosses lower part of nasal septum, maxillary antra and the pterygoid plates.
2. Le Fort II (pyramidal) fracture passes through the root of nose, lacrimal bone, floor of orbit, upper part of maxillary sinus and pterygoid plates. This fracture has some features common with the zygomatic fractures.
3. Le Fort III (craniofacial dysjunction). There is complete separation of facial bones from the cranial bones. The fracture line passes through root of nose, ethmofrontal junction, superior orbital fissure, lateral wall of orbit, frontozygomatic and temporozygomatic sutures and the upper part of pterygoid plates.

## 844. Xray showing air column between soft tissue mass and posterior wall of nasopharynx is suggestive of ?

a) Ethmoidal polyp

b) Antrochoanal polyp

c) Nasal myiasis

d) None of the above

Correct Answer - B
Ans. is b' i.e., Antrochoanal polyp
On xray,antrochoanal polyp appears as a soft tissue density and shows a column of air between the soft tissue mass and posterior wall of nasopharynx.

## 845. Following arteries anastomose in the little's area except ?

a) Anterior ethmoidal artery

b) Superior labial artery

c) Sphenopalatine artery

d) Lesser palatine artery

Correct Answer - D
**Ans. is 'd' i.e., Lesser palatine artery**
**Four arteries contribute to little's area :**
i) Anterior ethmoidal artery.
ii) Septal branch of superior labial artery (Branch of facial A).
iii) Septal branch of sphenopalatine artery (Branch of maxillary A).
iv) Greater palatine artery (Branch of maxillary A).

## 846. Rhinitis medicamentosa is caused by excessive use of ?

a) Topical decongestants

b) Topical steroids

c) Systemic decongestants

d) Systemic steroids

Correct Answer - A
**Ans. is 'a' i.e., Topical decongestants**
**Rhinitis medicamentosa**
Caused by excessive use of topical decongestant nasal drops.
It is treated by withdrawal of nasal drops, short course of systemic steroid therapy and in some cases surgical reduction of turbinates, if they have become hypertrophied.

## 847. A minor symptom of sinusitis is

a) Nasal blockage

b) Facial congestion

c) Nasal congestion

d) Halitosis

Correct Answer - D

The clinical symptoms of acute sinusitis have been classified into major and minor.

**Major**

- Facial pain or pressure
- Purulent nasal discharge
- Fever
- Nasal congestion
- *Nasal obstruction*
- Hyposmia or Anosmia
- *Facial congestion or fullness*

**Minor**

- Headache
- Cough
- Fatigue
- Halitosis
- Dental pain
- Ear pain or pressure

## 848. Tensor of vocal cord is ?

a) Vocalis

b) Cricothyroid

c) Cricoarytenoid

d) Thyroarytenoid

Correct Answer - B
Ans. is 'a' i.e., Vocalis

| MUSCLES | ORIGIN | INSERTION | INNERVATION | A |
|---|---|---|---|---|
| Cricothyroid **(Located on external aspect)** | Anterolateral part of cricoid cartilage | Inferior margin & inferior horn of thyroid cartilage | **External laryngeal** | **S t** |
| Post. cricoarytenoid (**Safety muscle of larynx)** | Post. surface of lamina of cricoid cartilage | Muscular process of arytenoid cartilage | Reccurent laryngeal | **A** T **c k** |
| Lateral cricoarytenoid | Arch of cricoid cartilage | Muscular process of arytenoid cartilage | Reccurent laryngeal | **A** |
| 1. Arytenoid **transverse/interarytenoid** 2. oblique fibers | One arytenoid cartilage | Another arytenoid cartilage | Reccurent laryngeal | 1. 2. |

| | | | | |
|---|---|---|---|---|
| | | | | i |
| **Thyroarytenoid** | Post. surface of thyroid cartilage | Muscular process of arytenoid cartilage | Reccurent laryngeal | **A** |
| Vocalis | Depression b/w laminae of thyroid cartilage | Part of vocal ligament & vocal process of arytenoid cartilage | Reccurent laryngeal | **F** l r **c** |

## 849. Mouse-nibbled vocal cord is seen in ?

a) TB

b) Leprosy

c) Laryngeal papilloma

d) Epiglottitis

Correct Answer - A

**Tubercular laryngitis**

- Tubercular laryngitis is almost always secondary to pulmonary lesions, mostly affecting *males in middle age (20-40 years).*
- Disease affects the posterior third of larynx more commonly than anterior part.
- The parts affected in descending order of frequency are :- i) Interarytenoid fold, ii) Ventricular band, iii) Vocal cords, iv) Epiglottis

**Clinical features**

- Weakness of voice with periods of aphonia --> earliest symptoms.
- Hoarsness, cough, dysphagia (odynophagia)
- Referred otalgia

**Laryngeal examination in TB laryngitis**

- Hyperaemia of the vocal cord in its whole extent or confined to posterior part with impairment of adduction is the first sign.
- Swelling in the interarytenoid region giving a mammilated appearance.
- Ulceration of vocal cord giving **mouse-nibbled appearance.**
- Superficial ragged ulceration on the arytenoids and interarytenoid region.
- Granulation tissue in interarytenoid region or vocal process of arytenoid.
- Pseudoedema of the epiglottis "turban epiglottis".

- Swelling of ventricular bands and aryepiglottic folds.
- Marked pallor of surrounding mucosa.

## 850. Hemlichs maneuver is used for ?

a) Upper airway obstruction by foreign body

b) BPPV

c) Eustachian tube patency test

d) Tympanic membrane integrity test

Correct Answer - A

**Ans. is 'a' i.e., Upper airway obstruction by foreign body**

**<u>Heimlich manoeuvre</u>**

Abdominal thrusts, also called the Heimlich manoeuvre or Heimlich maneuver, is a first aid procedure used to treat upper airway obstructions (or choking) by foreign objects. The term Heimlich maneuver is named after Dr. Henry Heimlich, who first described it in 1974.

## 851. Following is/ are the indications of cryotherapy

a) Vasomotor rhinitis

b) Hemoangiomas

c) Epistaxis

d) All the above

Correct Answer - D

**Following are the indications of cryotherapy**

- Vasomotor rhinitis
- Leukoplakia
- Mucous cysts
- Aphthous ulcers
- Hemangiomas
- Pappilomas
- Granulation tissue
- Epistaxis
- Carcinomas
- Adhesions

## 852. Most common site of rupture of esophagus during rigid esophagoscopy is at

a) Above cricopharynx

b) Near vocal cord

c) GE junction

d) At killian's dehiscence

Correct Answer - D

**Complications of Rigid esophagoscopv**

- Injury to lips and teeth.
- Injury to arytenoids.
- Injury to pharyngeal mucosa.
- Perforation of esophagus; most often it occurs at the site of killians dehiscence (near the cricopharyngeal sphincter).
- Compression of trachea.

## 853. Preferred treatment approach for locally advanced head and neck cancers is ?

a) Radiotherapy alone

b) Surgery alone

c) Induction chemotherapy followed by radiotherapy / surgery

d) Concomitant chemotherapy with radiotherapy

Correct Answer - D

**LOCALLY OR REGIONALLY ADVANCED Head and neck cancer**
Locally or regionally advanced disease-disease with a large primary tumor and/or lymph node metastases-is the stage of presentation for 50% of patients.
Such patients can also be treated with curative intent, but not with surgery or radiation therapy alone.
Combined modality therapy including surgery, radiation therapy, and chemotherapy is most successful.
It can be administered as induction chemotherapy (chemotherapy before surgery and/or radiotherapy) or as concomitant (simultaneous) chemotherapy and radiation therapy. The latter is currently most commonly used and best evidence-supported.
In patients with intermediate stage (stage III and early stage IV) concomitant chemoradiotherapy is given postoperatively.
It can be administered either as a primary treatment for patients with unresectable disease, to pursue an organ-preserving approach, or in the postoperative setting for intermediate-stage resectable tumors.
Preferred chemotherapy agents - cisplatin and cetuximab

**854. A 15 year aged boy presents with unilateral nasal blockade,mass in the cheek and epistaxis, the likely diagnosis is ?**

a) Nasopharyngeal carcinoma

b) Nasopharyngeal Angiofibroma

c) Inverted papilloma

d) None of the above

Correct Answer - B

Recurrent epistaxis, nasal obstruction and swelling over cheek in a 15 years boy suggest the diagnosis of nasopharyngeal angiofibroma.
Juvenile nasopharyngeal angiofibroma (JNA) is a benign, but locally aggresive, tumor of nasopharynx seen in prepubertal and adolescent males. It is the most common benign neoplasm of nasopharynx. It is a highly vascular tumor and blood supply of the tumor most commonly arises from the internal maxillary artery.
Juvenile nasopharyngeal angiofibroma (JNA) occurs almost exclusively in males. Female with Juvenile nasopharyngeal angiofibroma (JNA) should undergo genetic testing. Onset is most commonly in the second decades, the range is 7-19 years.
The exact cause is unknown. As the tumour is predominantly seen in adolescent males in the second decade of life, it is thought to be testosterone dependent.
Such patients have a hamartomatous nidus of vascular tissue in the nasopharynx and this is activated to form angiofibroma when male

sex normone appears.

**855. 3 cm oral cavity tumor with single ipsilateral 5 cm lymph node with no distant metastases; stage of tumor is ?**

a) T3N3M0

b) T2N2aM0

c) T2N3M0

d) T2N2bM0

Correct Answer - B

## 856. Pyriform sinus is laterally bounded by what?

a) Interarytenoid artery

b) Thyroid artery

c) Epiglottis

d) Thyrohyoid membrane

Correct Answer - D

- On either side of the laryngeal orifice in humans is a recess, termed the **piriform sinus** (also **piriform**recess, **pyriform sinus**, **piriform fossa**, or smuggler's **fossa**), which is bounded medially by the aryepiglottic fold, laterally by the thyroid cartilage and thyrohyoid membrane.
- The fossae are involved in speech.

## 857. Which structure is not seen in water's view?

a) Anterior ethmoid air cells

b) Posterior ethmoid air cells

c) Maxillary sinus

d) Petrous bone

Correct Answer - D

## 858. Which of the following is true about pleomorphic adenoma except ?

a) Most common tumor of salivary glands

b) Has a tendency to invade perineural space

c) Most commoly involves the parotid gland

d) It is also called a mixed tumor

Correct Answer - B

**Pleomorphic adenoma**

- This is the Commonest neoplasm of Salivary glands.
- The most Common salivary gland involved is Parotid - represent about 60% tumors in the parotid. o Submandibular and minor salivary glands may also be involved rarely.
- Pleomorphic adenoma → Parotid > Submandibular > minor salivary glands.
- They are derived from a mixture of ductal (epithelial ) and myoepithelial cells and therefore they show both epithelial and mesenchymal differentiation - Also called mixed tumor.

## 859. Most common site for mucoepidermoid carcinoma is

a) Parotid gland

b) Submandibular gland

c) Sublingual gland

d) Minor salivary gland

Correct Answer - A
Mucoepidermoid carcinoma is the most frequently diagnosed malignancy of the salivary gland.
Among the major salivary glands, the **parotid gland** is most commonly involved.

## 860. Golden period of eye donation ?

a) 6 hours

b) 12 hours

c) 18 hours

d) 24 hours

Correct Answer - A
Ans. is 'a' i.e., 6 hours
*"Donor corneas are harvested from cadaveric donors within 6 hours after death, sometimes up to 12 hours after death in countries with cold climates".*

## 861. What happens to corneal endothelium after injury ?

a) Slowly regenerates

b) Never regenerates

c) Regenerates rapidly

d) Forms a scar

Correct Answer - C
Ans. is 'c' i.e., Regenerates rapidly
The cell density of endothelium is around 3000 cells/mm2 in young adults, which decreases with the advancing age.
There is a considerable functional reserve for the endothelium.
Therefore owing to the high functional reserve and good metabolic activity of the endothelial layer, regeneration occurs rapidly after injury.
Therefore, corneal decompensation occurs only after more than 75 percent of the cells are lost.

## 862. All of the following are true about iris except ?

a) When iris is ruptured, it moves to one quadrant.

b) When iris is ruptured it continues to function except in the altered segment

c) Rupture at the root of the iris produces a D -shaped pupil

d) Even in presence of iris sphincter injury, pupillary reactions can be evaluated

Correct Answer - A

**Ans. is 'a' i.e., When iris is ruptured, it moves to one quadrant**

**Facts about iris:**

- The pupillary reactions may be evaluated even in the presence of iris atrophy, traumatic rupture of the sphincter, and congenital or surgical coloboma.
- Tears of the iris usually affects the pupil margin and involve the iris sphincter muscle causing traumatic mydriasis.
- Sphincter tears may be single or multiple and appear as triangular notches of the pupil margin.
- Tears may also involve the iris root at the junction with the ciliary body and, if large, such iridodialysis produces a characteristic D - shaped pupil.
- When the iris spincter is severed or ruptured it continues to function except in the altered segment, rather than retracting to one quadrant.

## 863. Which of the following material is used in hard IOL?

a) PMMA

b) Silicon

c) Hydrogel

d) Acrylic

Correct Answer - A
**Ans. is 'a' i.e., PMMA**
**Depending on the material of manufacturing, following types of IOLs are there :-**
*i) Rigid IOLs :-* Made entirely from polymethyl methacrylate (PMMA)
*ii) Foldable IOLs :-* Are used after phacoemulsification and are made of silicon, acrylic, hydrogel and collamer.
*iii) Rollable IOLs :-* Ultra thin IOLs and are sued after phokonit technique (micro- incision : lmm). These are made of *hydrogel*

**864. Penetrating iron particle in eye which of the following investigation will not be used ?**

a) X- ray

b) CT scan

c) MRI

d) USG

Correct Answer - C
Ans. is 'c' i.e., MRI
MRI is contraindicated in presence of metalic (magnetic) foreign body.

## 865. Focal length of high power objective lens of microscope?

a) 40mm

b) 16mm

c) 20mm

d) 4mm

Correct Answer - D
Answer- D. 4mm
Approximate focal length-4mm

## 866. Water content in lens is ?

a) 64%

b) 35%

c) 1%

d) 28%

Correct Answer - A
Ans. is 'a' i.e., 64%
The lens is composed of 64% water, 35% protein, and 1% lipid, carbohydrate and trace elements. The protein concentration in the lens is actually the highest amongst body tissues. The main types of proteins are alpha (31%), beta (55%) and gamma (2%) crystallins, and insoluble albuminoids (12%).

## 867. Nodules seen near the collarette are called ?

a) Busacca's nodules

b) Koeppe's nodules

c) Lisch nodules

d) Dalen Fuch's nodules

Correct Answer - A
Ans. is 'a' i.e., Busacca's nodules
*Koeppe's nodules* are situated at the pupillary border and may initiate posterior synechia.
*Busacca's nodules* situated *near the collarette* are large but less common than the Koeppe's nodules.

## 868. Probing and irrigation is not done in ?

a) Lacrimal fistula

b) Acute dacryocystitis

c) Congenital dacryocystitis

d) Trauma to eye

Correct Answer - B

**Ans. is 'b' i.e., Acute Dacryocystitis**

**Contraindications to probing and irrigation:**

- The main contraindications are *acute* dacryocystitis and acute canaliculitis.
- In the setting of active infection, probing and irrigation is more likely to cause trauma because the lacrimal sac wall is inflamed and friable; it also can cause unnecessary pain and anxiety for the patient.

## 869. 40 years male with spherophakia is at risk for developing ?

a) Phacolytic glaucoma

b) Phacoanaphylactic glaucoma

c) Phacomorphic glaucoma

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Phacomorphic glaucoma**

**Phacomorphric glaucoma is an acute secondary angle-closure glaucoma caused by :**

1. *Intumescent lens i.e., swollen cataractous lens due to rapid maturation of cataract or sometimes following traumatic rupture of capsule is the main cause of phacomorphic glaucoma.*
2. *Anterior subluxation or dislocation of the lens*
3. *Spherophakia (congenital small spherical lens)*

## 870. Keratometer is used for ?

a) Corneal thickness

b) Corneal diameter

c) Corneal curvature

d) Distance between cornea and pupil

Correct Answer - C
Ans. is 'c' i.e., Corneal curvature

## 871. Accommodation is due to ?

a) Relaxation of ciliary muscles

b) Contraction of ciliary muscles

c) Contraction of dilator pupillae

d) None

Correct Answer - B

**Ans. is 'b' i.e., Contraction of ciliary muscles**

**<u>Accommodation</u>**

- Accommodation of the eye refers to the act of physiologically adjusting crystalline lens elements to alter the refractive power and bring objects that are closer to the eye into sharp focus.
- Our eyes have been provided with a unique mechanism by which we can even focus the diverging rays coming from a near object on the retina in a bid to see clearly.
- This mechanism is the accommodation.
- *In accommodation there occurs increase in the power of crystaline lens due to increase in the curvature of its surfaces.*
- Accommodation is due to contraction of ciliary muscles.
- Near point and far point are related to accommodation

.. The near point is the closest distance between an object and eye that makes possible the formed image to be focused, i.e., it is the point in which accommodation is maximum (ciliary muscles are maximally contracted).

2. Far point is the most distant point from the eye in which an object can be placed and its image is still focused, i.e., it is the situation of maximum relaxation of ciliary muscles.

3. *In myopia near point and far point of vision come closer and in hypermetropic near point becomes more distant.*

- Anomalies of accommodation are : *(i) Presbyopia, (ii) Insufficiency of accommodation, (iii) Spasm of accommodation, (iv) Paralysis of accommodation.*

## 872. Visual acuity is:
***March 2012***

a) Refractive power of eye

b) Dividing denominator with distance at which the letters can be read on Snellen chart

c) Ability to increase converging power of eye

d) Ability to discriminate 2 points

Correct Answer - D

Ans: D i.e. Ability to discriminate 2 points

**Some common terms**

- Refractory power/ optical power is the ability of eye to bend light as it passes through the eye
- The minimum angle of resolution (MAR) is arrived at by dividing the denominator by the distance at which the letters were read
- The necessary increase in convergence power of eye is (accomplished by augmenting the refractive power of the crystalline lens by increasing the curvature of its surface) by the phenomenon of accommodation.
- Visual acuity is a measure of the spatial resolution of the eye or, in other words, an estimation of its ability to discriminate between 2 points

## 873. Fluoroscein dye study is done to detect

a) Assess retinal function of babies

b) Retinal vascular pathology

c) Macular pathology

d) Posterior segment of eye

Correct Answer - B

**Ans. is 'b' i.e., Retinal vascular pathology**

**Angiography for fundus examination**

- Angiography is used for dynamic flow study of Iris, Retina or choroid. Following types of angiographies are used.

1. Fluorescein Angiography :- *Sodium fluorescein* dye is used by injecting it into antecubital vein. It is primarily used for retinal vasculature, but iris & choroid can also be examined.
2. Indocyanine green Angiography :- It is used primarily for choroidal vasculature, especially in choroidal neovascular membranes (CNVM). Therefore, it is used in - i) *The identification and delineation ofpoorly defined or occult choroidal neovascularization,* (ii) *Retinal pigmented epithelium (RPE) detachments.*

## 874. In retinal artery angiogram dye injected through?

a) Retinal artery

b) Antecubital vein

c) Ophthalmic artery

d) Femoral vein

Correct Answer - B
Ans. is 'b' i.e., Antecubital vein
Angiography for fundus examination
Angiography is used for dynamic flow study of Iris ,Retina or choroid . Following types of angiographies are used:?
1. *Fluorescein Angiography :* - Sodium fluorescein dye is used by injecting it into antecubital vein. It is primarily used for retinal artery angiography, but iris & choroid can also be examined.
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## 875. Egyption ophthalmia is ?

a) Spring catarrh

b) Trachoma

c) Interstitial keratitis

d) Xerophthalmia

Correct Answer - B

**Ans. is 'b' i.e., Trachoma**

**<u>Trachoma</u>**

- Trachoma, also called Egyptian ophthalmia, is a chronic *keratoconjunctivitis* primarily affecting the superficial epithelium of conjunctiva and cornea simultaneously. Trachoma is characterized by mixed follicular and papillary conjunctivitis. Trachoma is cuased by *chlamydia trachomatis seroptypes A, B, Ba and C.* The organism is epitheliotropic and produces *intracytoplasmic* inclusion bodies called HP bodies (Halberstaedter prowazeke bodies).

**Clinical features of Trachoma**

- The clinical course of trachoma is determined by the presence or absence of secondary infection. In the absence of such infection, a pure trachoma is so mild and symptomless that the disease is usually neglected and symptoms include mild foreign body sensation and occasionally lacrimation. But, mostly the picture is complicated by secondary infection and may start with typical symptoms of acute mucopurulent conjunctivitis. On examination the conjunctiva and cornea, both are involved : ?

**A) Conjunctival signs**

i. *Congestion* of upper tarsal and forniceal conjunctiva.

i. *Conjunctival follicles :-* Boiled sagograin like follicles are commonly seen on upper tarsal conjunctiva and fornix. Sometimes follicles are

present on bulbar conjunctiva and *presence of follicles on bulbar conjunctiva is pathognomonic of trachoma.* The characteristic feature of trachoma follicle is the presence of necrosis and leber cells (large multinucleated cells) which differentiate it from follicular conjunctivitis.

i. *Papillary hyperplasia :-* Papillae are reddish, flat topped raised areas which give red and *velvety appearance to the tarsal conjunctiva.*
ii. *Conjunctival scarring :* - Linear scar present in the sulcus subtarsalis is called Arlt's line.
iii. *Concretion :* - May be formed due to accumulation of dead epithelial cells and inspissated mucus in depressions called *glands of Henle.*

**B) Corneal signs**

i. Superficial keratitis
ii. *Herbert follicles :* - Follicles in the limbal area.
iii. *Pannus :-* Infiltration of cornea associated with vascularization.
iv. *Corneal ulcer ..* - At the advancing edge of pannus.
v. *Herbert pits :* - Left after healing of Herbert follicles in the limbal area.
vi. *Corneal opacity*

**Sequelae and complications of trachoma**

**Sequelae and complications of trachoma are : *?***

1. *Lids : - Entropion,* trichiasis, tylosis, ptosis, madarosis, ankyloblepharon.
2. *Conjunctival :* - Concretions, pseudocyst, *Xerosis (dryness),* symblepharon.
3. *Corneal :* - Corneal opacity, ectasia, corneal xerosis, total corneal pannus, corneal ulcer.
4. *Other :* - Chronic dacryocystitis, Chronic dacryoadenitis.
5. *Blindness*

## 876. Bacteria not causing ophthalmia neonatorum ?

a) Chlamydia

b) Gonococcus

c) Pseudomonas

d) Moraxella

Correct Answer - D

**Ans. is 'd' i.e., Moraxella**

**<u>Ophthalmia neonatorum</u>**

- Ophthalmia neonatorum, also called *neonatal conjunctivitis,* is the conjunctivitis in the first month of life. Infection may be acquired during birth from infected birth canal (most common) or after birth. The causative agents are : -

1. *Common organisms are : - Gonococcus, C. trachomatis,* Herpes simplex virus. Other organisms are : -*Staphylococcus* aureus, pneumococcus, Streptococcus, *Pseudomonas,* Serratia, Klebsiella.
2. *Chemical conjunctivitis :* - Caused by use of silver nitrate or antibiotic prophylaxis.

## 877. Jackson's crosscylinder test is used for ?

a) Subjective verification

b) Subjective refining

c) Subjective balancing

d) Objective refining

Correct Answer - B
**Ans. is 'b' i.e., Subjective refining**
**<u>Subjective refraction</u>**

- Subjective refraction is meant for finding out the most suitable lenses to be prescribed. The proper subjective refraction includes three steps.
  1)Subjective verification of refraction
- It is done by `*trial and-error 'methods.* In this one eye is occluded and the appropriate lens combination (as indicated by retinoscopy or refractometry) is placed in front of the other eye. By increasing or decreasing the power of lens, the most suitable spherical lens is chosen. *The strongest convex lens and the weakest concave lens providing best vision should be chosen in patients with hypermetropia and myopia respectively.*
  2)Subjective refining of refraction
- The most suitable combination of lenses chosen after the subjective verification of refraction is refined before final prescription is made. It is always better to first refine the cylinder and then sphere. A) Refining the cylinder : - Cylinder can be refined by either crosscylinder or by astigmatic fan test.
- *Jackson's crosscylinder test (more commonly used)*
- Crosscylinder is used to verify the strength and axis of the cylinder

prescribed.

The cross cylinder is a mixed combination of various strengths in which spherical component is one half the power of the cylindrical and of opposite sign to with the axis at right angles. The most convenient form is a combination of a -0.5 D sphere with a +1.0 D cylinder which has an effective strength of + 0.5 D cylinder in one meridian and - 0.5 D cylinder in the meridian perpendicular to the first. The cross-cylinder is identified by the strength of its cylinderical component. So, above described cross cylinder is referred as + 0.5 crosscylinder.

- **Thus, cross cylinder has following feature : -**

i. It has one spherical and one cylinderical lens.

i. This combination creates two cylinders of equal strength but with opposite sign placed with their axes at right angle to each other.

i. *Astigmatic fan test :* - It is used to confirm the cylindrical correction.

B) Refining the sphere : - After refining the cylindrical power and axis, the spherical correction is refined by : - *The fogging technique, Duochrome test, Pin-hole test.*

3)Subjective binocular balancing

- The final step in the subjective refraction is binocular balancing, i.e., *'equalization of vision ' or 'equalizing the accommodative effort'.* This allows both eyes to have the retinal image simultaneous in focus.

## 878. Shadow test is used in ?

a) Keratometry

b) Ophthalmoscopy

c) Gonioscopy

d) Retinoscopy

Correct Answer - D
Ans. is 'd' i.e., Retinoscopy
Retinoscopy, also called *skiascopy* or *shadow test,* is an objective method of finding out the error of refraction by the method of neutralization.

## 879. Which bacteria penetrates intact cornea ?

a) Corynebacterium

b) Pneumococcus

c) Morexella

d) E. coli

Correct Answer - A
**Ans. is 'a' i.e., Corynebacterium**
**<u>Bacterial corneal ulcer</u>**

- Bacterial corneal ulcer, also called *suppurative keratitis,* is due to organisms that produce toxin which cause tissue necrosis and pus formation in the corneal tissue. Purulent keratitis is nearly always exogenous, due to pyogenic organism. As long as the cornea is healthy, the majority of bacteria are unable to cross or adhere to the corneal epithelium. Therefore the two main predisposing factors for bacterial corneal ulcer are : -

1. *Damage to corneal epithelium*
2. *Infection of the eroded area*

- However, *there are a few species that are capable of penetrating an intact epithelium : -*

1. *Neisseria gonorrhoea*
2. Neisseria meningitidis
3. *Corynebacterium diphtheriae*
4. *Listeria species*
5. *Haemophilus agyptus*

- Bacteria which cause corneal ulcer (Purulent keratitis) after epithelial injuries are : -

1. *Pseudomonas*

2. *Pneumococcus*
3. *Streptococcus epidermidis*
4. *Staphylococcus aureus*
5. *Morexella*
6. *Enterobacterias*
7. *Proteus, Klebsiella)*

- Although there are specific presentations depending on the bacteria involved, there exists a series of symptoms and signs common to all that allow for a rapid diagnosis, and therefore early treatment of corneal ulcers. *The most important symptoms are pain, lacrimation, foreign body sensation, conjunctival injection (red eye), photophobia and blurred vision.* There is lid swelling, blepharospasm and yellow white areas of ulcer with swollen and overhanging marin may be seen.

## 880. Which of the following is/ are contrast sensitivity testing charts?

a) Pellirobsons

b) Snellen type chart

c) Regan chart

d) All of the above

Correct Answer - D
**Ans. is d i.e., All of the above**
**Contrast Sensitivity Testing is done with the help of following charts:**

- Pelli-Robson chart
- The Regan chart
- StandardSnellen-type

## 881. Schwalbe's line is the peripheral limit of which layer of cornea?

a) Bowman's layer

b) Stroma

c) Descemet's layer

d) Endothelium

Correct Answer - C
**Ans. is `c' i.e., Descemet's layer**
**<u>Histology of cornea</u>**
The cornea has five distinct layers (from superficial to deep) :?
1) Epithelium :- It is the outermost part of cornea and is composed of stratified squamous non-keratinized epithelial cells.
2) Bowman's membrane : - It is not a true membrane but simply a condensed superficial part of stroma. Once destroyed, it does not regenerate.
3) Stroma (Substantia propria) : - This layer constitutes most of the cornea (90% of thickness). It consists of *collagen fibrils (lamellae)* embedded in hydrated matrix of proteoglycans.
*4)* Descemet's membrane : - This layer bounds the stroma posteriorly. In the periphery it appears to end at the anterior limit of trabecular meshwork as *Schwable's ring.*
5) Endothelium : - It is a single layer of flat polygnonal cells. The endothelial cells contain 'active-pump' mechanism and is the most important layer in maintaining the transparency of cornea.

## 882. Hypopyon in a fungal corneal ulcer contains?

a) Fungal filaments

b) Fungal spores

c) Purulent material

d) Sterile material

Correct Answer - A
Ans. is 'a' i.e., Fungal filaments
Hypopyon in fungal ulcer is not sterile as in bacterial corneal ulcer because the fungi penetrate in the anterior chamber without perforation.
Hypopyon in fungal ulcer is fixed and does not show positional variation as in bacterial corneal ulcer as the fungal filaments adhere to the walls of anterior chamber.

## 883. Vernal keratoconjunctivitis is associated with ?

a) Corneal opacity

b) Bacterial ulcer

c) Spring season

d) Glaucoma

Correct Answer - A

**Ans. is 'a' i.e., Corneal opacity**

**<u>Vernal kerato conjunctivitis (spring cattarrh)</u>**

- Spring cattarrh is an *allergic inflammation* of conjunctiva which is characterized by *recurrent, bilateral, inter?stitial, selflimiting* conjunctivitis that becomes *aggravated during spring and summer period.*
- It is considered to be Type **I** hypersensitivity reaction (immediate type) to *exogenous allergens* such as grass pollens.
- It is more common in boys and affects age group 4-20 years.
- *More common in summer,* hence the name spring catarrh looks a misnomer.
- Recently it is being labeled as *"Warm weather conjunctivitis".*

**Clinical features of spring catarrh**

- Spring catarrh is characterized by marked itching & burning, Stringy (ropy) discharge, lacrimation, photo-phobia and heaviness of lids.
- Clinically spring catarrh is divided into three types : *?*

i. *Palpebral form :* - It is the *most common types.* The *upper* palpebral conjunctiva shows papillae (papillary hypertrophy with their characteristic appearance : - i) Lage & flat toped, ii) Cobble stone appearance (Pavement stone appearance). These papilla heal without scarring.

i. *Bulbar form :* - It is characterized by (i) Dusky red triangular congestion of bulbar conjunctiva in palpebral area; ii) Gelatinous thickened accumulation of tissue around the limbus; iii) Presence of discrete whitish raised dots along the limbus (Tranta's spot).

i. *Mixed form :* - Both bulbar and palpebral manifestations occur together.

**Corneal signs (Vernal keratopathy)**

- *Punctate epithelial keratitis*
- *Ulcerative vernal keratitis : shallow transverse ulcer (Shield ulcer)*
- *Vernal corneal plaques*
- *Subepithelial scarring*
- Pseudogerontoxon: chracterized by a classical "cupid's bow" outline.

## 884. Phthsisbulbi means ?

a) Developmental hypoplasia of optic cup

b) Final end stage of chronic scleritis

c) Final end stage of chronic uveitis

d) All of the above

Correct Answer - C
**Ans. is 'c' i.e., Final end stage of chronic uveitis**
**Phthisis bulbi**
It is the final stage end result of any form of chronic uveitis. In this condition ciliary body is disorganised and so aqueous production is hampered. As a result of it the eye becomes soft, shrinks and eventually becomes a small atrophic globe (phthisis bulbi).
*Intraocular tension is reduced due to decreased aqueous formation. Histopathologically, the globe is small and shrunken with marked thickening of the sclera, as well as disorganization and atrophy of much of the intraocular contents. Commonly the retinal pigmented epithelium may undergo a metaplasia leading to intraocular ossification (calcification) in the end- stage of phthisis bulbi.*

## 885. Most common symptom of posterior uveitis ?

a) Pain

b) Photophobia

c) Lacrimation

d) Diminished vision

Correct Answer - D

**Ans. is 'd' i.e., Diminished vision**

**<u>Clinical features of posterior uveitis</u>**

- Choroiditis (chorioretinitis) is usually insidious (unlike anterior uveitis, which is acute most of the time). There is *no pain, photophobia, lacrimation or circumcorneal congestion.*
- *Most prominent symptom is diminished vision* especially if the lesion involves macula, maculopapillary bundle and optic nerve. Other symptoms are *black spots floating in front of the eye, metamorphosia, tnicropsia, macropsia, positive scototna.*
- On examination following signs may be seen *:?*

.. *Vitreous opacities :-* Fine, coarse, stringy or snowball opacities.

2. Pale yellow or dirty white raised area of choroid.

## 886. Space of cloquet is phylogenetically related to

a) Hyaloid artery

b) Central Retinal artery

c) Central retinal vein

d) Iris

Correct Answer - A

**Ans. is 'a' i.e., Hyaloid artery**

**Cloquet's canal**

- It is the embryonic remnant of hyaloid artery.
- It runs from the optic nerve, where it originates in shape of funnel and creates the peripappilary space of
- Martegiani, and narrows as it passes through the central vitreous until it reaches the retrocrystalline lens zone.
- The anterior vitreous space, or anterior hyaloid is inserted in the posterior capsule of crystalline lens forming a circular zone 8 - 9 mm in diameter known as Weiger'shyaloidocapsular ligament.
- This ligament constitutes the union between the anterior hyaloid and the anteriormost portion of the Cloquet's canal, leaving a space between the two, called Berger's space.

## 887. All of the following are side effects of topical pilocarpine solution except?

a) Accomodative spasm

b) Miosis

c) Blurred vision

d) Follicular conjunctivitis

Correct Answer - D
Ans. is 'd' i.e., Follicular conjunctivitis

## 888. Rossette shaped cataract is seen in ?

a) Congenital rubella

b) Blunt trauma to eye

c) Wilson's disease

d) Diabetes mellitus

Correct Answer - B
Ans. is 'b' i.e., Blunt trauma to *eye*
*Vossius ring on anterior surface of lens, Rosette shaped cataract.*

## 889. Sunflower cataract is seen in ?

a) Wilson's disease

b) Congenital rubella

c) Blunt trauma to eye

d) Myotonicdystrophica

Correct Answer - A
Ans. is 'a' i.e., Wilson's disease

## 890. Most common type of congenital cataract ?

a) Punctate cataract

b) Nuclear cataract

c) Zonular cataract

d) Lamellar cataract

Correct Answer - A

**Ans. is 'a' i.e., Punctate cataract**

**<u>Congenital cataract</u>**

- Among the many morphological types, the following are common :?
  1) Punctate cataract
- This is the most common manifestation and, in minute degress, is almost universal in occurrence. When the small opaque spots are multiple and scattered all over the lens, appearing as tiny blue dots, they are known as *cataracta coerulea or blue- dot cataract.* When crowed in the Y- sutures, the terms *sutural cataract and anterior axial embryonic cataract* have been used. Another variant is a cataract with a central spheroidal or biconvex opacity consisting of powdery fine white dots within the embryonic or foetal nucleus, called *cataracta centralis pulverulenta.*
  2) Zonular cataract (lamellar cataract)
- *This accounts for approximately 50% of all visually significant congenital cataracts. A* zone *around the embryonic nucleus* (usually in the area of the *foetal nucleus)* becomes opacified.The area of the lens within and around the opaque zone is clear, although linear opacities like *spokes of a wheel (riders)* may run outwards towards the equator. *Lack of Vitamin **D** is apparently a potent factor* and evidence of rickets may be found in affected children.

Hypoparathyroidism during pregnancy may also cause this type of cataract

3) Fusiform cataract (Spindle- shaped/ axial/ coralliform)

- There is an anterioposterior spindle-shaped opacity with offshoots giving an appearance resembling a *coral.*

4) Nuclear cataract

- It is due to disturbance in development at a very early stage, therefore, the central nucleus remains opaque --> *Embryonic nuclear cataract.* It may be associated with rubella (German measles) in mother.

5) Coronary cataract

- It occurs around puberty and appears as a *corona of club shaped opacities* in the periphery of the lens.

6) Anterior capsular (polar) cataract

- It involves the central part of the anterior capsule and the adjoining superficial most cortex. It may be either due to (i) Developmental delay in formation of anterior chamber (ii) Aquired due to corneal perforation (as in penetrating injury *or ophthalmia neonatorum).* It may be of following types:?

i. *Thickened white plaque*

i. *Anterior pyramidal cataract* Cone shaped opacity with apex towards cornea.

i. *Reduplicate (double) cataract:-* A transparent zone between two opacities (one on capsule and other in cortex). The burried opacity is called *imprint* and the two together constitute reduplicate cata ract.

7) Posterior capsular (polar) cataract

- This is due to persistence of the posterior part of the vascular sheath of the lens.

## 891. Laser capsulotomy is done for ?

a) Pseudophakic bullous keratopathy

b) After cataract

c) Cystoid macular edema

d) Retinal detachment

Correct Answer - B
Ans. is 'b' i.e., After cataract
Thin membranous after cataract and thickened posterior capsule are best treated by YAG-laser capsulotomy or discission with cystitome or Zeigler's knife.

## 892. Most common complication of extracapsular cataract surgery is:

a) Retinal detachment

b) Opacification of posterior capsule

c) Vitreous haemorrhage

d) Bullous keratopathy

Correct Answer - B
Ans. Opacification of posterior capsule
Opacification of the posterior capsule caused by proliferation of cells in capsular bag remains the most frequent complication of ECCE and IOL surgery.

## 893. Normal intraocular pressure is -

a) 7 - 14 mm Hg

b) 2.1 - 6 mm Hg

c) 10 - 21mm Hg

d) 16 - 32 mm Hg

Correct Answer - C
Ans. is 'c' i.e., 10 - 21 *mm* Hg
The intraocular pressure (TOP) refers to the pressure exerted by intraocular fluids on the coats of the eyeball. The normal IOP varies between 10 and 21 mmHg.

## 894. Vertically oval dilated pupil is seen in ?

a) Acute primary angle closure glaucoma

b) Wernicke's korsakoff psychosis

c) Neurosyphilis

d) Paralysis of occulomotor nerve

Correct Answer - A
Ans. is 'a' i.e., Acute primary angle closure glaucoma
In acute primary angle closure glaucoma - Pupil is semidilated, vertically oval and fixed. It is non-reactive to both light and accommodation.

## 895. Acute angle closure glaucoma first line treatment?

a) Iv mannitol

b) Acetazolamide

c) Pilocarpine

d) Beta blocker eyedrops

Correct Answer - A

**Ans. is 'a' i.e., I.V. Mannitol**

**Treatment of angle closure glaucoma**

- Definitive treatment (treatment of choice) is surgery. However, intially drugs are used to decrease KW during an acute attack. Approach of treatment is as follows:-
- Start i.v. mannitol or i.v. acetazolamide
- When IOT starts falling, start topical pilocarpine or β-blocker (timolol).
- Apraclonidine/latanoprost may be added.
- Once IOT is reduced, surgery is done.
- Topical pilocarpine 2% is the preferred antiglaucomatous drug.
- After control of IOP, Laser (Nd : YAG) peripheral irodotomy *is* the definitive management of choice. If laser is not available surgical peripheral iridectomy is the procedure of choice. Other surgical procedures used are *filteration surgeries* (like trabeculectomy, deep sclerotomy, *Viscoanulostomy).*
- Symptomatic treatment during an attack also includes *analgesics, antiemetic and topical corticosteroids* to reduce inflammation. Mydriatics (e.g. atropine) are contraindicated as they precipitate glaucoma.
- PACG is a bilateral disease, the fellow eye is at risk of developing an

acute attack in 50% cases in future. Therefore a prophylactic peripheral laser iridotomy should be performed in the fellow eye.

**896. Which of the following drugs is not associated with open angle glaucoma?**

a) Betamethasone

b) Docetaxel

c) Prednisone

d) Thiazide

Correct Answer - D
Ans. is 'd' i.e., Thiazide

## 897. A patient has complaint of seeing coloured holoes in the evening and blurring of vision for last few days with normal 10P ?

a) Prodromal phase of acute angle closure glaucoma

b) Acute angle closure glaucoma

c) Chronic glaucoma

d) Epidemic dropsy

Correct Answer - A

**Ans. is 'a' i.e., Prodromal phase of acute angle closure glaucoma**

**Features of latent PACG (Prodromal stage) are :?**

i. Shallow anterior chamber
i. *Occasionally complain of halos around light*
i. Sometimes slight-haziness or blurring of vision
v. Normal 10P

- It is the only phase of glaucoma, where IOP pressure is normal at all the time. Whereas in incipient stage, there is recurrent elevation of IOP by predisposing factors like dim light.

## 898. Most common cause of neovascular glaucoma ?

a) Diabetes

b) CRAO

c) CRVO

d) Eale's disease

Correct Answer - A

**Ans. is 'a' i.e., Diabetes**

**Neovascular glaucoma (Rubeosis iridis)**

- It is a *secondary angle closure glaucoma* which results due to formation of neovascular membrane over the iris i.e., neovascularization of iris (rubeosis iridis). Causes of rubeosis iridis are :-

1. *Common :- Diabetic retinopathy (most common cause),* central retinal vein occlusion, Eale's disease, sickle- cell retinopathy
2. *Rare causes :* - Long standing retinal detachment, central retinal artery occlusion, intraocular inflammation (uveitis), intraocular tumors (choroidal melanoma, retinoblastoma), radiation retinopathy, ocular ischemic syndrome (carotid artery disease, carotid - cavernous fistula), Fusch's heterochromic iridocyclitis.

- In central retinal vein occlusion (CRVO), glaucoma manifests about 100 days after thrombosis of central vein, therefore, it is also called 100 days glaucoma.
- The most widely accepted theory for neovascularization is that the hypoxic retina produces diffusible angiogenic factor (VEGF) that stimulates new vessel proliferation.
- Treatment of choice is panretinal photocoagulation as it terminates the angiogenic stimulus for neovascularization of retina.

## 899. Waxy pallor of optic disc is seen in which disease?

a) Retinitis pigmentosa

b) Retinopathy of prematurity

c) Hypertensive retinopathy

d) Diabetic retinopathy

Correct Answer - A
Ans. is 'a' i.e., Retinitis pigmentosa
Retinal pigmentary changes (Bone spicule intraneural retinal pigmentation) : - Retina studded with small, jet-black spots resembling bone corpuscles with a spidery outline. These pigmentary changes are typically perivascular and retinal veins (never arteries) have a sheath of pigment for part oftheir course. These changes afrect equatorial region initially sparingthe posterior pole and periphery. Later in the course ofdisease whole retina is involved.

## 900. Photosensitive layer of retina ?

a) Pigment layer

b) Layers of rods and cones

c) External limiting membrane

d) Internal limiting membrane

Correct Answer - B
Ans. is 'b' i.e., Layers of rods and cones

- Rods and cones are the end organs of vision and are also known as photoreceptors.
- Layer of rods and cones contains only the outer segments of photoreceptor cells arranged in a palisade manner. There are about 120 millions rods and 6.5 millions cones.
- Rods contain a photosensitive substance visual purple (rhodopsin) and subserve the peripheral vision and vision of low illumination (scotopic vision).
- Cones also contain a photosensitive substance and are primarily responsible for highly discriminatory central vision (photopic vision) and colour vision.

## 901. Shaffer's sign is seen in

a) Rhegmatogenous retinal detachment

b) Exudative retinal detachment

c) Tractional retinal detachment

d) Vitreous haemorrhage

Correct Answer - A
Ans. is 'a' i.e., Rhegmatogenous retinal detachment
Shafer's sign alludes to the clinical finding of pigment cells in the vitreous. In the absence of prior ocular surgery, this sign is considered practically pathognomonic of a retinal break or rhegmatogenous detachment.

## 902. Eale's disease is:

a) Retinal hemorrhage

b) Vitreous hemorrhage

c) Conjunctival hemorrhage

d) Choroidal hemorrhage

Correct Answer - B
Ans. Vitreous hemorrhage
Eale's disese is an idiopathic inflammatory venous occlusion that primarily affects the peripheral retina of young adult (20-30 yrs) male.

## 903. Dalen fuchs nodules ?

a) Sympathetic Ophthalmitis

b) Chronic iridocyclitis

c) Neurofibromatosis

d) Trachoma

Correct Answer - A
Ans. is 'a' i.e., Sympathetic Ophthalmitis
Dalen fuch's nodules are seen in sympathetic ophthalmitis.
*Dalen-Fuchs' nodules* are formed due to proliferation of the pigment epithelium (of the iris, ciliary body and choroid) associated with invasion by the lymphocytes and epitheloid cells. Retina shows perivascular cellular infiltration (sympathetic perivasculitis).

## 904. Most common cause of proptosis in adults is ?

a) Orbital cellulitis

b) Thyroid Ophthalmopathy

c) Carotico - cavernous fistula

d) Trauma

Correct Answer - B
Ans. is 'b' i.e., Thyroid Ophthalmopathy

- *The most common cause of unilateral proptosis in children is orbital cellulitis.*
- *The most common cause of unilateral proptosis in adults is thyroid ophthalmopathy.*

## 905. Enophthalmos is seen in ?

a) Blow out fracture of orbit wall

b) Hyperthyroidism

c) Radiation Injuries

d) Diabetes mellitus

Correct Answer - A
Ans. is 'a' i.e., Blow out fracture of orbit wall
Enophthalmos is seen in blow out fracture of orbit wall.

**906. Child with mild squint. Intrauterine, birth history, developmental history till date all normal. Corneal reflex normal. All other eye parameters normal except exaggerated epicanthal fold. Diagnosis ?**

a) Pseudostrabismus

b) Accomodative squint

c) Exophoria

d) Esophoria

Correct Answer - A
Ans. is 'a' i.e., Pseudostrabismus
Epicantnic fold causes Pseudoesotropia (Pseudostrabismus).

## 907. Synergistic muscle for right medial rectus is ?

a) Right lateral rectus

b) Left lateral rectus

c) Right superior rectus

d) Right superior oblique

Correct Answer - C
Ans. is 'c' i.e., Right superior rectus
To know this question one should know the difference between synergistic muscles and yoke muscles.
*Synergists.* It refers to the muscles having the same primary action in the same eye e.g.,superior rectus and inferior oblique of the same eye act as synergistic elevators.

## 908. For Dextroelevation of eye, muscles acting are ?

a) Right lateral rectus and left medial rectus

b) Right superior rectus and left inferior oblique

c) Right inferior rectus and left superior oblique

d) Bilateral superior recti and inferior obliques

Correct Answer - B
Ans. is 'b' i.e., Right superior rectus and left inferior oblique (Dextroelevation)
Right superior rectus
Left inferior oblique

## 909. In paralytic squint, primary deviation

a) More than secondary deviation

b) Less than secondary deviation

c) Equal to secondary deviation

d) Any of the above, i.e. variable

Correct Answer - B
Ans. is 'b' i.e., Less than secondary deviation
*In paralytic (Incomitant) squint* → Secondary deviation > primary deviation.
*In non paralytic (Concomitant) squint* → Primary deviation = secondary deviation.

## 910. Last ocular muscle to be involved in Grave's disease?

a) Inferior rectus

b) Lateral rectus

c) Superior rectus

d) Inferior oblique

Correct Answer - D
Ans. is 'd' i.e., Inferior oblique
Order of involvement (Mnemonic : IM $SLO_{(W)}$) :- Inferior rectus > medial rectus > superior rectus > Lateral rectus > obliques.

## 911. Nuclear ophthalmoplegia is due to ?

a) Damage to medial longitudinal fasciculus

b) Damage to temporal lobe

c) Damage to oculomotor nuclei

d) None of the above

Correct Answer - C

**Ans. is 'c' i.e., Damage to oculomotor nuclei**

**<u>Ophthalmoplegia</u>**

- Ophthalmoplegia is paralysis of the eye muscles. Three common types are :-

i. *External ophthalmoplegia :-* If only extraocular muscles are paralysed.

i. *Internal ophthalmoplegia :-* If only intrinsic muscles (ciliar muscles and iris) are paralysed.

i. *Total ophthalmoplegia :-* All extrinsic and intrinsic muscles are affected.

- Certain other types of ophthalmoplegia are :-

i. *Nuclear ophthalmoplegia :-* It is paralysis of extraocular muscles due to lesion of the third cranial nerve nuclei. They are more often bilateral.

i. *Ophthalmoplegic migraine or Episodic ophthalmoplegia :-* It is characterized by recurrent attacks of headaches associated with paralysis of third, fourth and sixth cranial nerves. The incidence of involvement of the third cranial nerve is the most common and it persists for days or weeks after the attack. It is often unilateral and tends to become permanent.

i. *Chronic progressive external ophthalmoplegia (CPEO)* CPEO is the *most common feature of mitochondrial myopathy.* It occurs in > 50%

cases of all mitochondrial myopathies.Typical presentation *is B/L ptosis without diplopia* in early adulthood. Ophthalmoplegia is usually symmetrical & slowly progressive so diplopia is not often a complaint because all eye movements are reduced equally. *The progressive ophtha lmoplegia is unnoticed till decreased ocular motility limits peripheral vision. Ciliary muscles & iris muscles are often unaffected by CPEO.* Other variable symptoms are:

- Exercise intolerance
- Hearing loss
- Ataxia
- Hypogonadism
- Cataract
- Sensory axonal neuropathy
- Clinical depression
- Parkinsonism

## 912. The normal cup disc ratio is ?

a) 0.3

b) 0.6

c) 1.2

d) 2.4

Correct Answer - A
Ans. is 'a' i.e., 0.3
The ratio of cup diameter to disc diameter is normally 0.3:1.
Optic nerve head changes associated with glaucoma are thought to be seen prior to the development of visual field loss. The following changes are commonly seen in the optic nerve head in glaucoma :
- Asymmetry of the cup: disc ratio (>0.2) between the two eyes
- A localized notch or thinning of the neuroretinal rim
- An enlarged cup: disc ratio (>0.5), especially if in the vertical axis
- Pallor of the neuroretinal rim
- Superficial disc haemorrhages
- Vascular signs suggestive of an acquired cupping, such as baring of the circumlinear vessels and 'overpass' of central vessels and
- Parapapillary atrophy

## 913. Papilledema - 1st clinical sign is ?

a) Bulging of disc

b) Hyperemia of disc

c) Myopia

d) Obscuration of disc margins

Correct Answer - D

**Ans. is 'd' i.e., Obscuration of disc margins**

**<u>Ophthalmoscopic signs of papilloedema</u>**

- *Blurring of disc margin (first sign)*
- *Venous :-* Engorgment, congestion, *loss of pulsation*
- Hyperemia of the disc with capillary dilatation.
- *Filling of physiological cup with gradual obliteration of physiological cup.*
- *Gradual* elvetion of disc (mushroom or dome shaped) with *sharp bending of vessels over its margins.*
- Cotton- wool spots (soft exudates) and both flame shaped (superficial) and punctate (deep) hemorrhages
- Macular fan or macular star due to hard exudates.
- Late findings in long standing (vintage) papilloedema :- Markedly elevated disc with champagne cork appearance, post neuritic optic atrophy,corpora amylacea deposits on disc margin, generalized retinal pigmentation.

## 914. Following is a feature of papilloedema ?

a) Shrinkage of blind spot

b) Blurring of disc margin

c) Low vision

d) Loss of pupillary reflex

Correct Answer - B
Ans. is 'b' i.e., Blurring of disc margin
Blurring of disc margin is earliest sign. Vision is normal initially. In 25% of patients visual symptoms occur only in *advanced severe papilloedema,* when optic atrophy sets in. Typically, there is recurring brief episodes (transient) of visual obscurations *(Amaurosis fugax)* lasting less then 30 seconds, in which vision turns grey or blacks, sometimes decribed as if a veil has fallen over the eyes. The symptoms usually affect both eyes at once as papilloedema is bilateral. Central vision is affected late in the disease. Initially there is *enlargement of blind spot* and progressive contraction of the visual field (visual field becomes smaller). Complete blindness sets in eventually. Thus, characteristically there is gradually progressive painless loss of vision.

## 915. Amarosis fugax is ?

a) Transient blindness

b) Unilateral nystagmus

c) Depupillary reflex

d) Bilateral strabismus

Correct Answer - A

**Ans. is 'a' i.e., Transient blindness**

**<u>Amaurosis fugax</u>**

- Sudden, temporary and painless monocular visual loss occurring due to a transient failure of retinal circulation.
- Causes : Carotid transient ischaemic attacks (TIA), embolization of retinal circulation, papilloedema, giant cell arteritis, Raynaud's disease, migraine, as a prodromal symptom of central retinal artery or carotid artery occlusion, hypertensive retinopathy, and venous stasis retinopathy.
- Symptom : An attack of amaurosis fugax is typically described by the patients as a curtain that descends from above or ascends from below to occupy the upper or lower halves of their visual fields.
- Clinical Signs : The attack lasts for two to five minutes and resolves in the reverse pattern of progression, leaving no residual deficit. Due to brief duration of the attack, it is rarely possible to observe the fundus. When observed shortly after an attack, the fundus may either be normal or reveal signs of retinal ischemia such as retinal oedema and small superficial haemorrhages. In some cases, retinal emboli in the form of white plugs (fibrin-platelet aggregates) may be seen.

## 916. Superior orbital fissure syndrome - following nerves are affected ?

a) C.N. 1, 2, 4, 6

b) C.N. 2, 3, 4, 6

c) C.N. 3, 4, 5, 6

d) C.N. 1, 2, 3, 4, 5

Correct Answer - C
Ans. is 'c' i.e., C.N. 3, 4, 5, 6
The superior orbital fissure is a cleft between the lesser and greater wing of sphenoid.The structures passed through *superior orbital fissure are 3rd, 4th, 6th nerve, ophthalmic division of 5th nerve,* superior & inferior division of ophthalmic vein and sympathetic fibres.

## 917. Tear drops formed by all except ?

a) Glands of Manz

b) Meibomian, Zeis and Moll glands

c) Lacrimal glands

d) Lacrimal puncta

Correct Answer - D

**Ans. is 'd' i.e., Lacrimal puncta**

**The major function of lacrimal apparatus is to secrete and drain the tear. Tear film consists of 3 layers *:?***

i. *Mucous or mucin layer (innermost):-* Secreted by conjunctival goblet cells, crypts of Henle, glands of Manz.
i. *Aqueous layer (intermediate) :-* This forms the bulk of the tear. It is secreted by main lacrimal and accessory lacrimal glands.
i. *Lipid layer (outermost) :-* Secreted by the Meibomion Zeis, and Moll glands.

**918. Children with apathy, general weakness, loosening of skin, marasmic features also has X3 B xerophthalmia features. Eye finding will be ?**

a) Corneal ulcer with thickening

b) Corneal ulcer with full thickness

c) Hyperemia

d) Conjunctivalxerosis

Correct Answer - B
Ans. is 'b' i.e., Corneal ulcer with full thickness
X3A Corneal ulceration/keratomalacia affecting less than one-third corneal surface.
X3B Corneal ulceration/keratomalacia affecting more than one-third corneal surface. XS Corneal scar due to xerophthalmia XF Xerophthalmic fundus.

## 919. All are true about NPCB in india except ?

a) 100% centrally sponsored scheme

b) Believes in the concept of mobile surgery camps

c) Aims at uniform distribution of services

d) Aims at shifting from conventional surgery to IOL

Correct Answer - B

Ans. is 'b' i.e., Believes in the concept of mobile surgical camps

NPCB does not promote the concept of mobile surgery camps.

- NPCB (National Programme for control of blindness) was launched in the year 1976.
- It is a 100% centrally sponsored scheme.

**Aims at strengthening services for :**

- Corneal blindness (requiring transplantation)
- Refractive errors in school going children
- Improving follow up of cataract operated persons.
- Treating glaucoma.

**Also concentrates :**

- To shift the eye camp approach to a fixed facility approach (NOT support mobile surgery camps).
- From conventional surgery to IOL.
- To enhance the coverage of eye care services in tribal and under - served areas.

Thus it aims at uniform distribution of eye care facilities.

**920. Patient complains of sudden onset blindness but does not experience any pain, the cause is**

a) Glaucoma

b) Cataract

c) Vitreous haemorrhage

d) Age related macular degeneration

Correct Answer - C
Ans. is 'c' i.e., Vitreous haemorrhage

## 921. Commonest manifestation of retinoblastoma is ?

a) Pseudohypopyon

b) Leukocoria

c) Squint

d) Nystagmus

Correct Answer - B
Ans. is 'b' i.e., Leukocoria
Leukocoria or amauratic cat's eye reflex this is the most common manifestation. The leukocoria or the white glow in the pupil is caused by reflection of light from the white intraocular tumor.

## 922. Topical Steroid is associated with ?

a) Post subcapsular cataract

b) Glaucoma

c) Uveitis

d) Ptosis

Correct Answer - B
Ans. is 'b' i.e., Glaucoma
Amongst the given options cataract and glaucoma are complications of cortisosteroids.
Cataract occurs after systemic administration, while glaucoma occurs after topical therapy.

## 923. Intraocular calcification in eye in child ?

a) Toxocara

b) Retinoblastoma

c) Angiomatosis retinae

d) Malignant melanoma of choroid

Correct Answer - B
Ans. is 'b' i.e., Retinoblastoma

- In retinoblastoma, there are areas of necrosis and calcification.
- In the presence of calcification, endophytic retinoblastoma gives the typical 'cottage cheese' appearance.

## 924. Pizza pie appearance is seen in ?

a) Toxoplasmosis

b) Congenital rubella

c) Drug toxicity

d) CMV retinitis

Correct Answer - D
**Ans. is 'd' i.e., CMV retinitis**
Fundus changes in CMV retinitis
. Crumbled cheese and ketchup appearance (sauce and cheese appearance) - Pizza pie appearance
. Brush fire appearance

## 925. Brush fire appearance of fundus is seen in

a) Toxoplasmosis

b) CMV retinitis

c) Chloroquine toxicity

d) Bacterial endocarditis

Correct Answer - B
Ans. is 'b' i.e., CMV retinitis

## 926. Contractile Dysfunction is the dominant feature of which of the following types of cardiomyopathies

a) Dilated cardiomyopathy

b) Restrictive cardiomyopathy

c) Hypertrophic cardiomyopathy

d) Infiltrative cardiomyopathy

Correct Answer - A
**Answer is A (Dilated cardiomyopathy)**
*Contractile dysfunction (systolic failure) is the dominant feature of dilated cardiomyopathy.*
*`An enlarged left ventricle with decreased systolic function (contractile dysfunction) as measured by left ventricular ejection fraction charachterizes diated cardiomyopathy. Systolic failure is more marked than the frequently accompanying diastolic dysfunction '*

## 927. Tako-Tsubo Cardiomyopathy is a type of:

a) Dilated Cardiomyopathy

b) Restrictive Cardiomyopathy

c) Hypertrophic Cardiomyopathy

d) Toxic Cardiomyopathy

Correct Answer - A

**Answer is A (Dilated Cardiomyopathy)**

*Tako-Tsubo cardioniyopathy is a rare form of dilated cardiomyopathy.*

*Tako-Tsubo cardiomyopathy also known as stress cardiomyopathy, apical ballooning syndrome or 'Broken Heart Syndrome' is a type of dilated cardiomyopathy seen predominately in older women (usually over the age of 50 years) after sudden intense emotional or physical stress. It is thought to be caused by the release of catecholamines (adrenergic surge) from severe phʸsical and/or emotional stress. The ventricle shows global ventricular dilation with basal contraction forming the shape of a narrow necked jar called 'Taka-Tsubo' which is used in Japan to trap octopi. In the majority of cases all the symptoms are resolved in 3to 7 days without any residual effects.*

## 928. The most common type of cardiomyopathy in India is:

a) Dilated Cardiomyopathy

b) Hypertrophic Cardiomyopathy

c) Toxic Cardiomyopathy

d) Restrictive Cardiomyopathy

Correct Answer - A
**Answer is A (Dilated Cardiomyopathy)**
*Dilated Cardiomyopathy (DCM) is the most common type of cardiomyopathy in India and the western world.*
*`Dilated Cardiomyopathy (DCM) is the most common type of cardiomyopathy'*
***Note :***
*The most common cause of dilated cardiomyopathy is Idiopathic (Two-Thirds) The most common toxin implicated in chronic dilated cardiomyopathy is Alcohol*

## 929. The most common toxin causing Dilated Cardiomyopathy is:

a) Alcohol

b) Chemotherapeutic agents

c) Heavy metal

d) Occupational exposure

Correct Answer - A
**Answer is A (Alcohol)**
*Chronic Alcohol Consumption is the most common cause of Toxic Dilated Cardiomyopathy. Alcohol is the most common toxin implicated in chronic dilated cardiomyopathy'*
***Note :***
*Dilated cardiomyopathy is the most common type of cardiomyopathy The most common cause of dilated cardiomyopathy is Idiopathic (Two-Thirds) Alcohol Consumption is the most common cause of Toxic Dilated Cardiomyopathy*

## 930. Epsilon wave is seen in

a) Brugada syndrome

b) Hypothermia

c) WPW syndrome

d) Arrhythmogenic right ventricular dysplasia

Correct Answer - D

**Answer- D. Arrhythmogenic right ventricular dysplasia**

- Arryhthmogenic right ventricular cardiomyopathy (ARVC), formerly called arryhthmogenic right ventricular dysplasia
- (ARVD) is an underr recognized clinical entity characterized by ventricuhr arryhthmias and a characteristic ventricular
- Pathology.

## 931. Pressure difference of 5 mmHg between the two upper limbs occurs in which congenital heart disease?

a) TOF

b) TGA

c) HOCK

d) Supra-valvular aortic stenosis

Correct Answer - D

**Answer- D. Supra-valvular aortic stenosis**

- Blood pressure difference of 5 mm of Hg between two upper limbs can occur in congenital heart disease- Supra-valvular aortic stenosis

## 932. All of the following are inherited platelet function disorders Except:

a) Bernard Soulier syndrome

b) Glanzman Thrombasthenia

c) Wiskott Aldrich Syndrome

d) Weber-Christian disease

Correct Answer - D
Answer is D (Weber-Christian disease)
*Weber Christian Disease is not an inherited disorder of platelet function.*
*Weber Christian Disease is a relapsing febrile nodular non suppurative panniculitis characterized by multiple recurrent subcutaneous nodules, with accompanying fever. The laboratory abnormalities include elevated ESR, Anemia, Leucopenia or leucocvtosis, depression of complements and evidence of circulating immune complexes.*
Classification of congenital disorder of platelet function:
1. Defects in platelet-vessel wall interaction (disorders of adhesion)
*(a) von Willebrand disease (deficiency or defect in plasma vWF)*
*(b) Bernard-Soulier syndrome (deficiency or defect in GPIb)*
2. Defects in platelet-platelet interaction (disorders of aggregation)
*(a) Congenital alibrinogenemia (deficiency of plasma fibrinogen)*
*(b) Glanzmann thrombosthenia (deficiency or defect in GPIIb-IIia)*
3. Disorders of platelet secretion and signal transduction
*(a) Storage pool deficiency*
*(b) Quebec platelet disorder*
*(c) Chediak Higashi syndrome*
*(d) Gray Platelet syndrome*

*(e) Wiskott-Aldrich syndrome*

4. Disorders of platelet coagulation – protein interaction

*(a) Defect in facor Va-Xa interaction on platelets (Scott syndrome)*

## 933. Blood transfusion should be completed within hours of initiation

a) 1- 4 hours

b) 3- 6 hours

c) 4- 8 hours

d) 8- 12 hours

Correct Answer - A
Ans. is 'a' i.e., 1-4 hours

## 934. Sicca syndrome is associated with all, Except :

a) Midline granuloma

b) Chronic active hepatitis

c) Rheumatoid arthritis

d) Scleroderma

Correct Answer - A
Answer is A (Midline granuloma):
*Midline granuloma has no association with Sjogren Syndrome (Sicca Syndrome)*
*As a result of its tendency to cause 'dryness' Sjogren's syndrome is often referred to as `Sicca' syndrome.*
*Being an autoimmune disorder this disorder is associated with a number of other disorders of autoimmune origin. Rheumatoid arthritis, chronic active hepatitis and scleroderma are known autoimmune disorders that are often associated with Sjogren Syndrome.*
**These include:**
**Autoimmune disorders associated with Sjogren's syndrome:**
-Rheumatoid arthritis *(most common)*[Q] - Chronic active hepatitis
- SLE [Q] -Polymyositis
- Scleroderma[Q] -Hashimoto's thyToditis
Mixed connective tissue disease [Q] -Interstitial pulmonary fibrosis.
Primary biliary cirrhosis [Q] - Sarcoidosis.

- Vasculitis

**What puzzles the question?**

Sjogren is syndrome occurs as two types.

*Primary form* (Sicca syndrome)- when it occurs as an *isolated disorder.*

***Secondary form* – when it occurs in association with other *autoimmune disease.***

*In the true sense it is not Sicca syndrome but the secondary form with which autoimmune disorders are associated. Nevertheless Midline granuloma remains the single best answer of exclusion.*

## 935. In rheumatoid arthritis pathology starts in

a) Articular cartilage

b) Capsule

c) Synovium

d) Muscle

Correct Answer - C

**Answer- C. Synovium**

- RA is a chronic multisystem disorder that may affect many tissues and organs, but principally attacks the joint, producing a
- nonsuppurative proliferative and inflammatory synovitis that often progresses to destruction of the articular cartilage and ankylosis ofthe joint.

**936.**

## Which part of the spine is most commonly affected in Rheumatoid arthritis:

a) Cervical

b) Lumbar

c) Thoracic

d) Sacral

Correct Answer - A
**Answer** *is* **A (Cervical):**
*Rheumatoid arthritis commonly involves the joints of hands, wrist, elbow, knees, ankle, and feet in a symmetrical manner.*
*Axial skeleton involvement is usually limited to Upper Cervical Spine.*

**937.** **Which is the most common site of Necrobiosis lipoidica diabeticorum?**

a) Face

b) Neck

c) Front of leg

d) Back of leg

Correct Answer - C

**Necrobiosis lipoidica diabeticorum appear most commonly over the tibial shin.**

It is seen more frequently in type 1 than in type 2 diabetes and may occur before the onset of clinical diabetes.

It is more commen in women than in men.

It is characterized by yellow - red to brown, translucent shiny patches and plaques that slowly enlarge over months to years resulting in epidermal atrophy and telengiectasia.

## 938. Complement necessary for neisseria infection is/ are -

a) C5

b) C6

c) C7

d) All

Correct Answer - D
Ans. is All 'a' i.e., C 5; 'b' i.e., C 6; 'c' i.e., C 7

## 939. Dawson disease is

a) SSPE

b) Acute disseminated encephalomyelitis

c) Neuromyelitis optica

d) Paralysis agitans

Correct Answer - A
**Answer- A. SSPE**

- SSPE is ako known as Dawson encephalitis and measles encephalitis.

**940. A patient with Hypertension presents with Hypokalemia. Aldosterone levels and Renin levels are both elevated. The most likely diagnosis is**

a) Renal Artery stenosis

b) Primary Hyperaldosteronism {Conn's syndrome}

c) Addison's disease

d) Cushing's syndrome

Correct Answer - A

**Answer- A. Renal Artery stenosis**

- The association of High aldosterone and High Renin levels in a hypertensive patient with hypokalemia suggests a diagnosis of
- Secondary Hyperaldosteronism of from Renal Artery Stenosis.

## 941. True about Henoch Schonlein purpura is -

a) Medium vessels vasculitis

b) Renal symptoms start late in the disaese

c) IgA deposition in mesangium

d) Low Platelet count

Correct Answer - C

**Answer- C. IgA deposition in mesangium**

- Henoch - Schonlein purpura is vasculitis of small vessels (capillaries, venule or arterioles) and characterized by deposition of IgA in the wall of involved vessels.
- H.S. purpgra is characterized by tetrad of purpura arthritis glomerulonephritis, and abdominal pain.

**Diagnosis is confirmed by presence of palpable purpura with normal platelet count along with one or more of the following:**

- abdominal pain, arthralgia/arthritis and mesangial deposition of IgA.

## 942. True about drug induced SLE is:

a) CNS manifestation are common

b) Renal involvement is common

c) Antihistone antibodies are found in many

d) All with antibodies progress to lupus

Correct Answer - C
C i.e. Antihistone antibodies are found
Drug induced lupus is *caused by procainamide, hydralazine, isoniazid (but not chloroquine) Q.* It is a syndrome of *positive ANA associated commonly with antihistone antibodies, fever, malaise, arthritis or intense arthralgiaVmyalgias, serositis, and/or rashQ.* It occurs *predominantly in whites, has less female predilection than SLE, rarely involves brain or kidneys, is rarely a/w anti ds DNA and usually resolves over several weeks after discontinuation of offending drugQ.*

## 943. Q. Initial Antihypertensive agent of choice in a patient with stable ischemic heart disease is

a) Beta-Blockers

b) Alpha-Blockers

c) Calcium Channel Blockers

d) Ace Inhibitors

Correct Answer - A
Answer *is* A (Beta-Blockers)
*Beta Blockers are recommended as First Line Agents of choice for treatment of hypertension in hypertensive patients with Stable Ischemic Heart Disease.*

## 944. First line drug choice for management of hypertension in patients with angina:

a) Beta Blockers

b) ACE Inhibitors

c) Calcium Channel Blockers

d) Hydralazine

Correct Answer - A
Answer is A (Beta Blockers)
*'Hypertension: A companion to Braunwald's Heart Disease (Elsevier) 2007/335*
*Beta-blockers are the first line drugs of choice for treatment of hypertension in patients with coronary artery disease & stable angina*
*`Beta blockers are the first line choice when treating hypertension in a patient with coronary artery disease' — Evidence Based Medicine Guidelines (John Wiley & Sons)*
*'Beta blockers reduce angina symptoms, improve mortality and lower BP, and they should be the drugs offirst choice in hypertensive patients with CAD and stable angina' — 'Hypertension: A companion to Braunwald's Heart Disease'*

## 945. Ice pack test is due for

a) Myesthenia gravis

b) Multiple system atrophy

c) Hyperparathyroidism

d) Hypokalemic periodic paralysis

Correct Answer - A

**Answer- A. Myesthenia gravis**

- The ice pack test is a bedside test to help in the diagnosis of myethenia gravis

## 946. Thymomas may be associated with all of the following, Except

a) Myaesthania Gravis

b) Hypergammaglobulinemia

c) Panhypopituitarism

d) SLE

Correct Answer - B

**Answer is B (Hypergammaglobulinemia):**

*Thymoms may he associated with Hypogammaglobulinemia and not with Hypergammaglobulinemia.*

*Thymoma is associated with Hypogammaglobulinemia and not with hypergammaglobulinemia*

**Immune status with Thymoma**

- T-cell number & cell medicated immunity are usually intact *Q*
- These patients are very *deficient in circulating B lymphocytes*$^{Q}$ *&* pre B cell in the bone marrow *Hypogammaglobulinemia*$^{Q}$ usually occurs relatively late in adult life.
- Bacterial infection & diarrhea usually reflect this antibody deficiency.Q
- Frequently have *eosinopeniaQ*
- May develop *Red cell (Erythroid) Aplasia.Q*

## 947. Pheochromocytoma is usually associated with: *September 2007*

a) Pancreatic exocrine carcinoma

b) Astrocytoma

c) Neurofibromatosis

d) Neuroblastoma

Correct Answer - C
Ans. C: Neurofibromatosis
Pheochromocytoma linked to MEN II cart be caused by RET oncogene mutations. Both syndromes are characterized by pheochromocytoma as well as thyroid cancer (thyroid medullary carcinoma). MEN IIA also presents with hyperparathyroidism, while MEN IIB also presents with mucosal neuroma.
Pheochromocytoma is also associated with neurofibromatosis

## 948. Characterstic X Ray finding in ASD is:

a) Enlarged left ventricle

b) Enlarged left atria

c) Pulmonary pletheora

d) PAH

Correct Answer - C
C i.e. Pulmonary plethora

**949. Treatment of 42 year old obese man with blood glucose 450 mg, urine albumin 2+sugar 4+ketone 1+ is**

a) Insulin

b) Glibenclamide

c) Glipizide

d) Metformin

Correct Answer - A
Answer is A (Insulin):
*Presence of sugar and ketones in urine and the presence of hyperglycemia (400 mg Glucose) suggests a diagnosis of Diabetic ketoacidosis. The treatment of choice in Diabetic ketoacidosis is Insulin.*

## 950. Shelf life of blood in a blood bank in CPDA buffer

a) 21 days

b) 30 days

c) 35 days

d) 42 days

Correct Answer - C
**Answer- C. 35 days**

- Citrate phosphate dextrose-adenine (CPD-A )- 35 days

## 951. Platelets transfusion must be completed in how many hours after entering the bag

a) 1 hour

b) 2 hour

c) 3 hour

d) 4 hour

Correct Answer - D

**Answer- D. 4 hour**

- Once the blood bag is opened hy puncturing one of the sealed ports, the platelets must be administered within 4 hours

## 952. Shelf life of platelets to blood bank is

a) 5 days

b) 7 days

c) 10 days

d) 21 days

Correct Answer - A

**Answer- A. 5 days**

- Platelets are approved by FDA for stored upto 5days at 20-24 (RoomTemperature) because of risk of bacterial contamination.

## 953. Volcano ulcers in esophagus are seen in

a) Herpetic esophagitis

b) Candida esophagitis

c) Apthous ulcer in crohn

d) HIV esophagitis

Correct Answer - A

**Answer- A. Herpetic esophagitis**

- The ulcers of herpes esophagitis can haye a punctate, linear, stellate, or volcano-like appearance, often with a thin halo fo edemaat the margins.
- The ulcers may be clustered together or widely separated with normal intemening mucosa.

## 954. Garland sign on CXR in sarcoidosis involves all except?

a) Right paratracheal nodes

b) Right hilar nodes

c) Left hilar nodes

d) Left pretracheal lymph nodes

Correct Answer - D
Ans. is 'd' i.e., Left pretracheal lymph nodes

- *Bilateral hilar lymphadenopathy with right paratracheal nodal enlargement is classic for sarcoidosis and is referred to as the 1-2-3 sign or Garland triad.*

**Garland's triad (also known as the 1-2-3 sign or Pawnbrokers sign) of Sarcoidosis**

- Right paratracheal nodes
- Right hilar nodes
- Left hilar nodes

## 955. In giardiasis malabsorption is due to all except

a) Loss of brush border enzymes

b) Bacterial overgrowth

c) Lactose intolerance

d) Hypogammaglobulinaemia

Correct Answer - A

**Answer- A. Loss of brush border enzymes**

- Giardia causes diarrhea and malabsorption. Malabsortion is due to loss of brush border enzyme activities, which cause fat malabsorption (steatonhea) and vitamin deficiency.
- There may be abdominal pain, bloating, nausea & vomiting flatulence and flatts.

## 956. The most reliable investigation in amyloid disease is -

a) Rectal biopsy

b) Immunoglobulin assay

c) Ultrasound

d) Urine examination

Correct Answer - A
Ans. is 'a' i.e., Rectal biopsy

## 957. HLA B51 is associated with ?

a) Behcet's disease

b) Chrug strauss syndrome

c) Microscopic polyangitis

d) Polyarteritis nodosa

Correct Answer - A
**Ans. is 'a' i.e., Behcet's disease**
**Behcet's disease :?**

- Behcet disease is a small- to medium-vessel neutrophilic vasculitis that classically presents as a clinical triad of recurrent oral aphthous ulcers, genital ulcers, and uveitis.
- There can also be gastrointestinal and pulmonary manifestations, with disease mortality related to severe neurologic involvement or rupture of vascular aneurysms. There is an association with certain HLA haplotypes (HLAB51, in particular)

## 958. Dawson's fingers are seen in

a) Multiple sclerosis

b) Multiple myeloma

c) Freidreich's ataxia

d) SACD

Correct Answer - A
**Answer- A. Multiple sclerosis**

- Dawson's fingers on MRI scans are diagnostic of Multiple Scerlosis

**959. McDonald stitch is applied in the following conditions except :**

a) Incompetent os

b) Septate uterus

c) Placenta previa

d) Bad obstetrical history

Correct Answer - C
Placenta previa

**960. Roth spots are commonly seen in:**
***March* 2013**

a) Papilledema

b) Sepsis

c) Diabetes

d) Hypertension

Correct Answer - B
Ans. B i.e. Sepsis

## 961. Acute Infective Endocarditis with abscess formation is most commonly associated with

a) Listeria

b) Staphylococcus

c) Streptococcus

d) Enterococcus

Correct Answer - B
Answer is B (Staphylococcus)
*Acute Infective Endocarditis with abscess formation is most commonly associated with staphylococcus.*
*`The most common organism causing acute infective endocarditis overall is staphylococcus aureus. Staphylococcus aureus endocarditis is particularly virulent and associated with annular and myocardial abscess formation and a higher mortality'*

## 962. Earliest sign of increased ICT is?

a) Erosion of dorsum sella

b) Pineal displacement

c) Widening of sella

d) Copper beaten appearance

Correct Answer - A
Erosion of dorsum sella
REF: Sutton 7th edition volume 2 page 1626
SIGNS OF RAISED INTRA CRANIAL TENSION:
1. Suture diastasis: first and most important sign in children, Not seen in adults
2. Sellar erosion: First sign in adults
3. Pineal displacement: more in adults
4. Copper/silver beaten appearance: Gyri make prominent markings on the skull (Increased convolutional marking), Also seen in craniostosis, so not much diagnostic

## 963. In Alzheimer's disease (AD) which of the following is not seen:

a) Aphasia

b) Acalculia

c) Agnosia

d) Apraxia

Correct Answer - C

**Ans. None > C. Agnosia** *tRej. Kaplan ana[l] Jaadock s Synopsis of Psychiatry 10/c pi-t?*

*Aphasia, Apraxia, Acalculia and Agnosia may all be seen in Alzheimer's Dementia. Agnosia in Alzheimer's disease usually presents late in the disease and is not included in the ICD-10 Diagnostic criteria for dementia in Alzheimer's disease with early onset and hence may be selected as the single best answer by exclusion*

## 964. Characteristic of mixed connective-tissue disease [MCTD] are all of the following except:
***March 2005***

a) Hypogammaglobulinemia

b) Membranous glomerulonephritis

c) Polyarthritis

d) CNS involvement

Correct Answer - A
Ans. A: Hypogammaglobulinemia
**Manifestations of mixed connective-tissue disease (MCTD) can be variable. Most patients experience Raynaud phenomenon, arthralgia/arthritis, swollen hands, sclerodactyly or acrosclerosis, and mild myositis. The following may be revealed by history or physical examination:**

- Raynaud phenomenon
- Arthralgia/ arthritis
- Esophageal hypomotility
- Pulmonary dysfunction
- Swollen hands
- Myositis
- Rash
- Leukopenia
- Sclerodactyly
- Pleuritis/ pericarditis
- Pulmonary hypertension
- Membranous glomerulonephritis

Lab investigations shows features of inflammation with elevated ESR and hypergammaglobulinemia

**965.** **All of the statements are true about Brugada syndrome, EXCEPT:**

a) Transient ST segment elevation in lead V1-V3 is seen

b) Responsible for the sudden and unexpected nocturnal death syndrome

c) Risk of fatal ventricular arrhythmia is more

d) Flecainide can be used to treat

Correct Answer - D

The major clinical features of Brugada syndrome include, transient, or concealed ST segment elevation in V1 to V3 that typically can be provoked with the sodium channel-blocking drugs  flecainide, and procainamide and a risk of polymorphic ventricular arrhythmias.

**Ref:** Harrisons Principles of Internal Medicine, 18th Edition, Page 1898.

## 966. All the following are features of right sided heart failure, Except:

a) Increased PCWP

b) Pulsatile liver

c) Increased JVP

d) Positive hepatojugular reflex

Correct Answer - A

**Answer is A (Increased PCWP)**

*Elevated Pulmonary capillary wedge pressure (1 PCWP) is a feature of left sided heart failure and not right sided heart failure.*

*Failure of Right ventricle results in systemic congestion, and not pulmonary congestion and hence PCWP is not raised unless Right heart, failure is caused:secondary to Left sided failure.*

**Left heart failure**

- Left heart failure is defined as a clinical syndrome where the dominant feature is fluid congestion in the lungs (pulmonary) rather than in the systemic circulation
- The pulmonary capillary wedge pressure is typically elevated (1-PCWP)
- Predominant symptoms are related to passive congestion of lungs and pulmonary edema
- Dyspnea
- Orthopnea
- Paroxysmal Nocturnal Dyspnea (PND)
- Cough with Pink Frothy Sputum
- Rales / Crackles

**Right heart failure**

- Right heart failure is defined as a clinical syndrome where the dominant feature is fluid congestion in the systemic circulation.
- The pulmonary capillary wedge pressure is normal (Normal PCWP) unless Right heart failure is caused secondary to left sided heart failure (Ted PCWP) *(PCWP is not elevated in isolated Right heart failure)*
- Predominant symptoms are related to passive systemic  congestion
- Peripheral Edema
- Ascitis
- Congestive hepatomegaly (may be pulsatile)
- Congestive splenomegaly
- Weight gain
- Nocturia
- Raised JVP
- Positive Hepatojugular reflex

## 967. The complication of diabetes which cannot be prevented by strict control of blood sugar is

a) Amyotrophy

b) Nerve conductivity

c) Macular edema

d) Microalbuminuria

Correct Answer - C

**Answer- C. Macular edema**

- Reduced nonproliferative and proliftrative retinopathy
- Microalbuminuria
- Clinical nephropathy
- Neuropathy
- Improved glycemic control

## 968. Positive nitrogen balance is seen in

a) Growing children

b) Acute illness

c) Scurvy

d) Osteomalcia

Correct Answer - A

**Answer- A. Growing children**

- Nitrogen balance means the amount of nitrogen lost in 24 hr period is equal to that consumed during this period i.e. the patient is in state of nitrogen balance.
- Normally positive nitrogen balance is sem in growing children, convalescing patients and pregnant woman

## 969. Features of Gegenhalten are all exept

a) It is voluntary opposition by patient to passive movement of limb

b) It is stiffening of limb in response to contact

c) Strength of antagonists remains the same as examiner uses increased force to change limb position

d) It is present throughout the range of motion

Correct Answer - C

**Answer- C. Strength of antagonists remains the same as examiner uses increased force to change limb position**
**It is ako called paratonia or paratonic rigidity.**

- It is the voluntary opposition of patient to passive movement of limb.
- It is the movement of the limb to counteract any movement made by the examiner.
- The resistance offered to passive movement is variable and fluctuating in nature.
  **Patient is unable to relax a group of muscles on command due to inattentiveness.**
- Strength of antagonists increases as examiner uses increasing force to change the limb position.
  **Resistance is present throughout the range of motion.**
- It is also described as stifening of limb in response to contact.
- It is a sign of bilateral frontal lobe dysfunction" especially mesial cortex and superior convexity

## 970. Concentration of urea in a patient is 52 mg/dL. What is the serum Blood Urea Nitrogen?

a) 24.3

b) 34.5

c) 41.9

d) 69-7

Correct Answer - A

**Answer- A. 24.3**

- Serum Blood Urea Nitrogen (BUN): it is the mass of nitrogen within the urea/ unit volume.
- Urea= BUN * 2.14= 24.3 mg/dL

## 971. Vanishing tumor is seen in

a) Liver

b) Lung

c) Bone

d) Heart

Correct Answer - B

**Answer- B. Lung**

- Accumulation of fluid in the interlobar spaces of the lung (as a result of CHF) appears as a neoplasm on a radiograph.
- It is called as Phantom tumor or pseudotumor or vanishing tumor.

## 972. A patient came to the casualty with acute bronchial asthma after treatment for glaucoma. The probable drug may be -

a) Timolol

b) Betaxolole

c) Latanoprost

d) Anticholinesterase

Correct Answer - A
Ans. is 'a' i.e., Timolol
o As you all know β, receptors cause bronchodilatation, blockade of β, mediated bronchodilatation can precipitate bronchospasm and acute attack of asthma.
o Timolol is a non-selective β -blocker (blocks $p_i$ and $\beta_2$ receptors). Therefore, it can precipitate acute attack of asthma. o Betaxolo is also a β -blocker. But it is a cardioselective β -blocker (blocks ft, receptors, not (32).

## 973. Locked in state is associated with ?

a) Medulla

b) Pons

c) Midbrain

d) Spinal cord

Correct Answer - B
Ans. is 'b' i.e., Pons

- Locked in syndrome is caused by an insult to ventral pons (basis pontis).
- It is characterized by inability to speak and quadriplagia.
- There is complete paralysis of all voluntary muscles except for the eyes.
- The lesion essentially interrupts corticobulbars and corticospinal pathways.
- Somatosensory and ascending neuronal pathways responsible for arousal and wakfullness remain intact.

## 974. Most common presentation of sick euthyroid state -

a) Low T3 with normal T4

b) Low T3 with low T4

c) Low T3 with high T4

d) High T3 with high T4

Correct Answer - A

**Answer- A. Low T3 with normal T4**

- The most common hormone pattern in sick euthyroid syndrome (SES) is a decrease in total end unbound T3 levekl(low T3 syndtome) with normal levels of T4 aad TSH.

## 975. Myxoedema coma is treated with -

a) Hydrocortisone

b) Liothyronine

c) Levothyroxine

d) All of the above

Correct Answer - D
**Answer- D. All of the above**

- Administer thyroxine 200 to 400 mg (0.2 to 0.4 mg) intravenously followed by daily doses of 50 to 100 mg,. and triiodothyronine 5 to 20 mg intravenously followed by 2.5 to l0 mg ever)) S hours.

## 976. Spontaneous muscle bleeding is typically seen in:

a) Hemophilia

b) Afibrinogenemia

c) Von Willebrand's disease

d) Scott's syndrome

Correct Answer - A
Answer is A (Hemophilia)
*Spontaneous Hemarthrosis and spontaneous muscle hematomas are charachteristic of moderate or severe congenital factor VIII or IX deficiency (Hemophilia).*
*Spontaneous bleeding may also be seen in Afibrinogenemia, Von willebrand disease and Scott's syndrome (defect in platelet's activated surface that promotes thrombin formation), but it is most charachteristic (Hallmark) of Hemophillia or factor VIII & IX Deficiency. -*

## 977. Recurrent Spontaneous Hemarthrosis is commonly seen in patients with Hemophilia when factor VIII levels are:

a) < 36 %

b) <10%

c) <5%

d) <1 %

Correct Answer - C
Answer is C (<5%):
*Recurrent Spontaneous Hemarthrosis is commonly seen in patients with Hemophilia when factor VIII levels are less than 5 percent of normal (Moderate; Moderately severe form).*

| Classification | Levels of factor VIII | Implications |
|---|---|---|
| Mild | 6-36 % of Normal (>5%) | Bleeding generally occurs in response to mild trauma |
| Moderate | 2-5% of normal (<5%) | Associated with spontaneous bleeding.<br>Recurrent Hemarthrosis is the most common manifestation |
| Severe | <1% of normal | Life threatening Bleeding manifestations may be seen |

## 978. The most common manifestation of moderate /severe Hemophilia A is:

a) Recurrent Hemarthrosis

b) Recurrent muscle bleeding

c) Recurrent bleeding from gums

d) Recurrent Hematuria

Correct Answer - A
Answer is A (Recurrent Hemarthrosis):
*Recurrent Hemarthrosis is the most common manifestation of Hemophilia A.*
*'Recurrent Hemarthrosis is the most common manifestation of Hemophilia-A occurring in up to two third of patients' —Primer on the Rheumatic Diseases*
*'In the severe form the most common bleeding manifestations are the recurrent hemarthroses'*

## 979. Pulfrich effect is seen in -

a) Multiple sclerosis

b) Gullian Barre syndrome

c) Parkinson's disease

d) Alzheimer's disease

Correct Answer - A

**Answer- A. Multiple sclerosis**

- The Pulfrich effect is a sign of optic neuritis seen in patients with Multiple sclerosis.
- The Pulfrich effect is a psychophysical percept wherein a two dimensional lateral motion of an object in the fietd of view is interpretd by the visual cortex as having a depth component (three dimensional), due to a relative difference in signal timings between the two eyes.

**980.** **Which is the earliest feature of multiple sclerosis ?**

a) Internuclear opthalmoplegia

b) Optic neuritis

c) Cerebellar ataxia

d) Diplopia

Correct Answer - B

*Sudden onset of optic or retrobulbar optic neuritis without any associated CNS involvement can be interpreted as the first sign or only sign of multiple sclerosis provided other causes of optic neuritis are excluded.*

**Reference:**

Current Medical Diagnosis and Treatment By Panda 3rd edition page 537.

## 981. "Hour-glass" shape of the chest and "tri-radiate pelvis" are seen radiologically in -

a) Thyrotoxicosis

b) Myxedema

c) Osteomalacia

d) Hyperthyroidism

Correct Answer - C
**Answer- C. Osteomalacia**
**Acetabuli protrusio**

- Looser's zone (pseudofracture)

**Decreased bone density**

- Triadiate pelvis (females)

## 982. Mean pulmonary artery pressure is:
*September 2007*

a) 10 mm Hg

b) 15 mm Hg

c) 20 mm Hg

d) 25 mm Hg

Correct Answer - B

**Ans. B:15 mm Hg**

Pulmonary arterial pressure is generated by the right ventricle ejecting blood into the pulmonary circulation, which acts as a resistance to the output from the right ventricle. With each ejection of blood during ventricular systole, the pulmonary artery blood volume increases, which stretches the wall of the artery. As the heart relaxes (ventricular diastole), blood continues to flow from the pulmonary artery into the pulmonary circulation. The smaller arteries and arterioles serve as the chief resistance vessels, and through changes in their diameter, regulate pulmonary vascular resistance.
In hemodynamic terms, the mean pulmonary arterial pressure (PAP) can be described by
PAP = (CO x PVR) + PVP
Where CO = cardiac output, PVR = pulmonary vascular resistance, and PVP = pulmonary venous pressure.
The PVP is essentially the same as left atrial pressure. Therefore, increases in CO, PVR or PVP will lead to increases in PAP.
Normally, mean pulmonary artery pressure is about 15 mmHg, and the pulmonary artery systolic and diastolic pressures about 25 and 10 mmHg, respectively. Pulmonary venous pressure is about 8 mmHg. Therefore, the pressure gradient driving flow through the

pulmonary circulation is rather small at about 7 mmHg (mean pulmonary arterial minus venous pressures).

## 983. Pulmonary Hypertension is defined as Pulmonary Artery Pressure:

a) >15mm Hg

b) >18mmHg

c) >20mmHg

d) >25rrnnHg

Correct Answer - D
Answer is D (>25mmHg):
*PH has been defined as an increase in mean pulmonary arterial pressure **(PAP) >** 25 mmHg at rest as assessed by right heart catheterization (RHO.*

| **Definition** | **Characteristics** | **Clinical group(s)** |
|---|---|---|
| *Pulmonary hypertension (PH)* | • *Mean PAP >25 mmHg* | • *All* |
| *Pre-capillary PH* | • *Mean PAP >25 mmHg*<br>• *PWP 15mmHg*<br>• *CO normal or reduced* | • *Pulmonary arterial hypertension*<br>• *PH due to lung diseases*<br>• *Chronic thromboembolic PH*<br>• *PH with under and/or multifactorial mechanisms* |
| *Post-capillary PH* | • *Mean PAP >25 mmHg*<br>• *PWP >15 mmHg*<br>• *CO normal or* | • *PH due to left heart disease* |

*reduced*

***Note:*** *High CO can be present in cases of hyperkinetic conditions such as systemic to pulmonary shunts (only in the pulmonary circulation), Anaemia. Hyperthyroidism, etc.*

*CO =cardiac output; PAP =pulmonary arterial pressure; PH = pulmonary hypertension; PWP =pulmonary wedge pressure;*

## 984. Investigation of choice in parathyroid pathology is:

a) CT scan

b) Gallium scan

c) Thallium scan

d) Technetium-thallium subtraction scan

Correct Answer - D
Ans. Technetium-thallium subtraction scan

## 985. The following are true regarding Lyme's Disease, except -

a) It is transmitted by ixodid tick

b) Erythema chronicum migraines may be a clinical feature

c) Borrelia recurrentis is the aetiological agent

d) Rodents act as natural hosts

Correct Answer - C
Ans. is 'c' i.e., Borrelia recurrentis is the aetiological agent
Lyme's disease
. *Borrelia burgdorferi* is the causative agent of *Lyme's disease.*
. Borrelia burgdorferi is transmitted by the bite of Ixodid ticks.
The natural reservoir hosts are rodents, deer and other mammals.
*Incubation period of lyme disease is 3-30 days.*
. Lyme disease occurs in three stages.
1. Stage I (Local infection)
- Characteristic expanding skin lesion Trythma migrans' at the site of tick bite.
2. Stage 2 (Disseminated infection)
- Spirochete spreads to many different sites secondary annular skin lesions, carditis/AV block, migratory musculoskeletal pain etc.
3. Stage 3 (Persistent infection)
- Intermittant attacks of oligoarthritis (most common in knee), acrodermatitis chronica atrophicans, encephalomyelitis, encephalopathy, polyneuropathy.

## 986. Which of the following is the most common type of pituitary adenoma?

a) Thyrotropinoma

b) Gonadotropinoma

c) Prolactinoma

d) Corticotropinoma

Correct Answer - C
Answer is C (Prolactinoma):
`*Prolactinomas (Lactotroph Adenomas) are the most frequent type of hyperfunctioning pituitary adenomas, accounting for about 30% of all clinically recognized pituitary adenomas' - Robbins*

## 987. Jansen disease is?

a) Defect of PTH receptor

b) Defect of GH receptor

c) Defect of GHRH receptor

d) Defect of ADH receptor

Correct Answer - A

**Answer- A. Defect of PTH receptor**

- Jansen syndrome occurs due to activating mutations in the TH/PTHrp receptor (pTH1R).
- Rare autosomal dominant syndrome

**988.** **Anesthetic agent with vasoconstrictor is contraindicated in?**

a) Finger block

b) Spinal block

c) Epidural block

d) Regional anesthesia

Correct Answer - A

The use of **vasoconstrictors (epinephrine or adrenaline)** along with a local anesthetic is usually
avoided in case of ring block or finger block as it causes **severe vasocontriction (direct alpha adrenergic effect)**.
As this vaso-constriction in the end arteries can lead to **gangrene formation**.

**Ref:** Neural blockade in clinical anesthesia and management of pain, Issue 494 - Page 124, By Michael J. Cousins, Phillip O. Bridenbaugh; Fundamentals of Surgical Practice By Andrew Kingsnorth, Douglas Bowley, Page 147.

## 989. Diabetic retinopathy, most likely present with

a) IDDM with 2 years duration

b) NIDDM with 2 years duration

c) Juvenile diabetes

d) Gestational diabetes

Correct Answer - B

B i.e. NIDDM with 2 years duration

- *Diabetic Retinopathy (DR) is commoner in type 1 or IDDM (40%) than in type 2 (NIDDM) diabetes mellitus (20%)*
  *Duration of diabetes is most important risk factor* Q for DR. DR rarely develops within 5 years of the onset of diabetes or before puberty, but about 5% of type 2 (NIDDM) diabetics have DR at presentation.

## 990. An oral hypoglycemic agent used to treat obesity is:
***September 2008***

a) Tolbutamide

b) Glipizide

c) Gliclazide

d) Metformin

Correct Answer - D
Ans. D: Metformin
**Agents used for treating obesity**

- Orlistat reduces intestinal fat absorption by inhibiting pancreatic lipase. Orlistat may cause frequent, oily bowel movements (steatorrhea), but if fat in the diet is reduced, symptoms often improve.
- Sibutramine is an anorectic or appetite suppressant, reducing the desire to eat. Sibutramine may increase blood pressure and may cause dry mouth, constipation, headache, and insomnia.
- Rimonabant is a recently developed anti-obesity medication. It is cannabinoid (CB1) receptor antagonist that acts centrally on the brain thus decreasing appetite. It may also act peripherally by increasing thermogenesis and therefore increasing energy expenditure.
- In people with Diabetes mellitus type 2, the drug metformin can reduce weight.
- olestra is a sucrose polyester which can be used as a cooking medium in place of fat.
- Leptin analogues are under investigation.

## 991. All of the following are associated with Thyroid storm, Except :

a) Surgery for thyroiditis

b) Surgery for thyrotoxicosis

c) Stressful illness in thyrotoxicosis

d) All

Correct Answer - A
Answer is A (Surgery for thyroiditis) :
*Thyroid storm occurs in a thyrotoxic patient* who has been inadequately prepared for thyroidectomy.
*All options other than thyroiditis mentioned as options reflect a thyrotoxic state under stress and may lead to thyroid storm.*
*Thyroiditis may not be necessarily associated with thyrotoxicosis. Infact many firms of thyroiditis have associated hypothyroidism and hence these patients are unlikely to develop thyroid storm when taken for surgery.*
Thyroid storm is an extreme form of thyroitoxicosis that may occur with a variety of conditions:
**Conditions that may lead to thyroid storm in thyrotoxic patients**
*Stressful illness Thyroid surgery*
*Radioactive iodine administration*

## 992. Which drug is essential in Sheehan's syndrome:

a) Estrogen

b) Cortisone

c) Thyroxin

d) Growth hormone

Correct Answer - B
Answer is B (Cortisone):
*"Multiple hormones must be replaced in patients with pan-hypopituitarism, but cortisol replacement is most important"*(2 – *Harrison 14th /1994*
Sheehan's syndrome is post-partum infarction of the pituitary, leading to hypopituitarism.
*Treatment consists of hormone replacement therapy* including *Glucocorticoids,* Thyroid hormone, Sex steroids, Growth hormone, Vasopressin, etc. Thus, multiple hormones must be replaced, but remember that Cortisol replacement is most important.

## 993. Pemberton sign in seen in ?

a) Retrosternal goiter

b) Grave opthalmopathy

c) Thyroid crisis

d) Addisonian crisis

Correct Answer - A

**Answer- A. Retrosternal goiter**

- The pemberton maneuver is a physical examination method that elicits manifestations of latent increased pressure in the thoracic inlet by altering arm position to further marrow the aperture.

## 994. Differential diagnosis of Botulism are all except -

a) GB syndrome

b) Myasthenia gravis

c) Lambert Eaton syndrome

d) Clostridial myonecrosis

Correct Answer - D
**Answer- D. Clostridial myonecrosis**

- Guillain-Bare syndrome
- Eaton-Lambert syndrome
- Myasthenia gravis
- Tick paralysis
- Stroke syndromes

## 995. Secondary Polycythemia may be seen in:

a) Cor pulmonale

b) Congestive cardiac failure

c) Acyanotic congenital heart disease

d) All of the above

Correct Answer - A

Answer is A (Cor pulmonale):

*Secondary polycythemia due to decreased tissue oxygenation may be seen in chronic corpulmonale. Polycythemia may also be seen in association with cyanotic congenital heart diseases.*

**Physiologically Appropriate Polycythemia (Secondary to decreased tissue oxygenation or hypoxic erythropoietin production erythrocytosis) or response)**

- High-altitude erythrocytosis *(Monge disease)*
- Pulmonary disease
- Chronic cor pulmonale
- Cyanotic congenital heart disease

**Physiologically inappropriate polycythemia (Secondary to appropriate**

- Tumors, cysts, hemangiomas, and so forth
- Androgen abuse
- Erythropoietin abuse
- Ayerza syndrome
- Familial polycythemia

- Hypoventilation syndromes
  - Primary alveolar hypoventilation
  - Pickwickian syndrome, Ondine curse
  - Positional desaturation
  - Sleep apnea
- Abnormal hemoglobins
  - Inherited
  - Acquired: Drugs and chemicals, carboxyhemoglobin
  - Familial polycythemia

## 996. Monge's disease refers to:

a) Primary Familial Polycythemia

b) High Altitude Erythrocytosis

c) Spurious Polycythemia

d) Polycythemia Vera

Correct Answer - B

**Answer is B (High Altitude Erythrocytosis)**

*lionge's disease (Chronic :Mountain Sickness) is also known as High Altitude Pathologic Erythrocytosis.*

Chronic Mountain Sickness;
Monge's disease;
(High Altitude Pathologic Erythrocytosis; High Altitude Excessive Polycythem

a)

- Excessive Erythrocytosis (Hb>19 /dL for females and 21/dL for males)
- Hypoxemia
- Pulmonary hypertension (in some cases)
- Right heart failure or Cor-Pulmonale (in severe cases)
- Recovery on descent to low altitude

*Chronic Mountain Sickness is a clinical syndrome that occurs in natives or long? life residents above 2500m.*

Headache, dizziness and fatigue are typical initial presenting symptoms

## 997. Erythropoietin is increased in all except:

a) Hepatocellular carcinoma

b) Renal cell carcinoma

c) Cerebellar Hemangioblastoma

d) Pancreatic carcinoma

Correct Answer - D

**Answer is D (Pancreatic carcinoma)**

***Ectopic production of erythropoietin by cancer cells cause most paraneoplastic erythrocytosis. Cancers typically associated with this syndrome include Renal cancer, Hepatocarcinoma and cerebellar ..,,mangioblastomas.***

| **Syndrome** | **Protein** | **Cancers typically associated with syndrome** |
|---|---|---|
| ***Erythrocytosis*** *Paraneoplastic* ***syndrome*** | ***Erythropoetin*** | • ***Renal cancers*** • ***Hepatocarcinoma*** • ***Cerebellar hemangioblastoma*** |

**Tumours associated with Erythrocytosis :**

- ***Hypernephroma***
- ***Hepatoma***
- ***Cerebellar***
- ***Hemangiblastoma***

• Adrenal adenoma
• Pheochromocytoma
• Meningioma
• Uterine fibromyoma

## 998. High urinary chloride is seen in all except ?

a) Barter syndrome

b) Gitelman syndrome

c) Vomiting

d) Thiazide

Correct Answer - C

**Answer- c. Vomiting**

- In vomiting since the patient is developing dehydration the resultant R.A.A.S stimulation leads to increase of aldosterone and metabolic alkalosis ensues.

## 999. Which of the following is the correct full form of APACHE' ?

a) Acute pulmonary and cardiac health evauation

b) Acute physiology and chronic health evaluation

c) Adult pediatric and cardiac health evaluation

d) Adolescent pediatric and child health evaluation

Correct Answer - B

**Answer- B. Acute physiology and chronic health evaluation**

- APACHE is a severity-of-disease classification system and stands for 'Acute Physiology and Chronic Health Evaluation.

## 1000. Mendelson's syndrome is

a) Air leak

b) Tracheal rupture during intubation

c) Oesophageal rupture

d) Aspiration of gastric content

Correct Answer - D
D i.e. Aspiration of gastric content
- Mendelson's syndrome is d/t *aspiration of gastric contentQ*
- It is prevented by Sellick's maneuver i.e. backward *pressure on cricoid cartilageQ.*

## 1001. The organism causing osteomyelitis in sickle cell anemia -

a) Salmonella

b) Staphylococcus

c) H. influenza

d) E. coli

Correct Answer - A
**Answer- A. Salmonella**

- Most common cause of osteomyelitis in sickle cell anemia is salmonella.

## 1002. Good syndrome is

a) Thymoma with immunodeficiency

b) Thymoma with M. Gravis

c) Thymoma with serum sickness

d) Thymoma with pure red cell aplasia

Correct Answer - A

Ans. is 'a' i.e., Thymoma with immunodeficiency

- Good's syndrome (thymoma with immunodeficiency) is a rare cause of combined B and T cell immunodeficiency in adults.

**Clinical features of Good's syndrome are :-**

- Increased susceptibility to bacterial infections with encapsulated organisms and opportunistic viral and fungal infection.

***The most consistent immunological abnormalities are** :-*

- Hypogammaglobulinaemia and
- *Reduced or absent B cells*

**Treatment**

- Resection of the thymoma and immunoglobulin replacement to maintain adequate through Ig*G values*

## 1003. Small vessel vasculitis are -

a) Classical PAN

b) Wegner's granulomatosis

c) Giant cell arteritis

d) All

Correct Answer - B

Ans. is `b' i.e., Wegner's granulomatosis

- Inflammation of vessel wall is called vasculitis.

o Of these systemic necrotizing vasculitis, several types affect the aorta and medium sized vessels, but most affect small vessels, such as arterioles, venules, and capillaries —> small vessel vasculitis.

Large vessel vasculitis Medium vessel vasculitis Small vessel vasculitis

o Giant cell arteritis o Polyarteritis nodosa ANACA positive ANCA negative

(Temporal arteritis) o Kawasaki disease o Wegner's granulomatosis o Bechet's syndrome

o Takayasu arteritis o Buerger's disease o Microscopic polyangitis o Hypersensitivity

o Cogan syndrome o Churg strauss syndrome o Urticarial vasculitis o Drug induced

<u>Following information have been added in Pie of Robbins</u>

o Following are *small vessels vasculitis* and are immune-complex mediated :

.. SLE 3) Cryoglobulinemia

2. *Henoch schonlein purpoura* 4) Good-pasture disease

o Following *small vessel vasculitis* are pauci-immune, i.e. there is paucity of immune complexes:

| | |
|---|---|
| 1. Microscopic polyangitis syndrome<br>2. Wegener granulomatosis | 3. Chrug-strauss |

## 1004. Most common feature of essential hypertension:
***September 2005***

a) Visual disturbances

b) Headache

c) Palpitations

d) Dizziness

Correct Answer - B
Ans. B: Headache
Many patients with essential hypertension report that they can determine when their blood pressure is elevated. Often, their perception of experiencing high blood pressure is accompanied by vague complaints of headache, fatigue, dizziness, sweating, a pounding heart, or nose-bleeds. - Of all these symptoms, headache is the commonest complaint.It is localized to the occipital region and occurs in the morning.

## 1005. Burst – suppression EEG pattern is seen in all of the following, Except?

a) Hypoxic ischemic encephalopathy

b) Phenobarbital administration to lower ICP in traumatic brain injury

c) Severe Hypothermia

d) Creutzfeldt Jacob disease

Correct Answer - D
Answer is D (Creutzfeldt Jakob disease):
*Creutzfeldt Jakob disease is associated with periodic sharp wave complexes of a frequency of about 1/second. CJD is typically not associated with Burst suppression pattern on EEG.*

## 1006. Commonest location for craniopharyngioma is -

a) Intrasellar

b) Suprasellar

c) Intraventricular

d) Intracerebral

Correct Answer - B
Ans. is 'b' i.e., Suprasellar

## 1007. Bony clival erosion with inta-cranial calcification is seen in -

a) Craniopharyngioma

b) Medulloblastoma

c) Papilloma of the choroids plexus

d) Sella chordoma

Correct Answer - D

**Answer- D. Sella chordoma**

- Chordomas are rare, slow growing, locally aggressive neoplasms of bone that arise from embryonic remnants of the notochord.
- These tumors typically occur in the axial skeleton and are most common in the sphenooccipital region of the skull base and in the sacral regions.
- Craniocervical chordomas most often involve the dorsum sella, clivus, and nasopharyrrx.
- Chordoma of the clivus causes erosion of the clivus and attend in the direction of the nasopharynx as well as posteiorly.

## 1008. Hypertension with Hypokalemia is seen in:

a) Bartter Syndrome

b) Liddle's Syndrome

c) Gitelman's Syndrome

d) All of the above

Correct Answer - B
Answer is B (Liddle's Syndrome)
*Liddle's Syndrome is typically associated with Hypokalemia and Hypertension. Rartter's Syndrome and Gitelman's Syndrome are also associated with hypokalemia but without hypertension.*
***Liddle's Syndrome : Review***
***Pathophysiology:***
- *Autosomal dominant disorder.*
- *Genetic defect in the collecting tubule sodium channel, resulting in in*

*of inhibition by higher levels of intracellular sodium*
*Age of Presentation*
- *Often diagnosed at young age, but can present in adulthood due to p*

***Clinical presentation***
- *Classic triad of hypertension, metabolic alkalosis, and hypokalemia.*
- *Consider iffamily histor$^{y}$ of hypertension and/or hypokalemia. at you*

*Lab data*
- *Metabolic alkalosis, hrpokalemia (although some are low normal), lo*

***Treatment:***
- *Lifelong. Potassium-sparing diuretic which closes the sodium channe*

*Spironolactone does not work because aldosterone is not causing the s*

**1009. An 18-year-old male presented with acute onset a history of blurring of vision for the same duration on examination, the patient has quadriparesis with areflexia. Both the pupils are non-reactive.**
**The most probable diagnosis is -**

a) Poliomyelitis

b) Botulism

c) Diphtheria

d) Porphyria

Correct Answer - B
**Ans. b. Botulism**

## 1010. Acute onset of blurred vision and absent pupillary response with rapidly progressive descending muscular weakness manifesting as quadriparesis in an afebrile 20 year old male with preserved sensorium is

a) Porphyria

b) Botulism

c) Polio

d) Diphtheria

Correct Answer - B
Answer is B (Botulism):
*Sudden onset of blurred vision, absent pupillary reflexes (fixed /dilated pupil with lack of accomodation), symmetric descending paralysis progressing to qudriparesis and preserved sensorium suggest a diagnosis of Botulism.*
**Cardinal Feature of Botulism**

- Cranial Nerve Palsies with prominent bulbar palsy (4 'D's of Bulbar Palsy)
  (Diplopia, Dysarthria, Dysphonia, Dysphagia, Ptosis, Loss of Accomodation, Fixed / Dilated pupils)
- Descending motor paralysis
  (Extent of paralysis from a few cranial nerves only to quadriperesis depends on dose of toxin)
- Symmetry of symptoms/signs
- A clear sensorium

- Absence of fever
- Lack of sensory findings

## 1011. All of the following statements about Botulism are true except -

a) Botulism is caused by endotoxin

b) Honey ingestion causes infant botulism

c) Constipation is seen

d) Detection of antitoxin in the serum can aid in diagnosis

Correct Answer - A
Ans. is 'a' i.e., Botulism is caused by endotoxin
. Cl. botulinum produces a powerful exotoxin (not endotoxin) that is responsible for the pathogenesis.
. Source of infection for infant botulism is contaminated honey.
. Symmetric descending paralysis with parasympatholytic symptoms like constipation and urinary retention are characteristic.
. A retrospective diagnosis may be made by detection of antitoxin in the patient's serum but it may not be seen in all cases.
Remember
. *Diagnosis of botulism is confirmed by demonstration of the organism or its toxin in vomitus, gastric fluid, stool or food.*
. *The edrophonium chloride (Tensilon) test for mysthenia gravis may be falsely positive.*

## 1012. Most common cause of Cushing's syndrome is?

a) Pitutary adenoma

b) Adrenal adenoma

c) Adrenal carcinoma

d) McCune Albright syndrome

Correct Answer - A
Ans. is 'a' i.e., Pitutary adenoma
ACTH-secreting pituitary adenomas account for approximately 70% of cases of endogenous hypercortisolism (Cushing's syndrome).

**1013. A patient with cushinoid features presents with hemoptysis; he shows no response to dexamethasone suppression test; most likely diagnosis here is:**

a) Adrenal hyperplasia

b) Adrenal adenoma

c) Ca lung with ectopic ACTH production

d) Pituitary microadenoma

Correct Answer - C
Answer is C (Ca lung with ectopic ACTH production);
*Lack of suppression to dexamethasone challenge (ACTH producing tumor) and presence of hemoptysis (Carcinoma lung) in a patient with Cushinoid features suggests a diagnosis of Carcinoma lung with ectopic ACTH secretion.*
As a method of diagnostic workup of any patient with suspected Cushings we screen the patient with plasma cortisol levels at 8:00 a.m. in the morning. Those with increased cortisol levels are subjected to a *dexamethasone supression test.*
*In the given question there is lack of suppression to dexamethasone challenge so option (d) is out.*
*Out of the choices remaining the presence of hemoptysis points towards the diagnosis of carcinoma lung with ectopic ACTH.*

## 1014. A patient with pheochromocytoma would secrete which of the following in a higher concentration?

a) Norepinephrine

b) Epinephrine

c) Dopamine

d) VMA

Correct Answer - A

**Answer- A. Norepinephrine**

- Most pheochromocytomas contain and secrete both Norepinephrine and epinephrine and the percentage of norepinephrine is usually greater than in normal adrenal

## 1015. In Von willebrand disease, there is -

a) In Von willebrand disease, there is -

b) Factor VIII C deficiency

c) Factor X deficiency

d) vWF

Correct Answer - D
Ans. is 'd' i.e., vWF
o Von willebrand disease is characterized by the deficiency of vWF, while the synthesis of factor VIIIc is normal.

## 1016. Dose of streptokinase to be used in MI is ?

a) 0.15 Million units

b) 1.5 Million units

c) 15 Million units

d) 150 Million units

Correct Answer - B

**Answer- B. 1.5 Million units**

- The adult dose of streptokinase for Acute Myocardial Infarction is 1.5 million U lV over 60 minutes.

## 1017. Dose of Reteplase for management of Acute MI is?

a) 5 IU

b) 10 IU

c) 15 IU

d) 50 IU

Correct Answer - B

**Answer- B. 10 IU**

- The recommended dose for Reteplase in Acute Myocardial infarction is l0 Unit bolus given over 2 minutes.
- It is recommended to repeat the second I0 unit dose after 30 minutes.

## 1018. Half life of alteplase is ?

a) 5 mins

b) 30 mins

c) 1 hour

d) 2 hour

Correct Answer - A
Ans. is 'a' i.e., 5 mins

- Alteplase has a very short half-life (about 5 minutes) and, therefore, is administered as a total dose equal to 0.9mg kg.
- Ten percent of the total dose injected intravenously as a bolus and the remaining drug is administered over 60 minutes.

## 1019. Which of the following ECG leads is most sensitive in detecting intraoperative myocardial ischemia

a) Lead I

b) Lead II

c) Lead V5

d) Lead V2

Correct Answer - C

**Answer- C. Lead V5**

- If only single lead can be displayed → V5
- If two leads can be displayed → V4 & V5

## 1020. Wellen's syndrome suggests

a) Stable angina

b) Unstable angina

c) Prinzmetal angina

d) Ludwig angina

Correct Answer - B
**Answer- B. Unstable angina**
**Wellen's syndrome sugests unstable angia.**

- It is an E.C.G. manifestation of critical proximal left anterior descending coronary artery (LAD stenosis) in patients with unstable angina.

## 1021. Osborne waves in ECG are seen in :

a) Hypothyroidism

b) Hypothermia

c) Hypocalcemia

d) Hypokalemia

Correct Answer - B

**Answer is B (Hypothermia)**

***Osborne waves also called J waves are typically seen in Hypothermia.***

**Wave; Osborne Wave *(Camel-hump sign, Late delta wave, Hat-hook junction, or Current of injury***

- *wave (Also termed the' Osborne wave) is the most common ECG finding in patients with hypothermia*
- *h is characterized as a positive deflection in the terminal portion of the QRS complex and elevation of the J point*
- *waves are most commonly found in the anterior and lateral precordial leads and in lead IL although they may he present in only a single lead*
- *They usually occur in patients with core body temperatures less than 32° C (90°F) and often appear larger when the temperature is below 30°C (86°f).*
- *The size of the J waves usually correlates inversely with the body temperature: as the body temperature increases, the J wave gradually becomes smaller.*
- *Cigarette smoking is the single most important modifiable risk factor for atherosclerosis*
- *Smoking is the single most important modifiable risk factor¸ jOr the development of Peripheral Artery Disease (PAD)*

- *Smoking cessation is the single most important target for coronary artery disease (CAD) Prevention*

## 1022. True about Dressler's syndrome is all, except :

a) Occurs with in hours after myocardial infarction

b) Recurrence may be seen

c) Chest pain is common

d) Responds well to salicylates

Correct Answer - A

**Answer is A (Occurs with in hours after myocardial infarction)**

*Dressler's syndrome develops after an interval of 1 to 4 weeks (or even month) following cardiac injury (MI) and not within hours.*

**Dressler's syndrome / Post Cardiac Injury Syndrome**

- *Dressler's syndrome refers to an acute farm of pericarditis that develops after myocardial infarction*
- *The pericarditis typically develops I to 4 weeks following cardiac injury/MI but may appear after several months*
- *Recurrence may be seen sometimes upto 2 years or more after MI / Injury*
- *Pathological pericarditis may be of the fibrinous variety*
- *The mechanism is not certain but they are believed to result from a hypersensitivity reaction in which the antigen originates from the injured myocardial tissue.*
- *Circulating antibodies to myocardium occur frequently.*
- *The principal symptom is 'chest pain' of acute pericarditis.*
- *Leukocvtosis, T ESR and ECG changes of acute Pericarditis may also occur.*
- *The pericarditis is usually resolves in I to 2 weeks and often no treatment is necessary apart from aspirin, NSAIDS or analgesics.*
- *Therepy with NSAIDS or corticosteroids is usually effective.*

## 1023. Dressler's syndrome is due to:
***March 2005***

a) Cor pulmonale

b) Mitral stenosis

c) Myocardial infarction

d) Pulmoonary embolism

Correct Answer - C
Ans. C: Myocardial infarction
It occurs following transmural infarction or open heart surgery.
**Believed to have immunologic cause-Possibly a latent viral infection may be involved in cause. Clinical-Symptoms typically appear 2-3 weeks following infarct/surgery.**

- May last for weeks or months
- Pleuritic chest pain (91%)
- Fever
- Pericardial and pleural effusion
- Pericardial friction rub
- Effusions can be bloody and cause tamponade

**Imaging Findings:**

- Pleural effusions (83%)
- Parenchymal opacities (74%)
- Enlarged cardiac silhouette from pericardial effusion (49%)

## 1024. Bony erosion are seen in the following except -

a) Gout

b) Psoriasis

c) SLE

d) Osteoarthritis

Correct Answer - C
**Answer- C. SLE**

- Rheumatoid afihritis
- Gouty arthritis- lst MTP
- Pseudogout knee (Calcium phyrophosphate crystal deposition)
- Psoriatic arthritis
- Ankylosi ng spondylitis
- OA

## 1025. Shohl's solution is -

a) Sodium citrate

b) Potassium binding resin

c) Lugol iodine

d) Radio-iodine

Correct Answer - A

**Answer- A. Sodium citrate**

- Sodium citrate (Shohl's solution) or NaHCO: tablets (650-mg tablets contain 7.8 mEq) are equally effective alkalinizing salts.
- Citrate enhances the absorption of aluminum from the gastrointestinal tract and should never be ginen together with aluminum containing antacids because of the risk of aluminum intoxication.

## 1026. Rain drop pigmentation is caused by ?

a) Clofazimine

b) Dapsone

c) Minocycline

d) ArsenicHomosexual

Correct Answer - D
Ans. is 'd' i.e., ArsenicHomosexual

**1027. Which of the following may present with isolated prolongation of prothrombin time (PT):**

a) Factor VIII deficiency

b) Factor VII deficiency

c) Factor XII deficiency

d) Factor IX deficiency

Correct Answer - B
Answer *is* B (Factor VII deficiency)
*Factor VII deficiency may present with isolated prolongation of prothrombin time.*
*Deficiency of factor VIII, IX and XII may present with isolated prolongation of Partial Thromboplastin Time (APTT) and not isolated prolongation of prothrombin time (PT)*
Cause of Isolated prolongation of PT (CMDT)
*Vitamin K deficiency Warfarin therapy*
*Liver disease*
*Factor VII deficiency*

## 1028. Both APTT and PT are prolonged in which conditions?

a) Factor II deficiency

b) Factor XIII deficiency

c) Heparin administration

d) Thrombocytopenia

Correct Answer - A
Factor II deficiency
REF: Mastery of Surgery by Josef E. Fischer, K. I. Bland, 5th edition Part I page 90, Saint-Frances guide: clinical clerkship in outpatient medicine. Page 434 & 235, Harrison 17th ed table 59-4
See APPENDIX-50 for "BLEEDING/COAGULATION DISORDERS" and APPROACH TO A PATIENT WITH BLEEDING DISORDER

## 1029. Rademecker complex in EEG is seen in -

a) SSPE

b) vCJD

c) cCJD

d) Kuru

Correct Answer - A

**Answer- A. SSPE**

- Characteristic periodic activity (Rademecker complex) is seen on EEG showing widespread cortical dysfunction in SSPE.
- It is characterised by high voltage spike occuning at higlr lrequency of 0.5- 1.5 seconds.

## 1030. Medullary cystic disease of the kidney is best diagnosed by:

a) Ultrasound

b) Nuclear scan

c) Urography

d) Biopsy

Correct Answer - D
Answer is D (Biopsy):
*Although ultrasonography and CT scan can be useful in making a diagnosis of medullary cystic disease, an open renal biopsy that ensures recovery of tissue from the corticomedullary junction is definitive.*

## 1031. Pulmonary Apoplexy is seen in -

a) Mitral Stenosis

b) Mitral Regurgitation

c) Aortic Stenosis

d) Aortic regurgitation

Correct Answer - A

**Answer- A. Mitral Stenosis**

- Pulmonary apoplexy refers to sudden severe haemoptysis that may be seen in patieats with Mitral Stenosis from rupture of a bronchial vein.

## 1032. Cause of central cyanosis include all of the following, Except

a) Chronic Asthma

b) Congenital Pulmonary stenosis

c) Congestive heart failure

d) Alveolar hypoventilation

Correct Answer - C
Answer is C (Congestive heart failure):
*Congestive Heart Failure is a cause for Peripheral cyanosis and not central cyanosis*
*Cyanosis when present in Asthma, pulmonic stenosis and alveolar hypoventilation is of the central type.*

## 1033. Most common presentation of cardiac lupus ?

a) Myocarditis

b) Pericarditis

c) Aortic regurgitation

d) Libman sacks endocarditis

Correct Answer - B

**Answer- B. Pericarditis**

- Heart (lupus calditis) → Pericarditis (most common), myocarditis, endocarditis, pericardial effusion, coronary artery disease.

## 1034. Charcot's joint in diabetes affects commonly -

a) Shoulder joint

b) Knee joint

c) Hip joint

d) Tarsal joint

Correct Answer - D
**Answer- D. Tarsal joint**

- Tabes dorsalis → Knees, hip & ankles

## 1035. Which of the following is a cause of reversible dementia?

a) Subacute combined degeneration.

b) Picks disease

c) Creutzfeldt – Jakob disease.

d) Alzheimer's disease

Correct Answer - A
**Answer is A (Subacute combined degeneration)**
*`Subacute combined degeneration' is caused by vitamin B12 deficiency. Vitamin deficiencies including vitamin B,2 deficiency constitute potentially reversible causes of dementia.*

## 1036. Replacement dose of thyroxine is

a) 0.1 - 0.2 mg

b) 0.3 - 0.4 mg

c) 1 - 2 mg

d) 3 - 4 mg

Correct Answer - A
Ans. is 'a' i.e. 0.1 - 02. mg

- *Harrison 16/e writes ?*
*"If there is no residual thyroid function, the daily replacement dose of levothyroxine is usually 1.6 pg/kg body wt. (typically 100-150 fig)"*
- *Endocrine surgery of the Head & Neck* writes *?*
*"Hypothyroidism is an expected sequelae of total thyroidectomy or radioiodine therapy. In patients in whom hypothyroidism is expected to be permanent, thyroid hormone therapy is appropriate and L-thyroxine (1.6 jug/kg body wt.) should be given once a day.*
*If it is desirable to suppress TSH (as in patients with papillary or follicular carcinoma) a dose of 2.7 fig/kg of body weight should be given."*

## 1037. Osmotic demyelination syndrome develops due to rapid correction of hyponatremia at a level exceeding?

a) 0.5 mEq/hr

b) 2 mEq/hr

c) 5 mEq/hr

d) 10 mEq/hr

Correct Answer - A

**Answer- A. 0.5 mEq/hr**

- In patients who are treated to increase the serum sodium, the goal of initial therapy is to raise the serum sodium concentration by 4 to 6 meq/L in a 24-hour period.

## 1038. All of the following are seen in Coarctation of Aorta, Except:

a) Diminution of femoral pulsations

b) High incidence of associated Bicuspid aortic valve

c) Left ventricular Hypertrophy

d) Boot Shaped Heart

Correct Answer - D
Answer is D (Boot Shaped Heart)
*Boot Shaped Heart is not a radiological feature of Coarctation of Aorta.Boot Shaped Heart is typically seen in Tetralogy of Fallot.*
Boot Shaped Heart (Couer en Sabot)
Tetralogy of Fallot and Tetralogy of Fallot with pulmonary atresia (Pulmonary atresia with VSD)
Note that a Boot Shaped Heart may also be seen in Truncus Arteriosus (less commonly)
Coarctation of Aorta is associated with Hypertension in upper extremity with marked diminution of pulsation in lower extremities. Coarctation is also typically associated with Left Ventricular Hypertrophy from pressure overload. Bicuspid Aortic Valve is the most common associated cardiac anomaly in patients with Coarctation. Typical Radiological signs in Coarctation include Indentation of Aorta at site of Coarctation and '3 Sign' or para-mediastinal shadow together with notching of inferior surface of ribs.

## 1039. Useless hand of oppenheim was described for

a) Multiple sclerosis

b) Median nerve palsy

c) Ulnar nerve palsy

d) All of the above

Correct Answer - A

**Answer- A. Multiple sclerosis**

- Useless Hand of oppenheim was described in Multiple sclerosis

## 1040. The most important modifiable risk factor for Stroke is:

a) Hyperlipidemia

b) Diabetes mellitus

c) Cigarette Smoking

d) Hypertension

Correct Answer - D
Answer is D (Hypertension)
*Hypertension is the single most important, modifiable risk factor for stroke.*
*Treatment of hypertension to desired Blood Pressure is the most cost effective strategy for the prevention of both ischemic and haemorrhagic stroke.*

## 1041. Most common inherited bleeding disorder:

a) Von wilebrand disease

b) Bernard soulier

c) Glanzmann thrombasthenia

d) ITP acute

Correct Answer - A
Ans. is 'a' i.e., Von Wilebrand disease

- Von it illebrand disease (vWD) is the most common inherited bleeding disorder.
- It is autosomal dominant, and its pr*evalence is estimated to be as high as 1 case per 1000 population*

**1042.** **A child is diagnosed to have atypical pneumonia.**

**Assertion: Diagnosis can be made by demonstration of IgM antibody by ELISA during acute stage.**

**Reason: It is useful for detecting viruses which are the most common etiologic agent of atypical pneumonia.**

a) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion

b) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion

c) Assertion is true, but Reason is false

d) Assertion is false, but Reason is true

Correct Answer - C

Primary atypical pneumonia is caused by Mycoplasma pneumoniae.
In atypical pneumonia cold agglutinins are elevated in ? to ¾ of the patients.
Diagnosis can be made rapidly by demonstrating IgM antibody by ELISA during the acute stage and by IgG antibodies which are demonstrable after 1 week of illness.

**Ref:** Essentials of Paediatrics By O P Ghai, 6th Edition, Page 350.

## 1043. Foster Kennedy syndrome is associated with all(o\fBtLh)e following, except:

a) Ipsilateral Anosmia

b) Contralateral Optic Atrophy

c) Olfactory groove meningioma

d) Contralateral Papilloedema

Correct Answer - B
Answer is B (Contralateral optic Atrophy):
*Foster Kennedy Syndrome is associated with ipsilateral optic atrophy and not contralateral optic atrophy*
*The Foster Kennedy syndrome consists of ipsilateral anosmia, ipsilateral optic atrophy and contralateral papilledema*

## 1044. Foster Kennedy syndrome is classically described inassociation with:

a) Craniopharyngioma

b) Pituitary adenoma

c) Olfactory groove meningioma.

d) Medulloblastoma

Correct Answer - C
Answer is C (Olfactory groove meningioma):
*Foster Kennedy syndrome is typically described in association with olfactory groove meningioma.*
*The Foster Kennedy syndrome consisting of anosmia accompanied by unilateral ipsilateral optic atrophy and contralateral papilledema may be caused by any large baso-frontal or orbito-frontal tumors. It has typically been associated with olfactory groove or sphenoid ridge masses especially meningiomas and has classically been described in patients with olfactory groove meningiomas.*

## 1045. All of the following may be used to treat Acute Hypercalcemia Except:

a) Hydration with saline

b) Calcitonin

c) Biphosphonates

d) Gallium Nitrate

Correct Answer - D
Answer is D (Gallium Nitrate)
*Gallium Nitrate exerts s hypocalcemic effect by inhibiting calcium resorption from bone. Maximum hypocakemic effect of gallium nitrate may take 3-4 days to appear and it is not often used now because of availability of superior alternatives. Gallium nitrate is the single best answer of exclusion.*

| Treatment of Hypercalcemia | Onset of Action |
|---|---|
| *Hydration with Saline* | *Hours* |
| *Forced diuresis (saline + loop diuretic)* | *Hours* |
| *Calcitonin* | *Hours* |
| *Intravenous phosphate* | *Hours* |
| *Pheomycin / Mithromycin* | *Hours* |
| *Dialysis* | *Hours* |
| *Biphosphonates* | *Days (1 to 2 days)* |
| *Glucocorticoids* | *Days* |
| *Gallium Nitrate* | *Days (3-4 days)* |

## 1046. Definitive treatment of hypermagnesemia is?

a) Calcium gluconate

b) IV fluids

c) Hemodialysis

d) Exchange resins

Correct Answer - C
Hemodialysis REF: Harrison's 17th ed chapter 346
HYPERMAGNESEMIA: TREATMENT
Successful treatment of hypermagnesemia generally involves identifying and interrupting the source of magnesium and employing measures to increase magnesium clearance from the BCF. Use of magnesium-free cathartics or enemas may be helpful in clearing ingested magnesium from the gastrointestinal tract. Vigorous IV hydration should be attempted, if appropriate. Hemodialysis is effective and may be required in patients with significant renal insufficiency. Calcium, administered IV in doses of 100-200 mg over 1-2 h, has been reported to provide temporary improvement in signs and symptoms of hypermagnesemia.

**1047. The number of café au lait macules as one of the diagnostic criteria for adult neurofibromatosis is**

a) 1

b) 2

c) 4

d) 6

Correct Answer - D

**Answer- D. 6**

- l.5 cm orlarger in individuals past puberty
- 0.5 cm or larger in individuals before puberty.

**1048. The number of Neurofibromas as one of the diagnostic criteria for adult neurofibromatosis type-I**

a) 1

b) 2

c) 4

d) 6

Correct Answer - B
**Answer- B. 2**

## 1049. Eosinophilic meningoencephalitis is caused by:

a) *Gan thostoma spiralis*

b) *Naegleria*

c) *Toxocara canis*

d) *Angiostrongylus cantonensis*

Correct Answer - B:D
Ans. (b) and (d) Naegleria and *Angiostrongylus cantonensis*

## 1050. Most common viral infection after Kidney Transplantation is:

a) EBV

b) HSV

c) CMV

d) HBV

Correct Answer - C
**Answer is C (CMV):**
*CMV is the most common viral infection after Kidney Transplantation.*
*'CMV is the single most important viral infection in renal transplant recipients'- Critical Care Nephrology*

## 1051. Bronchial hyperplasia may be caused by all except?

a) Smoking

b) Theophylline

c) Prematurity

d) Allergy

Correct Answer - B
Answer is B (Theophylline):
***Theophylline*** *relaxes the tone of bronchial smooth muscles, thereby causing bronchodilation*
*It may he used in the treatment of bronchial hyperplasia, it certainly does not contribute to bronchial hyperplasia.*
**Smoking and other irritants** cause the *hypertrophy of mucus glands*$^{Q}$ within the brochial wall, and contributes to narrowing of bronchioles by a variety of factors.
**Prematurity** may *be associated with bronchopulmonary dysplasia*$^{Q}$ *and bronchial hyperplasiae*

## 1052. Floating water-lily sign is feature of:

a) Lung Hydatid

b) Bronchial adenoma

c) Lung abscess

d) Aspergilloma

Correct Answer - C
C i.e. Lung abscess

| **Calcification type** | **Condition associated** |
|---|---|
| Pop corn calcification | *Pulmonary hamartomaQ,* mediastinal lymph nodes of acute histoplasmosis. |
| Egg shell (peripheral) calcification | *SilicosisQ, SarcoidosisQ* |
| Rice grain calcification | *CysticercosisQ* |
| Tram track (Rail road) calcification | *Struge Weber syndromeQ* |
| Basal ganglion calcification | Hyper parathyroidism |
| Cardiac calcification | Carcinoid syndrome |
| Pericardial calcification | Constructive pericarditis |
| Not calcify | *Hydatid cyst in lungQ* |

## 1053. Treatment of choice in Wegner's granulomatosis is

a) Cyclosporine

b) Cyclophosphamide

c) Steroids

d) Radiotherapy

Correct Answer - B

**Answer- B. Cyclophosphamide**

- Cyclophosphamide alongwith glucocorticoids is the treatment of choice, For selected patients whose disease is not immediately life threatening or in those patients who have experienced significant cyclophosphamide toxicity, methotrexate together with glucocorticoids may be considered as an alternative

## 1054. Auenbrugger's sign is seen in

a) Pericardial Effusion

b) Constrictive pericarditis

c) Aortic Regurgitation

d) Mitral Stenosis

Correct Answer - A
**Answer- A. Pericardial Effusion**
**Friedreich's sign**

- Pitres's sign
- Auenbrugger's sign

**Sansom's sign**

- Greene's sign
- Ewart's sign
- Ebstein's sign
- Rotch's sign

**Moschcowit's sign**

- Ewart's second sign
- Dressle's sign
- Bamberger's sign

## 1055. All of the following are features of moscheowitz triad in Pericardial effusion, except

a) Widening of the cardiac sillhouette

b) Bunting of cardiophrenic angle on the right side

c) An increase in cardiac dullness in the second intercostal space

d) An abrupt transition of pulmonary resonance to cardiac dullness

Correct Answer - B

**Answer- B. Bunting of cardiophrenic angle on the right side**
**Widening of the cardiac silhouette (widening of cardiac flatnest to percussion).**

- Widening or increae in cardiac dullness in the second intercostal space; and
- An abrupt transition of pulmonary resonance to cardiac dullness

# 1056. Which of the following structures of the pericardium is insensitive to pain:

a) Fibrous Pericardium

b) Parietal layer of Serous pericardium

c) Visceral layer of Serous pericardium

d) All of the above

Correct Answer - C

**Answer is C (Visceral layer of Serous pericardium)**

*The visceral layer of serous pericardium is insensitive to pain. The visceral layer of the serous pericardium is supplied by the sympathetic trunk and branches of the vagus nerves which are Pain Insensitive*

***Note :***

*The pain of pericarditis typically originates only from the pain sensitive parietal layer (lower two thirds) and is transmitted by the phrenic nerve. Pain from the heart(angina) originates in the muscles and vessels and is transmitted by sympathetic nerves*

*Fibrous pericardium and Parietal layer of the Serous Pericardium are supplied by the phrenic nerve and are pain sensitive*

**Nerve Supply of The Pericardium**

- Phrenic nerves (C3-05) (This is the primary source of sensory fibres)
- Pain sensations conveyed by these nerves are commonly referred to the skin (C3 -05 dermatomes) of the ipsilateral supraclavicular region (top of the shoulder of the same side).
- Vagus nerve (Their function is uncertain)
- *Sympathetic trunks* (Vasomotor)

## 1057. Chest pain from pericardial inflammation in pericarditis is referred by:

a) Vagus nerve

b) Phrenic nerve

c) Trigeminal nerve

d) Sympathetic nerves

Correct Answer - B

**Answer** *is* **B (Phrenic nerve)**

*The phrenic nerve (C3, 4, 5) provides sensory innervation to the fibrous and parietal layers of the pericardium. When pain sensitive areas of pericardium are stimulated by disease, pericardial pain is perceived as pain in the neck and around the trapezius muscle via the phrenic nerve (The skin above the clavicle (C3, 4, 5 dermatomes))*

***Note: The phrenic nerve does not innervate the heart but does give off somatosensory branches to the pericardium (pericardial branches) in the middle mediastinum on its way to the diaphragm***

**Note:** The phrenic nerve only innervates the pericardium and does not innervate the heart

## 1058. Most common cause of inherited peripheral neuropathy is ?

a) Chartcot - Marie - Tooth disease

b) Hereditary neuropathy with pressure palsy

c) Familial amyloid polyneuropathy

d) Hereditary sensory neuropathy

Correct Answer - A
Ans. is 'a' i.e., Chartcot - Marie - Tooth disease
**Charcot-Marie-Tooth (CMT) disease :?**

- This is the most common of the inherited peripheral neuropathies, affecting up to 1 in 2500 people.
- This is a nerve conduction disease.
- Affected individuals are heterozygous for duplication of a small region of chromosome 17 (17p12).
- It is an autosomal dominant disorder

## 1059. All of the following are true regarding Guillain-Barre syndrome except: *March 2008*

a) Peripheral nervous system is affected

b) Histologically there is inflammation of peripheral nerv

c) Descending paralysis

d) Elevated CSF proteins

Correct Answer - C
Ans. C: Descending paralysis
**Guillain-Barre syndrome, a disease of the peripheral nervous system, is** characterized by weakness beginning in the distal limbs but rapidly advancing to affect proximal muscle function **("ascending paralysis"), and histologically by inflammation** and demyelination of spinal nerve roots and peripheral nerves (radiculoneuropathy).
**There is elevation of the CSF protein** due to inflammation and altered permeability of the microcirculation within the spinal roots as they traverse the subarachnoid space.
Inflammatory cells are contained within the roots, however, and there is little to no CSF pleocytosis.

## 1060. Characteristic of Guillain-Barre syndrome is:
***September 2005***

a) Profouund sensory loss

b) Loss of limb reflex

c) Residual paralysis

d) Descending paralysis

Correct Answer - B
Ans. B: Loss of limb reflex

## 1061. All are true regarding treatment of Guillain-Barre syndrome EXCEPT:

a) Corticosteroid used for early recovery and prevent long stay

b) High-dose intravenous immune globulin (IVIg) can be initiated

c) Plasmapheresis can be done

d) High-dose intravenous immune globulin (IVIg) and plasmapheresis are equally effective

Correct Answer - A
Corticosteroid used for early recovery and prevent long stay REF: Harrison's 17th ed chapter 380
In the vast majority of patients with GBS, treatment should be initiated as soon after diagnosis as possible. Each day counts; -2 weeks after the first motor symptoms, immunotherapy is no longer effective. Either high-dose intravenous immune globulin (IVIg) or plasmapheresis can be initiated, as they are equally effective. A combination of the two therapies is not significantly better than either alone.
Glucocorticoids have not been found to be effective in GBS.
Occasional patients with very mild forms of GBS, especially those who appear to have already reached a plateau when initially seen, may be managed conservatively without IVIg or PE.

## 1062. Hepatomegaly with liver pulsation indicates:

a) TR

b) MR

c) Pulmonary hypertension

d) MS

Correct Answer - A
Answer is A (Tricuspid Regurgitation)
*Systolic pulsations of the liver and marked hepatomegaly are characteristic features of Tricuspid Regurgitation.*
*`Hepatic pulsation in Tricuspid Regurgitation are caused by reversed systolic blood flow in the great veins'*
*In about 2/3$^{rd}$ of patients with Tricuspid Regurgitation there is associated systolicpulsations of liver which may be considerably enlarged and tender'*

## 1063. Vitum's sign is seen in -

a) Tricuspid Regurgitation

b) Mitral Stenosis

c) Aortic Stenosis

d) Aortic Regurgitation

Correct Answer - A

**Answer- A. Tricuspid Regurgitation**

- Increase in intensity of the murmur on pressing the liver is celled vitum's sign.
- It is associated with "Vitum's sign".

## 1064. Cavallo's sign is seen in -

a) Tricuspid Regurgitation

b) Mitral Stenosis

c) Aortic Stenosis

d) Aortic Regurgitation

Correct Answer - A
**Ans. A. Tricuspid Regurgitation**

## 1065. Carvallo's sign representing a Diastolic Murmur that increases on inspiration is seen in -

a) Tricuspid Stenosis

b) Tricuspid Regurgitation

c) Mitral Stenosis

d) Aortic Regurgitation

Correct Answer - A

**Answer- A. Tricuspid Stenosis**

- Carvallo's meneuever is also associated with tricuspid stenosis.
- In tricuspid stenosis diastolic murmur is accentuated during inspiration whereas in T.R. pan systolic murmur is accentuated during inspiration.

## 1066. CURB-65 score includes all except:

a) Age > 65 years

b) Confusion and elevated blood urea nitrogen > 7 mmol/L

c) Respiratory rate > 30/min

d) Systolic BP < 100 mm Hg and Diastolic BP < 60 mill Hg

Correct Answer - D

**Answer- D. Systolic BP < 100 mm Hg and Diastolic BP < 60 mill Hg**

Pneumonia Severily Index (PSI) and CUR8-65 criteria ure used in patients of community-acquired pneumonia to decide severity of illness and which patients merit in-patient/ICU care. Systolic BP of <90 mm Hg (not < 100 mm Hg) is a part of the CURB65 criteria.

## 1067. What is the minimum number of Red Blood Cells /til of urine required for diagnosis of hematuria ?

a) 3 RBC/pL

b) 5 RBC/pL

c) 8 RBC/pL

d) 10 RBC/pL

Correct Answer - A

**Answer- A. 3 RBC/pL**

- Mircoscopic hematuria is defined as the praence of three or more red blood cells per high- power field on microscopic evaluation of urinary sediment from two of three properly collected urinalysis specimens.

## 1068. D-Dimer is the most sensitive test for

a) DVT

b) Pulmonary Embolism

c) Acute Pulmonary adema

d) Acute myocardial infarction

Correct Answer - B
Answer is B (Pulmonary Embolism):
*D-Dimer test is a sensitive test for detection of DVT and PE. Amongst DVT and PE, the D-Dimer test is less sensitive for DVT than PE • (More sensitive for PE)*
*The sensitivity of the D-Dimer assay is greater than 80% for DVT and greater than 95% for PE. The D-Dimer test is less sensitive for DVT than PE because the DVT thrombus size is smaller-Harrison 17th/1653*

## 1069. The treatment of choice in a patient with Massive Pulmonary Embolism in Shock is:

a) Thrombolytic Therapy

b) Low Molecular Weight Heparin

c) Aggressive fluid resuscitation

d) Diuretic Therapy

Correct Answer - A
Answer is A (Thrombolytic Therapy):
*Normotension with Right ventricular hypokinesia suggests a diagnosis of submassive pulmonary embolism and stratifies the patient into an intermediate risk category. Treatment for intermediate risk patients with submassive PE is controversial. Guidelines recommend individual risk assessment for the thrombotic burden versus risk of bleeding. According to Harrisons textbook young patients without any comorbidities that fall into the intermediate risk category are excellent candidates for thrombolysis.* The patient in question is a young 20 years old patient and the question makes no mention of any comorbidities, hence thrombolysis is the single best answer of choice.

## 1070. Giant cell arteritis causes which of the following in the eye -

a) Episcleritis

b) Anterior ischemic optic neuropathy

c) Neuroparalytic keratitis

d) Band keratitis

Correct Answer - B

**Answer- B. Anterior ischemic optic neuropathy**

**Causes of vision loss**

- Anterior ischemic optic neuropathy.
- Central retinal artery occulusion.
- Posterior ischemic optic neuropathy.
- Branch vetinal artery occlusion
- Cerebral ischemia

## 1071. Tietze's syndrome usually develops at costal cartilage -

a) First and Second ribs

b) Second to fifth ribs

c) Sixth to Eighth

d) All seven ribs

Correct Answer - B

**Answer- B. Second to fifth ribs**

- Tietze syndrome is characterized by mild to severe localized pain and tenderness in one or more of the upper four ribs.
- The second or third ribs are most oftm affected

## 1072. Which of the following drugs is MOST suitable for a 45-year old diabetic with blood pressure 150/95 mmHg?

a) Lisinopril

b) Amlodipine

c) Propranolol

d) Hydrochlorothiazide

Correct Answer - A

**Answer- A. Lisinopril**

- An ACE inhibitor is the f.rst choice for comorbid diabetes and renal disease and angiotensin II receptor blocker is the first choice for comborbid L.V.H.

**1073. A male patient presents with headache, profuse sweating and palpitations with a blood prssure of 180/120 mmHg. The drug of choice would be -**

a) Nifedipine

b) Labetalol

c) Prazocin

d) Phenoxy benzamine

Correct Answer - D

**Answer- D. Phenoxy benzamine**

- Symptoms of the patient suggests pheochromocytoma .
- The drug of choice for pheochromocytomas is phenoxybenzamine

## 1074. All of the following statement about atrial myxomas are true, except:

a) Most common site is Left Atrium

b) Most common in young individuals

c) Distant metastasis are rare

d) Most myxomas are familial

Correct Answer - D
Answer is D (Most myxomas are fmilial)
Most cardiac myxomas are sporadic while some may he familial.

## 1075. Carcinoid syndrome produces valvular disease primarily of the

a) Venous valves

b) Tricuspid valve

c) Mitral valve

d) Aortic valve

Correct Answer - C
Answer is B (Tricuspid valve);
*The most common site of involvement is the – Ventricular surface of Tricuspid valve.*
*'Cardiac manifestations in carcinoid syndrome are due to fibrosis involving the endocardium, primarily on the right side although left side lesions also occur. Dense fibrous deposits are most commonly on the ventricular aspect of the tricuspid valve and less commonly on the pulmonary valve cusps.'*
**They can result in either constriction of valves (stenosis) or fixation of valves in open (regurgitation)**
- Abnormality produced due to tricuspid valve involvement – Tricuspid regurgitation Q
- Abnormality produced due to pulmonary valve involvement – Pulmonary stenosis Q

## 1076. Most common valvular lesion in carcinoid syndrome of heart is:

a) Aortic stenosis

b) Tricuspid regurgitation

c) Mitral Stenosis

d) Aortic Regurgitation

Correct Answer - B
Answer is B (Tricuspid Regurgitation)
***Carcinoid syndrome*** *most* ***frequently involves the ventricular aspect of the tricuspid valve and leads to Tricuspid Regurgitation***

## 1077. The protein which has structural homology with plasminogen and is responsible for myocardial infarction and stroke -

a) HDL

b) LP(a)

c) LDL

d) Homocysteine

Correct Answer - B

**Answer- B. LP(a)**

- Lp(a) has structural homology to plasminogen because of apoprotein(a) of Lp(a).

## 1078. WHO Rose Questionnaire is used for -

a) Alcohol Addiction

b) Angina Assessment

c) DVT Assessment

d) Arrhythmia Assessment

Correct Answer - B

**Answer- B. Angina Assessment**

- The Rose Questionnaire is used for assessment of coronary artery disease/angina/Ml.

## 1079. Which one of the following drugs cause hypomagnesemia by increased excretion

a) Frusemide therapy

b) Cisplatin

c) Digitalis

d) Aminoglycosides

Correct Answer - A
Frusemide therapy *[Ref: Lawrence 10'"/e p. 487; Goodman & Gilman Tele p. 751]*
*"Loop diuretics cause the abolition of transepithelial potential difference that results in marked increase in excretion of Cc?'" and Me".*

- *Loop and thiazide diuretics cause significant urinary loss of magnesium.*
  - Magnesium deficiency brought about by diuretics is rarely severe enough to induce the classic picture of neuromuscular irritability.

## 1080. Hypomagnesaemia presents with all except -

a) Symptoms same as hypocalcaemia

b) Development of torsades de pointes

c) Potentiates hypocalcaemia

d) Seen in diabetic ketoacidosis

Correct Answer - D

**Answer- D. Seen in diabetic ketoacidosis**

- Hypocalcemia is often observed in patients with magnesium deficiency and may contribute to the clinical findings.
- Hypomagnesemia may cause prolonged QT and Torsades-de-pointes.
- DKA is associated with hypermagnesemia.

## 1081. Heart block is seen in -

a) Hypermagensemia

b) Hypomagnesemia

c) Hypernatremia

d) Hypocalcemia

Correct Answer - A

**Answer- A. Hypermagensemia**

- Hypermagnesemia slows the heart and leads to heart block.

## 1082. Most common cause of death in measles ?

a) Encephalitis

b) Meningitis

c) Dehydration

d) Pneumonia

Correct Answer - D
**Answer- D. Pneumonia**

- Most commot cause of death in measles is pneumonia

## 1083. Most common extra-cutaneous manifestation of chicken pox is -

a) CNS involvement

b) Varicella pneumonia

c) Congenital varicella

d) Reye syndrome

Correct Answer - A

**Answer- A. CNS involvement**

- The most common extracutaneous site of involvement in chicken pox in children is the CNS
- The cerebrospinal fluid (CSF) contains lymphoctyes and elevated levels of protein.

## 1084. Dialysis patients are prone to develop -

a) Lead toxicity

b) Iron toxicity

c) Aluminium toxicity

d) Zinc toxicity

Correct Answer - C

**Answer- C. Aluminium toxicity**

- Aluminium intoxication is common in dialysis patients.
- It can cause anemia, osteomalacia and encephalopathy (dementia).

## 1085. Dementia in patient of chronic renal failure with chronic hemodialysis is due to -

a) Aluminium toxicity

b) Uremia

c) A Beta, amyloid

d) A beta amyloid deposition

Correct Answer - A

**Answer- A. Aluminium toxicity**

- Patients undergoing long-term dialysis acquire dialysis encephalopathy (or dialysis dementia), which is a subacute, progressive,and often fatal disease.
- Aluminium toxicity either from aluminium phosphate salts or from aluminium in the dialysate were linked to the pathogenesis of dialysis dementia.

**1086. An adult patient presents with normal or enlarged kidneys with massive proteinuria. Most likely cause is -**

a) Chronic pyelonephritis

b) Chronic glomerulonephritis

c) Amyloidosis

d) Renal artery stenosis

Correct Answer - C
**Answer- C. Amyloidosis**
**Amyloidosis causes :-**
1. Enlarged kidney
2. Massive proteinuria (nephrotic range proteinuria)

# 1087. All of the following are Light's criteria for exudative I pleural effusion:

a) Pleural fluid protein to serum protein > 0.5

b) Pleural fluid LDH to serum LDH > 0.6

c) Pleural fluid LDH is > 2/3 times the normal upper limit for serum

d) Pleural fluid ADA to Serum ADA <16

Correct Answer - D

Answer is D (Pleural fluid ADA and Serum ADA <16):

*Ratio of Pleural fluid ADA and Serum ADA <16 is not part of Light's Criteria.*

*Light's criteria, rely on a comparison of the chemistries in the pleural fluid to those in the blood, to establish the cause of the effusion as transudate or exudates.*

**According to Light's criteria a pleural effusion is likely exudative if at least one of the following exists**

- The ratio of pleural fluid protein to serum protein is greater than 0.5
- The ratio of pleural fluid LDH and serum LDH is greater than 0.6
- Pleural fluid LDH is greater than 0.6 or Y3 times the normal upper limit for serum.

**Note:**

*Exudative Pleural Effusions meet at least one of the above criteria while transudative effusions meet None These criteria misidentify around 25 percent of transudates as exudates*

## 1088. All of the following is NOT a feature of an exudate?

a) Serum : Pleural Albumin ratio < 1.2mg/dl

b) Pleural fliud cholesterol > 55

c) Fluid : Serum Protein ratio > 0.5

d) Fluid : Serum LDH ratio > 0.6

Correct Answer - A

**Answer- A. Serum : Pleural Albumin ratio < 1.2mg/dl**

.. Pleural fliud cholesterol > 55

2. Fluid : Serum Protein ratio > 0.5

3. Fluid : Serum LDH ratio > 0.6

## 1089. Following cranial nerve is involved in patients with sarcoidosis -

a) I cranial nerve

b) VII cranial nerve

c) III cranial nerve

d) IV cranial nerve

Correct Answer - B

**Answer- B. VII cranial nerve**

- The most common mainfestation is cranial neuropathy with B/L or U/L seventh nerve Bell palsy.

## 1090. Psychosis in SLE is caused by -

a) Anti-ribosomal P antibody

b) Anti-glutamate acid decarboxylase antibody

c) Anti-endomyosial antibody

d) Anti-histone antibody

Correct Answer - A
**Answer- A. Anti-ribosomal P antibody**

- Anti-ribosomal P antibody- CNS lupus

## 1091. Myasthenia gravis is associated with -

a) Thymoma

b) Thymic carcinoma

c) Thymic hyperplasia

d) Lymphoma

Correct Answer - A
Ans. is 'a' i.e., Thymoma
Myasthenia gravis
o It is a muscle disease caused by *immune-mediated loss of acetylcholine receptors.*
**o** When arising *before age 40 years, it is most commonly seen in women, but there is equal occurrence between the sexes in older patients.*

- *Thymic hyperplasia is found in 65% and thymoma in 15% of patients.*

**o** Analysis of neuromuscular transmission in myasthenia gravis shows a decrease in the number of muscle acetylcholine receptors (AChRs), and circulating antibodies to the AChR are present in nearly all patients with myasthenia gravis.
**o** Patients show improvement in strength in response to administration of anticholinesterase agents. This remains a most useful test on clinical examination.
**o** *Respiratory compromise* was a major cause of mortality in the past

## 1092. The term 'ragged red fibers' is applied to describe the skeletal muscle fibers in -

a) Myotonic dystrophy

b) Nemaline myopathy

c) Spinal muscular atrophy

d) Mitochondrial myopathy

Correct Answer - D

**Answer- D. Mitochondrial myopathy**

- The term 'ragged redfibers' is typically applied to describe the skeletal muscle fibers in mitochondrial myopathy.

**1093.** **Renal angiomyolipoma is associated with:**

a) Tuberous sclerosis

b) Neurofibromatosis 1

c) Neurofibromatosis 2

d) All of the above

Correct Answer - A

Angiomyolipomas are present in 25% to 50% of patients with tuberous sclerosis, a disease caused by loss-of-function mutations in the **TSC1 or TSC2 tumor suppressor genes.**
This is a benign tumor consisting of vessels, smooth muscle, and fat.
It is characterized by lesions of the cerebral cortex that produce epilepsy and mental retardation, a variety of skin abnormalities, and unusual benign tumors at other sites, such as the heart.

**Ref:** Robbins 8th edition Chapter 20.

## 1094. Shagreen patch is usually found in ?

a) Face

b) Cervical region

c) Limbs

d) Lumbosacral region

Correct Answer - D
D *i.e.* Lumbosacral

## 1095. Insensible losses of water per day are -

a) 400 ml per day

b) 600 ml per day

c) 800 ml per day

d) 1500 ml per day

Correct Answer - C
**Answer- C. 800 ml per day**

## 1096. Most common lymph node involved in Hodgkin's lymphoma is

a) Inguinal

b) Cervical

c) Axillary

d) Sub-clavicular

Correct Answer - B
Answer is B (Cervical)
*The most common lymph nodes involved in Hodgkins Lymphoma are the cervical lymph nodes.*
The most common lymph nodes involved in Hodgkin's Lymphoma are cervical lymph nodes and supraclavicular lymph nodes (60-70%)
*'Detection of an unusual mass or swelling in the superficial, supra-diaphragmatic lymph nodes (60-70% cervical and supraclavicular, 15-20% axillary) is the most common presentation of Hodgkin's Lymphoma. Only 15 to 20 percent of patients have sub-diaphragmatic disease at presentation' — William's Manual of Hematology*

## 1097. Romana's sign is seen in -

a) Toxoplasma

b) Trypanosoma cruzi

c) Loa loa

d) Wuchereria

Correct Answer - B

**Answer- B. Trypanosoma cruzi**

- The classic finding in acute Chagas disease, which consists of unilateral painless edema of the palpebrae and periocular tissues can result when the conjunctiva is the portal of entry.

## 1098. Central nervous system manifestation in chronic renal failure are result of all of the following, *except:*

a) Hyperosmolarity

b) Hypocalcemia

c) Acidosis

d) Hyponatremia

Correct Answer - B
**Answer *is* B (Hypocalcemia):**
'The total plasma calcium concentration in CRF patient is significantly low. *Patient with chronic renal disease tolerate the hypocakemia quite ;veil and rarely is a patient symptomatic from the decreased calcium concentration.*
This may be partly due to concomitant acidosis.' - *Harrison*
*Hyponatremia, acidosis and hyper osmolarity can lead to various CNS manifestation as lethargy, altered mentation, seizure, coma, and paralysis etc.*

## 1099. Dialysis disequalibrium occurs due to -

a) Cerebral edema

b) Hypertension

c) Alumunium toxicity

d) A P2 amyloid deposition

Correct Answer - A

**Answer- A. Cerebral edema**

**Dialysis disequilibrium -**

- This occurs during first few weeks of dialysis and is associated with rapid reduction in blood urea levels.
- It manifests clinically with nausea, vomiting, drowsiness, headache and rarely seizures.
- This syndrome has been attributed to cerebral edema & increased intracranial pressure due to the rapid (dialysis induced) shift of osmolity and pH between extracellular and intracellular fluids.

## 1100. Which of the following is the most specific test for rheumatoid arthritis ?

a) Anti- MCV antibody

b) Anti cardiolipin antibody

c) Anti Mi-2 antibody

d) Anti Ro antibody

Correct Answer - A

**Answer- A. Anti- MCV antibody**

- The newly developed antimutateil citrullinated vimenti (Anti MCV assay) have been tasted for the diagnosis of P.A.
- Their main advantage is early appearance making early detection of R.A.
- Anti MCV antibodies show strong conehtion with the disease activity, disease severity aqd the success of therapy.

## 1101. Speckled pattern is seen in -

a) Anti Sm antibody

b) Anti ds DNA antibody

c) Anti histone antibody

d) Anti chromatin antibody

Correct Answer - A
Ans. is 'a' i.e., Anti Sm antibody
o **The** most **commonly used method to detect antinuclear antibodies is indirect immunofluorescence.** o The pattern of nuclear fluorescence suggests the type of antibody present in patient's serum.
o Four basic patterns are recognized **:?**
**1. Homogenous or diffuse nuclear chromatin staining ----->** Reflects *antihistone* and *antichromatin* antibodies.
***2.*** **Rim or peripheral staining** *Anti ds DNA antibody.*
***3.*** **Speckled pattern -->** Most common pattern on immunofluorescence. Reflects the presence of non DNA nuclear contents --> *anti Sm, anti - Ro, anti-La, anti SS-A, and anti SS-B antibodies.*
**4. Nucleolar pattern -->** Nucleolar RNA.

## 1102. Storage temperature of platelet is -

a) - 4° C

b) + 4 ° C

c) - 20 ° C

d) + 20-24° C

Correct Answer - D
**Answer- D. + 20-24° C**

- Platelets are stored at room temperatures because cold induces clustering of Von Willebrand factor receptors on the platelet surface.

# 1103. All of the following are associated with Autonomic Neuropathies, Except

a) Diabetes

b) Amyloid

c) Hyperthyroidism

d) Botulinism

Correct Answer - C

Answer is C (Hyperthyroidism):

*Hyperthyroidism is not associated with an autonomic neuropathy. Thyroid Hormones interact with the sympathetic branch of the autonomic nervous system and stimulate /simulate increased activity of sympathetic nervous system. Hyperthyroidism however is not associated with an autonomic neuropathy.*

**Autonomic Neuropathies**

| **Acute / Subacute Autonomic Neuropathies** | **Chronic Peripheral Autonomic Neuropathies** |
|---|---|
| Subacute autoimmune autonomic ganglionopathy (AAG) | I Distal small fiber neuropathy |
| *Subacute paraneoplastic autonomic neuropathy* | 2. Combined sympathetic and parasympathetic failure |
| *Guillain-Barre syndrome* | *a) Atnyloid* |
| *Botulism* | *b) Diabetic autonomic neuropathy* |
| *Porphyria* | *c) Autoimmune autonomic ganglionopathy* |
| *Drug induced autonomic* | *(Paraneoplastic and* |

*neuropathies-stimulants, drug withdrawal, vasoconstrictor, vasodilators, beta-receptor antagonists, beta-agonists*

*Toxic autonomic neuropathies*

*Subacute cholinergic neuropathy*

*idiopathic)*

*Sensory neuronopathy with autonomic failure*

d) *Familial dysautonomia*

e) *(Riley-Day syndrome)*

*I) Diabetic, uremic, or nutritional deficiency*

g) *Dysautonomia of old age*

## 1104. Polyuria with low fixed specific gravity urine is seen in ?

a) Diabetes mellitus

b) Diabetes insipidus

c) Chronic glomerulonephritis

d) Potomania

Correct Answer - C

**Answer- C. Chronic glomerulonephritis**

- Polyuria with fixed low specific gravity is a feature of chronic glomerulonephritis.

## 1105. Initial treatment recommended for newly diagnosed patient with CML is:

a) Allogenic Bone Marrow Transplantation

b) Imatinib Mesylate Therapy

c) TNF-a

d) IFN-a

Correct Answer - B

**Answer *is* B (Imatinib Mesylate Therapy)**

*Harrison's 18th edition recommends starting treatment of newly diagnosed CML with TK inhibitors (Imatinib) and reserving alloginic transplantation for those who develop Imatinib resistance.*

***The therapy of CML is changing rapidly because we have a proven curative treatment (allogenic transplantation) that has significant toxicity and a new targeted treatment (imatinib) with outstanding outcome based on 8 year follow up data. We recommend starting with TK inhibitors (Imatinib) and reserving allogenic transplantation for those who develop imatinib resistance'***

**Note:**

- The only curative treatment for CML is Allogenic stem cell Transpintation
- The treatment of choice in CML is Allogenic BMTe
- The drug treatment of choice in CML is ImatinibQ
- Initial treatment recommended for newly diagnosed patient with CML is Imatinib.

**Treatment of CML MEW**

- The only curative treatment for CML is Allogenic Stem Cell Transplantation (SCT) (Allogenic bone marrow transplantation)Q

- The treatment of choice for CML is also Allogenic Stem **Cell** Transplantation (SCT) (Allogenic bone marrow transplantation)e
- *The drug treatment of choice for CML is Imatinibe*
- *Interferon alpha (IFN a ) used to be the drug treatment of choice for CML when Imatinab was not available*

## 1106. DOC for treatment of SSPE -

a) Abacavir

b) Inosine pranobex

c) Glatiramer

d) Interferon

Correct Answer - B

**Answer- B. Inosine pranobex**

- Inosine pranobex is used as an immune-modulator for the management of patients with-
- Immune-depression sufereing from viral infections as SSPE recurrent herpes simplex genital warts.

## 1107. True statement about Neuro-cysticercosis is -

a) Usually presents with seizures

b) Albendazole is more effective than praziquantel

c) Usually presents with 6th nerve palsy and hemiparesis

d) High does steroid are given for hydrocephalus

Correct Answer - A

**Answer- A. Usually presents with seizures**

- Most common site of neurocysticercosis is brain parenchyma.
- "Parenchymal brain calcifications are the most common fnding of neurocysticercosis on neuroimaging.

**1108. Which of the following is the most common ocular complication with renal transplantation:**

a) Cataract

b) Glaucoma

c) Cytomegalo virus retinitis

d) Candida keratomycosis

Correct Answer - C
Ans. Cytomegalo virus retinitis

## 1109. Test predicting the return of renal function in a patient with tumor lysis syndrome is ?

a) Serum creatinine

b) Serum phosphate

c) Serum potassium

d) Serum Uric acid

Correct Answer - D

**Answer- D. Serum Uric acid**

- The prognosis of tumor lysis syndrome is excellent, and renal function recovers after the uric acid level is lowered to < l0 mg/dl.

## 1110. Initial treatment of tumor lysis syndrome is -

a) Rasburicase + Hydration + K binder + Urinary alkalization

b) Allopurinol + Hydration + K binder + alkalization

c) Both rasburicase + Allopurinol + Hydration and K binder

d) Hydration alone is sufficient

Correct Answer - A

**Answer- A. Rasburicase + Hydration + K binder + Urinary alkalization**

- Allopurinol is used in prophylaxis in low and intermediate risk. Examinar is asking about treatment, in which rasburicase is used.

## 1111. The most common site of bleeding in Hemoptysis is

a) Tracheobronchial tree

b) Pulmonary Parenchyma

c) Pleural Disease

d) All of the above

Correct Answer - A
Answer *is* A (Tracheobronchial tree):
The most common source of hemoptysis is the tracheobronchial tree.
The most common site of hemoptysis within the tracheobronchial tree are small to medium sized airways.
*The most common site of bleeding is the tracheobronchial tree*[Q]
*The most common site of hemoptysis is bleeding from the small to medium sized airways* [Q]

## 1112. The artery most frequently responsible for bleeding in massive hemoptysis is

a) Bronchial Artery

b) Pulmonary Artery

c) Intersegmental Artery

d) Intercostal Artery

Correct Answer - A
Answer is A (Bronchial Artery):
*The most common source of bleeding in massive hemoptysis are the Bronchial arteries which are part of the high pressure systemic circulation*
The most common source of bleeding in hemoptysis is the tracheobronchial tree which can be affected by inflammation (bronchitis, bronchiectasis) or neoplasm (bronchiogenic carcinoma, endobronchial metastatic carcinoma or bronchial carcinoid tumor). The bronchial arteries which originate from either the aorta or from intercostal arteries, and are therefore part of the high pressure systemic circulation are the source of bleeding in bronchitis, bronchiectasis or with endobronchial tumors '
`*While alveolar haemorrhages arise from capillaries that are part of the low pressure pulmonary circulation, bronchial bleeding is generally from bronchial arteries which are under systemic pressure and therefore predisposed to large volume bleeding'*

## 1113. The primary involvement of which organ is so far not reported to be affected by sarcoidosis is -

a) Heart

b) Adrenals

c) Kidney

d) Brain

Correct Answer - B

**Answer- B. Adrenals**

- Involvement of the adrenal glands rarely occurs in sarcoid.osk.
- The functional status of the adrenal gland in patients with sarcoidosis has nearly always been normal when evaluated after stimulation with exogenous ACTH,with the exception of patients with secondary adrenal failure due to hypothalnmic-pituitary infiltration by sarcoid granulomas

## 1114. HLA associated with rhaumatoid arthritis ?

a) HLA-B27

b) HLA-DR4

c) HLA-CW6

d) HLA-B8

Correct Answer - B
Ans. is 'b' i.e., HLA-DR4

## 1115. Tic Douloureux is facial pain traveling through which of the following nerves?

a) Facial

b) Hypoglossal

c) Trigeminal

d) Vestibulocochlear

Correct Answer - C
Answer is C (Trigeminal nerve):
Tic Douloureux refers to the association of Hemifacial spasm with Trigeminal Neuralgia (Trigeminal nerve) Trigeminal neuralgia (TN, or TGN), also known as Prosopalgia, Fothergill's disease or formerly 'Suicide disease' is a neuropathic disorder characterized by episodes of intense pain in the face, originating from the trigeminal nerve. Pain is typicall$^{y}$ limited to the distribution of one or more divisions of the trigeminal nerve The pain often evokes spasm of the muscle of the face on the affected side. The clinical association between Trigeminal Neuralgia and hemifacial spasm is called Tic Douloureux.

**1116. A patient presents with recurrent episodes of sharp pain over his right cheek that is precipitated on chewing. Between attacks patients is otherwise normal.**
**The most probable diagnosis is -**

a) Preherpetic neuralgia

b) Trigeminal neuralgia

c) Mumps

d) Thalamic syndrome

Correct Answer - B
**Answer- B. Trigeminal neuralgia**

# 1117. All of the following statements about Trigeminal Neuralgia are true Except:

a) Most commonly involves Ophthalmic Division (V3) of Maxillary Nerve

b) Attacks most commonly occur during the day

c) Affects women more than men

d) More common on the Right Side

Correct Answer - A

Answer is A (Most commonly involves Ophthalmic Division (V3) of Maxillary Nerve):

The most common division of the trigeminal nerve involved in trigeminal neuralgia is the Maxillary division (V2) followed by the mandibular division (V3). The maxillary division (V2) is the most common site ofpain either alone or in combination with the mandibular division (V3). The ophthalmic Division (VI) is rarely involved (<5%). Pain arising from the maxillary division is usually referred to the upper lip nose and cheek while the pain arising from the mandibular division is often referred to the lower lip.

**Features of Trigeminal Neuralgia**

- The most common division of the trigeminal nerve involved in trigeminal neuralgia is the Maxillary division (V2)
- More common with advancing age
- More common in women
- More common on right side
- Attacks are most frequent during the day (but may awaken the patient at night)

## 1118. Drug of choice for trigeminal neuralgia is?

a) Chlorpromazine

b) Carbamezapine

c) Gabapentine

d) Fluoxetine

Correct Answer - B

Carbamezapine REF: Harrison's 17th ed chapter 371

- Drug of choice for trigeminal neuralgia - Carbamezapine
- If drug treatment fails, surgical therapy should be offered. The most widely applied procedure creates a heat lesion of the trigeminal (gasserian) ganglion or nerve, a method termed radiofrequency thermal rhizotomy.
- Gamma knife radiosurgery is also utilized for treatment
- A third surgical treatment, microvascular decompression to relieve pressure on the trigeminal nerve as it exits the pons, requires a suboccipital craniotom

## 1119. Most common site of peripheral aneurysm

a) Femoral artery

b) Radial artery

c) Popliteal artery

d) Brachial artery

Correct Answer - C
Ans is c i.e. Popliteal artery

- Popliteal artery aneurysm accounts for 70% of all peripheral aneurysms; two-thirds are bilateral.
- Almost all patients (97%) with popliteal artery aneurysms are male.
- Open surgical reconstruction with a *saphenous vein bypass* is the current gold standard for repair.

## 1120. In which one of the following head and neck cancer, perineural invasion is most commonly seen:

a) Adenocarcinoma

b) Adenoid cystic carcinoma

c) Basal cell carcinoma

d) Squamous cell carcinoma

Correct Answer - B

Adenoid Cystic Carcinoma (Cylindroma)

- Most common malignant tumor of submandibular glands.
- Most common minor salivary glands tumour.
- Most common site minor salivary gland.
- **Characterized** by its tendency to invade perineural space and lymphatics and thus causes **pain** (which may be a prominent and early syniptom) and **VII nerve paralysis.**
- **Skip lesions** along nerves are common.
- It is a **treacherous tumor** as it appears benign even when it is malignant.
- It can metastasize to lymph nodes
- They are highly recurrent.
- Local recurrence after surgical excision are common and can occur as late as 20 years after surgery. Distant metastases go to lung, brain and bone.
- Treatment of choice is **radical parotidectomy** irrespective of its benign appearance under the microscopy
- Radical neck dissection is not done unless nodal metastases are

present

- Postoperative radiation is given if margins of resected specimen are not free of tumor

## 1121. Polytrauma in paediatric age group most common feature is

a) Hypothermia

b) Hypovolemic shock

c) Hypotension

d) Hypoxemia

Correct Answer - B

**Answer- B. Hypovolemic shock**

- Due to the greater physiological capacity and ability ofchildren to compensate for fluid loss, hypotension is a very late and ominous sign of hypovolaemic shock.

## 1122. Advantage of minimally invasive surgery over open surgery are all except

a) Wide/better field of vision

b) Less operative time

c) Less post - operative pain

d) Less post operative morbidity

Correct Answer - B

**Answer- B. Less operative time**

**Decrease in wound size**

- Reduction in wound infection, dehiscence, bleeding, herniation and nerve entrapment
- Decrease in wound pain
- Improved mobility
- Decreased wound trauma
- Decreased heat loss
- Improved vision

## 1123. In pylorus, Pancreatoduodenectomy preserving following is not resected

a) Pyloric antrum

b) CBD

c) Duodenum

d) None

Correct Answer - A

**Answer- A. Pyloric antrum**

- The standard resection for a tumour of the pancreatic head or the ampulla is a pylorus-preserving pancreatoduodenectomy (PPPD).

## 1124. Green coloured i.v. cannula, the size is

a) 18

b) 20

c) 22

d) 24

Correct Answer - A
**Answer- A. 18**

- Green- 18
- Pink- 20
- Blue- 22
- Yellow/lime- 24

## 1125. As per trimodal distribution, in major trauma immediate deaths occurs in % of all deaths

a) 30%

b) 40%

c) 45%

d) 35%

Correct Answer - C

**Answer- C. 45%**

- Approx half of trauma deaths occure immediately after trauma, second mortality peak occurs within hours of injury and accounts for about 30% of deaths.

## 1126. AKT 1 amplification seen in

a) CA bladder

b) CA colon

c) Breast cancer

d) Gastric cancer

Correct Answer - D
**Answer- D. Gastric cancer**

- AKT 1 amplification- Glioblastoma, gliosarcoma, gastric cancer, lung cancer.

**1127.** **Felon is an infection of:**

a) Scalp

b) Face

c) Finger

d) Scrotum

Correct Answer - C

A felon is a closed-space, purulent infection of the fingertip pulp.

**Ref:** Schwartz's principle of surgery 9th edition, chapter 44.

## 1128. BIRADS stage 5 is

a) Negative

b) Probably benign

c) Suspicious abnormality

d) Highly suggestive of malignancy

Correct Answer - D
**Answer- D. Highly suggestive of malignancy**

## 1129. Air embolism in neural surgery maximum in which position:

a) Sitting

b) Supine

c) Trendelenburg

d) Left lateral

Correct Answer - A
Ans is 'a' i.e. Sitting

## 1130. TRUE regarding management of traumatic pneumothorax is -

a) Immediate ICD tube insertion

b) CT-scan should be done to confirm pulmonary leak

c) Intermittent needle aspiration

d) Sealed

Correct Answer - A
Ans. is 'a' i.e., Immediate ICD tube insertion.

## 1131. True of carotid body tumor is ?

a) Non-chromaffin paraganglioma

b) Good prognosis

c) Rarely metastasises

d) All

Correct Answer - D
Answer is 'a' i.e. Non-chromaffin Paraganglioma; 'b' i.e. Good Prognosis; 'c' i.e. Rarely metastasises

## 1132. All of the following form radiolucent stones except:

a) Xanthine.

b) Cysteine.

c) Allopurinol.

d) Orotic acid.

Correct Answer - B

B i.e. Cysteine

| Stone | Radiological appearance |
|---|---|
| - Calcium *phosphateQ* (apatite), - Ca - hydrogen - phosphate (Brushite) - Ca - mono - *oxalateQ* | Densely radiopaque |
| - Ca - di - oxalate - *StruviteQ* (Magnesium - ammonium - phosphate) | Moderately radiopaque |
| - CystineQ | *Faint* (slight) radiopaque d/t |

| | |
|---|---|
| | sulfer content |
| - *Orotic acidQ* | |
| - *Uric acidQ* | |
| - *XanthineQ* | Radiolucent |
| - Dihydroxyadenine | |
| - Indinavir | |
| - *Triamterene* | |
| - Matrix | |

**Orotic Acid Urea**

- Hereditary orotic acidurea is AR disorder caused by deficiency of *LIMP SynthaseQ* [Uridine Mono Phosphate synthase; a bifunctional enzyme having activity of Orotate - phosphor ibosyl - transferase & Ortidine - 5' -monophosphate decorboxylase, which converts orotic acid to UMP] resulting in excessive accumulation of orotic acid.
- Clinically presents as Macrocytic Hypochromic Megaloblastic anemia() *not responsive to folic acid and* $B_{12}$*,with normal serum levels of B12 & folic acid,* growth retardation, neurological abnormalities and orotic acid urea.
- *AllopurinolQ, 5 - azauridine,* 5 - flurouracil produce secondry (2°) orotic acidurea.
- 2° Orotic acid urea also occurs in parentral nutrition, essential amino acid deficiency *&* Rye's syndrome.

* Allopurinol treatment may lead to Xanthine & orotic acid stones, which are radiolucent.

## 1133. Ca prostate most common metastasis to

a) Skull

b) Femur

c) Lumbar spine

d) Sacrum

Correct Answer - C

**Answer- C. Lumbar spine**

**Most common metastatic sites of prostate carcinoma are lymph nodes & bones.**

- Lymphatic metastasis occurs most commonly to → obturator lymph nodes.
- Most common site of bony metastasis is lumbar spine.

## 1134. Which cancer develops in chronic ulcer

a) Malignant melanoma

b) Basal cell CA

c) Squamous cell CA

d) Kaposi sarcoma

Correct Answer - C

**Answer- C. Squamous cell CA**

- Chronic ulcer can cause squamous cell carcinoma.

## 1135. Initial treatment of keloid

a) Topical steroid

b) Intralesional steroid

c) Excision

d) Radiotherapy

Correct Answer - B

**Answer- B. Intralesional steroid**

- Intralesional injection of steroid (Triamcinolone acetate) is now recommended as the first line of t/t for keloid.

## 1136. Fogarty's catheter is used for?

a) urethral catheterization

b) removal of blood clots from the arteries

c) bladder drainage

d) TPN

Correct Answer - B
Ans is b i.e. removal of blood clots from the arteries
Fogarty's catheter is arterial embolectomy catheter.
It is used for removal of fresh, soft emboli and thrombi from arteries.
It is named after its inventor- Dr. Thomas J. Fogarty.

## 1137. FAST is used for:

a) Fast assessment of major visceral injuries

b) To look for free intraperitoneal fluid at specific sites

c) Fast assessment by CT scan to detect intraabdominal injuries

d) Quick clinical assessment to decide about I aprotomy

Correct Answer - B
Ans is 'b' i.e. To look for free intraperitoneal fluid at specific sites
Focused assessment with sonography for trauma (FAST) is the preferred triage method for determining the *presence of hemoperitoneum in blunt trauma patients* or *cardiac tamponade* in blunt and penetrating trauma patients. The presence of hemoperitoneum in an unstable patient on FAST may be an indication for exploratory laparotomy.
The goal of the FAST examination is the identification of abnormal collections of blood or fluid. In this regard, it obviates the need for diagnostic peritoneal lavage. The primary focus is on the peritoneal cavity, but attention is directed also to the pericardium and to the pleural space.
In the standard FAST examination, four areas are scanned: the right upper quadrant, the subxiphoid area, the left upper quadrant, and the pelvis.

## 1138. In FAST what is not assessed

a) Right upper quadrant

b) Left upper quadrant

c) Hypogastrium

d) Subxiphoid area

Correct Answer - C
**Answer- C. Hypogastrium**

## 1139. FAST USG focuses on all of the following areas except

a) Splenic

b) Hepatic

c) Pleura

d) Pelvic

Correct Answer - C
**Answer- C. Pleura**
**FAST focus only on four areas : -**

- Subxiphoid area (pericardium)
- Right upper quadrant (liver)
- Left upper quadrant (spleen)
- Pelvis

## 1140. A patient came with lower chest trauma with pain in abdomen. His BP is 60/40 pulse 120 next best investigation

a) CT abdomen

b) USG FAST

c) MR Angiography

d) X-ray abdomen

Correct Answer - B

**Answer- B. USG FAST**

- USG is the investigation of choice in both stable as well as unstable patients.
- "Blunt abdominal trauma initially is evaluated by FAST examination in most major trauma centers"

## 1141. Commonest site for rodent ulcer is -

a) Inner canthus

b) Outer canthus

c) Angle of mouth

d) Cheek

Correct Answer - A
Ans. is 'a' i.e., Inner canthus

## 1142. Glomus tumor is seen in

a) Liver

b) Adrenals

c) Pitutary

d) Finger

Correct Answer - D
Ans is d i.e. Finger

- The glomus tumor is a rare and benign vascular neoplasm that arises from the neuroarterial structure called a glomus body. The normal glomus body is located in the dermis throughout the body, but is more concentrated in the digits. They are believed to function in *thermal regulation.*
- The most common site of glomus tumors is *subungual* and 75% of the lesions occur in the hand.
- The lesions present most frequently during the fourth and fifth decade of life although they can be found in any age and at any site.
- The subungual tumors affect women three times more commonly than men.
- The lesions are usually solitay but mulifocal tumors are also seen.
- Clinically, glomus tumors are characterized by a triad of
  - sensitivity to cold,
  - localized tenderness and
  - severe intermittent pain.

  The pain can be excruciating and is described as a burning or bursting.
- Grossly, the tumors are usually less than one cm. in size, and appear as small red-blue nodules. The lesion appears as a localized dark red or blue lesion beneath the finger nail, but the subungual

lesions can be difficult to detect on clinical examination.

- Two useful tests for diagnosing glomus tumors, particularly solitary painful glomus tumors (especially those under a nail) are the following:
  - disappearance of pain after application of a tourniquet proximally on the arm
  - eliciting pain by applying pressure to a precise area with the tip of a pencil
  - Treatment of glomus tumors consists of *surgical excision.*

## 1143. Duodenal blow out which is done

a) Transcutaneous peritoneal drainage

b) Secondary closure

c) Re-exploration

d) None

Correct Answer - A

**Answer- A. Transcutaneous peritoneal drainage**

Duodenal blow out is massive leakage from duodenal stump following Bilroth II gastrectomy.

**Clinical features**

- It usually occurs on 2nd to 7th postoperative days.

**It usually presents as: -**

- Sudden intense thoracoabdominal pain
- Sudden elevation in pulse and temperature
- General deterioration of condition

**Treatment-**

- Total parenteral nutrition
- Fistula closure can be anticipated within 2-3 weeks.
- Adequate drainage

## 1144. Duodenal blow out following Billroth gastrectomy most commonly occurs on which day ?

a) 2nd day

b) $4^{th}$ day

c) $6^{th}$ day

d) $12^{th}$ day

Correct Answer - B

Ans. is b i.e., 4th day

- *Duodenal blow out* is *massive leakage from duodenal stump following Bilroth II gastrectomy.*
- Clinical features: ?

It usually occurs on $2^{nd}$ to $7^{th}$ *postoperative days. (In Bailey 22nd/e on page 689. it is specifically written that it occurs on* 4th *day).*

It usually presents as: *?*

- *Sudden intense thoracoabdominal pain*
- *Sudden elevation in pulse and temperature*
- *General deterioration of condition*

*Adequate drainage* must be instituted immediately which is done by *putting a catheter through an incision* below the right costal margin.

*Total parenteral nutrition* should be instituted and attention should be directed towards *fluid and electrolyte therapy.*

Fistula closure can be anticipated within 2-3 weeks.

**1145. Which of the following organisms produces signs and symptoms that mimic acute appendicitis?**

a) Enteropathic Escherichia coli

b) Enterobius vermicularis

c) Trichomonas hominis

d) Yersinia enterocolitica

Correct Answer - D
Ans. is 'd' i.e., Yersinia enterocolitica

**1146.** **The earliest manifestation of increased intracranial pressure following head injury is:**

a) Ipsilateral pupillary dilatation

b) Contralateral pupillary dilatation

c) Altered mental status

d) Hemiparesis

Correct Answer - C

Early signs of elevated iCP include drowsiness and a diminished level of consciousness (altered mental status).
Coma and unilateral papillary changes are late signs and require immediate intervention.

**Ref:** Harrison's Internal Medicine, 16th Edition, Page 1633; Clinical Hepatology: Principles and Practice of Hepatobiliary Diseases By Henryk Dancygier, Scott L. (FRW) Friedman, H. D. (CON) Allescher, U. (CON) Beuers, Volume 2, 2010, Page 938

## 1147. In surgical procedure NOTES entry point is through

a) Anus

b) Umbilicus

c) Mouth

d) None

Correct Answer - C
**Answer- C. Mouth**

- Scarless surgery, also known as Natural Orifice Translumetal Endoxopic Surgery (NOTES), involves passing surgical instruments through a natural orifice, such as mouth and vagina

## 1148. Mondor's disease is ?

a) Thrombophlebitis of the Superficial veins of Breast

b) Carcinoma of the breast

c) Premalignant condition of the breast

d) Filariasis of the breast

Correct Answer - A

Ans is 'a' i.e., Thrombophlebitis of Superficial veins of Breast

- Mondor's disease
- is thrombophlebitis of the superficial veins of anterior chest wall and breast although it has also been seen in the arm.
- frequently involved veins are lateral thoracic vein, thoracoepigastric vein and superficial epigastric veins.
- aetiology is unknown
- also known as 'string phlebitis', it presents as a tender cord-like structure.
- The women may present with acute pain in the lateral asepct of breast or the anterior chest wall. A tender cord-like superficial thrombosed vein is formed and when the skin over the breast is stretched by raising the arm, a narrow shallow subcutaneous groove alongside the cord becomes apparent.
- rarely it may be bilateral.
- Management

  it's a benign self-limited disorder

  The differential diagnosis is lymphatic permeation from an occult carcinoma of breast

  When the diagnosis is uncertain or a mass is present near the cord, a biopsy may be done. Treatment

  - antiinflammatory drugs and warm compresses

- restricted arm movements as well as brassiere support of breast
- it usually resolves within 4 to 6 weeks. When symptoms persists or are refractory to treatment, the involved vein segment may be excised.

**1149.** **Which among the following is the commonest site of diverticulosis in old population?**

a) Ascending colon

b) Transverse colon

c) Descending colon

d) Sigmoid colon

Correct Answer - D

**Diverticulosis** refers to the presence of diverticula without inflammation. *The sigmoid colon is the most common site of diverticulosis.*

The majority of colonic diverticula are *false diverticula* in which the mucosa and muscularis mucosa have herniated through the colonic wall.
These diverticula occur between the taeniae coli, at points where the main blood vessels penetrate the colonic wall (presumably creating an area of relative weakness in the colonic muscle).

**Ref:** Bullard Dunn K.M., Rothenberger D.A. (2010). Chapter 29. Colon, Rectum, and Anus. In F.C. Brunicardi, D.K. Andersen, T.R. Billiar, D.L. Dunn, J.G. Hunter, J.B. Matthews, R.E. Pollock (Eds), *Schwartz's Principles of Surgery*, 9e.

## 1150. All are true about Flail chest, except:

a) Fracture of atleast 3 ribs

b) If overlapping of fractured ribs with severe displacement is seen then patients are treated surgically with open reduction and fixation

c) Pa0260 treated with intubation and PEEP

d) Paradoxical movement may not be seen in conscious patients

Correct Answer - D

Ans is 'd' i.e. Paradoxical movement may not be seen in conscious patients

- Flail chest is simply when a portion of the bony chest wall loses its continuity from the remainder of the thorax due to multiple fractures. By definition, a flail chest occurs in the presence of two or more fractures in three or more consecutive ribs *(either on one side of the chest or either side of the sternum)* and causes instability of the chest wall: however, it can also occur after costochondral separation.
- Flail chest is characterized by *paradoxical motion* of the chest wall (inward with inspiration and outward with expiration). The chance of having an intrathoracic injury in this situation increases severalfold. The paradoxical motion increases the work of breathing, and the most important consequence of flail chest is respiratory failure.
- Until recently it was believed that ineffective air movement between both lungs caused by paradoxical motion of the chest wall was the main cause of the respiratory distress in patients with flail chest. It is now understood that underlying pulmonary contusion and pain during inspiration are the most important components in the pathophysiology of the respiratory failure.

**Management:**

Patients without evidence of respiratory distress can be managed with *only analgesia.* Pain control can be provided by an intercostal nerve block or more adequately by epidural anesthesia.

- If respiratory distress develops, endotracheal intubation and mechanical ventilation with peak end-expiratory pressure are usually indicated, provided that pain control is adequate.

- Sequential arterial blood gas determination may gauge the severity of an injury and is useful to predict which patients will require ventilatory support.The ratio of arterial oxygen tension to the fraction of inspired oxygen (Pa02:Fi02 ratio) yields an estimate of the extent of intrapulmonary shunt and may be used as a parameter to determine the need for mechanical ventilation.

- Schwartz 7/e p689 *writes-"1ntubation is delayed until clear evidence of a need of ventilator support develops: a respiratory rate of 40/min, a falling PaCO2 (evidence of excessive work of breathing) or a Pa02 below 60 Corr on inspired 02 fraction of over 0.5"*

- General Thoracic Surgery By Thomas W. Shields 7/e p894 *writes-"Suggested parameters for instituting ventilator support are respiratory rate >30 breaths per minute, Pa02 45mm Hg."*

Open reduction plus internal fixation of sternal or rib fractures is rarely needed. *[I could not get any text on indiacations of surgey in flail chest]*

## 1151. Paradoxical respiration seen in

a) Diaphragm rupture

b) Hemoperitoneum

c) Flail chest

d) Pneumothorax

Correct Answer - C
**Answer- C. Flail chest**

## 1152. True about flail chest are all except:
*March 2007*

a) Ultimately leads to respiratory failure

b) Paradoxical respiration

c) Fracture of 3-4 ribs

d) Mediastinal shift

Correct Answer - D
Ans. D: Mediastinal shift
A flail chest occurs when multiple adjacent ribs are broken in multiple places,i.e. three or more ribs fractured in two or more places, separating a segment, so a part of the chest wall moves independently.
Flail chest is invariably accompanied by pulmonary contusion, that can interfere with blood oxygenation. Often, it is the contusion, not the flail segment, that is the main cause of respiratory failure.
The characteristic paradoxical motion of the flail segment occurs due to pressure changes associated with respiration that the rib cage normally resists:
During normal inspiration, the diaphragm contracts and intercostal muscles push the rib cage out. Pressure in the thorax decreases below atmospheric pressure, and air rushes in through the trachea. However, a flail segment will not resist the decreased pressure and will appear to push in while the rest of the rib cage expands.
During normal expiration, the diaphragm and intercostal muscles relax, allowing the abdominal organs to push air upwards and out of the thorax. However, a flail segment will also be pushed out while the rest of the rib cage contracts. The constant motion of the ribs in the flail segment at the site of the fracture is incredibly painful, and,

untreated, the sharp broken edges of the ribs are likely to eventually puncture the pleural sac and lung, possibly causing a pneumothorax.

## 1153. Most serious injury is at

a) open pneumothorax

b) diaphragmatic injury

c) Flail chest

d) Single rib fracture

Correct Answer - A

**Answer- A. open pneumothorax**

- This is a large open defect in the chest (> 3 cm), leading to equilibration between intrathoracic and atmospheric pressure.
- Air accumulates in the hemithorax (rather than in the lung) with each inspiration, leading to profound hypoventilation on the affected side and hypoxia.

## 1154. Orichidopexy done at

a) 2 months

b) 6 months

c) 12 months

d) 24 months

Correct Answer - B

**Answer- B. 6 months**

- Orichidopexy should be done at 6 months, because spontaneous descend of the testis will not occur after 4 months of age.
- Best time of orichidopexy is around 6 months.

## 1155. In cryptorchism histological changes appear in testis

a) 4 months

b) 6 months

c) 8 months

d) 1 year

Correct Answer - B
**Answer- B. 6 months**

# 1156. Which polyp has maximum malignant potential ?

a) Sessile

b) Pedunculated

c) Superficial spreading

d) Any of the above

Correct Answer - A
Ans. is 'a' i.e., Sessile

- *Polyp —> Polyp is a grossly visible protrusion from the mucosal surface and it is classified pathologically as.*
  *a) Adenomatous polyp*
  *b) Juvenile polyp (hamartomatous polyps)*
  *c) Inflammatory polyp*
  *d) Hyper plastic polyp (hyperplastic mucosal proliferation)*
- Adenomatous polyps
  These are *premalignant* lesions. The risk of malignant degeneration is related to both the size and type of polyp. Majority of colorectal carcinomas evolve from adenomatous polyps; this sequence of events is the *adenoma–carcinoma sequence.*
- Hamartomatous Polyps (Juvenile Polyps)
  In contrast to adenomatous polyps, hamartomatous polyps (juvenile polyps) are *not usually premalignant.* These lesions are the characteristic *polyps of childhood* but may occur at any age.
- Inflammatory Polyps (Pseudopolyps)
  Inflammatory polyps occur most commonly in the context of inflammatory bowel disease, but may also occur after amebic colitis, ischemic colitis, and schistosomal colitis.
  These lesions are *not premalignant.*

- Hyperplastic Polyps
  Hyperplastic polyps are the most common colonic polyps, but they are usually quite small (Ninety percent of these polyps are less than 3 mm in size)
  These lesions are *not premalignant.*
- *Adenomatous polyps have special clinical significance because only adenomatous polyps are clearly premalignant, and only a minority of these adenomatous lesions ever develop into a cancer.*
  Clinically, the probability of an adenomatous polyp becoming a cancer depends on three factors
  1) Gross appearance of the lesion —> on gross appearance polyps are of two types
  a) Pedunculated (stalked)
  b) Sessile (flat based)
  Cancer develops more frequently in sessile polyps.
  2) Histologically —> Histologically polyps are of 3 types
  a) Tubular
  b) Villous (papillary)
  c) Tubulovillous
  Out of these histological types villous adenomas which are usually sessile become malignant more than 3 times as often as tubular adenomas.

## 1157. Most common cause of pseudoaneurysm

a) iv drug abuse

b) Trauma

c) Congenital

d) None

Correct Answer - B

**Answer- B. Trauma**

- When wall, is ruptured and there is collection of blood outside the vessel wall (extravascular hematoma) that is freely
- communicating with vessel wall → false aneurysm (Pseudoaneurysm). Most common cause of false aneurysm is Trauma.

## 1158. A woman with infertility receives an ovary transplant from her sister who is an identical Twin. What type of graft is it?

a) Autograft

b) Allograft

c) Isograft

d) Xenograft

Correct Answer - C

Women in the question stem has received transplant from her identical twin, hence it is an isograft. When grafting is done between synergestic individuals (i.e of identical genetic constitution) such as identical twins it is referred to as an isograft.

Ref:Bioethics and Biosafety By M. K. Sateesh, Page 641

## 1159. Polytrauma patient back examination

a) log roll

b) Barrel role

c) Chin lift

d) None

Correct Answer - A

**Answer- A. log roll**

- Once the patient has been evaluated anteriorln a log roll should be performed to inspect the back.
- One member of the team is responsible for maintaining in-line spinal stabilisation.

## 1160. Meckel's diverticulum, true are A/E :

a) Has three layers with artery

b) Heterotopic epithelium in 50-60% cases

c) Always gastric epithelium

d) May present with hemorrhage

Correct Answer - C
Ans. is 'c' i.e. Always gastric epithelium

## 1161. Abbreviated laparotomy done for:

a) Coagulopathy

b) Hypotension

c) Early wound healing

d) Early ambulation

Correct Answer - A
Ans is a i.e. Coagulopathy
In critically injured patients, triad of *hypothermia, acidosis,* and *coagulopathy* is a vicious cycle that if uninterrupted, is rapidly fatal. Abbreviated laparotomy is utilized to quickly achieve hemostasis. Patients are then transported to the surgical ICU for vigorous correction of metabolic derangements and coagulopathies.

## 1162. Penile carcinoma upto urethra stage -

a) T1

b) T3

c) T4

d) T2

Correct Answer - B
**Answer- B. T3**

- T3 → Invades urethra or prostate

**1163.**

## Which of the following is not a contraindication for resection of head of pancreas

a) Liver metastasis

b) Ascites

c) Retroperitoneal seedings

d) Involvement of major artery

Correct Answer - B

**Answer- B. Ascites**

**Signs of unresectability in CA pancreas**

- Encasement/invasion/occlusion of portal vein, sup. mesentric artery or vein.
- Extension beyond pancreatic capsule.
- Extension into retroperitoneum.
- Involvement of nerves/nodes around celiac axis or sup. mesentric artery.
- Extension beyond hepatoduodenal ligament

## 1164. Bochdalek hernia occurs in

a) Anterolateral part of diaphragm

b) Posterolateral part of diaphragm

c) Retrostemal area

d) Posterior to diaphragm

Correct Answer - B
B i.e. Posterolateral part of diaphragm

**1165.** **Most common diaphragmatic hernia is:**

a) Bochdalek hernia

b) Morgagni hernia

c) Paraesophagel hernia

d) None of the above

Correct Answer - A

Diaphragmatic hernias are of various types. The most common is a posterolateral (Bochdalek) hernia, which occurs as a result of a defect in the posterior diaphragm in the region of the tenth or eleventh ribs.

## 1166. Dimpling in carcinoma breast is due to

a) Edema

b) Contraction of cooper's ligaments

c) Subdermal lymphangitis

d) Scaring

Correct Answer - C

**Answer- C. Subdermal lymphangitis**

- Peaud's orange is produced due to obstruction of superficial lymph vessels by cancer cell.
- This causes edema of the skin giving rise to an appearance like that ofthe skin of an orange (Peau'd orange appearance).

## 1167. First step in management of raised intracranial pressure

a) Airway maintainance

b) Breathing

c) iv mannitol

d) Loading dose of epsolin

Correct Answer - A

**Answer- A. Airway maintainance**

- ABC is followed i.e. Airway Breathing then Circulation is evaluated in order.

## 1168. Most common cause of upper GI bleed

a) Gastric cancer

b) Oesophageal varices

c) Duodenal ulcers

d) Gastric ulcers

Correct Answer - C
**Answer- C. Duodenal ulcers**
**Causes ofupper GI bleeding (in descending order)**

- Peptic ulcer → Duodenal ulcer → gastric ulcer
- Oesophageal varices
- Gastritis erosions
- Mallory-Weiss tears
- Uncommon causes → Gastric carcinoma, esophagitis, pancreatits.

## 1169. String sign is suggestive of:

a) Toxic Megacolon

b) Hypertrophic Pyloric stenosis (HPS)

c) Ulcerative Colitis

d) IBS

Correct Answer - B

B i.e. Hypertrophic Pyloric Stenosis

Meconium ileus is small bowel obstruction secondary to sticky tenacious meconium d/ t deficiency of pancreatic secretions. It is the *earliest clinical manifestation of cystic fibrosis.* It usually presents with *abdominal distension, bilious vomiting and failure to pass meconium within 48 hours.* It has *Bubbly/Froathy/Soap BubbleQ/Apple sauce appearanceQ* d/t admixture of gas with meconium.

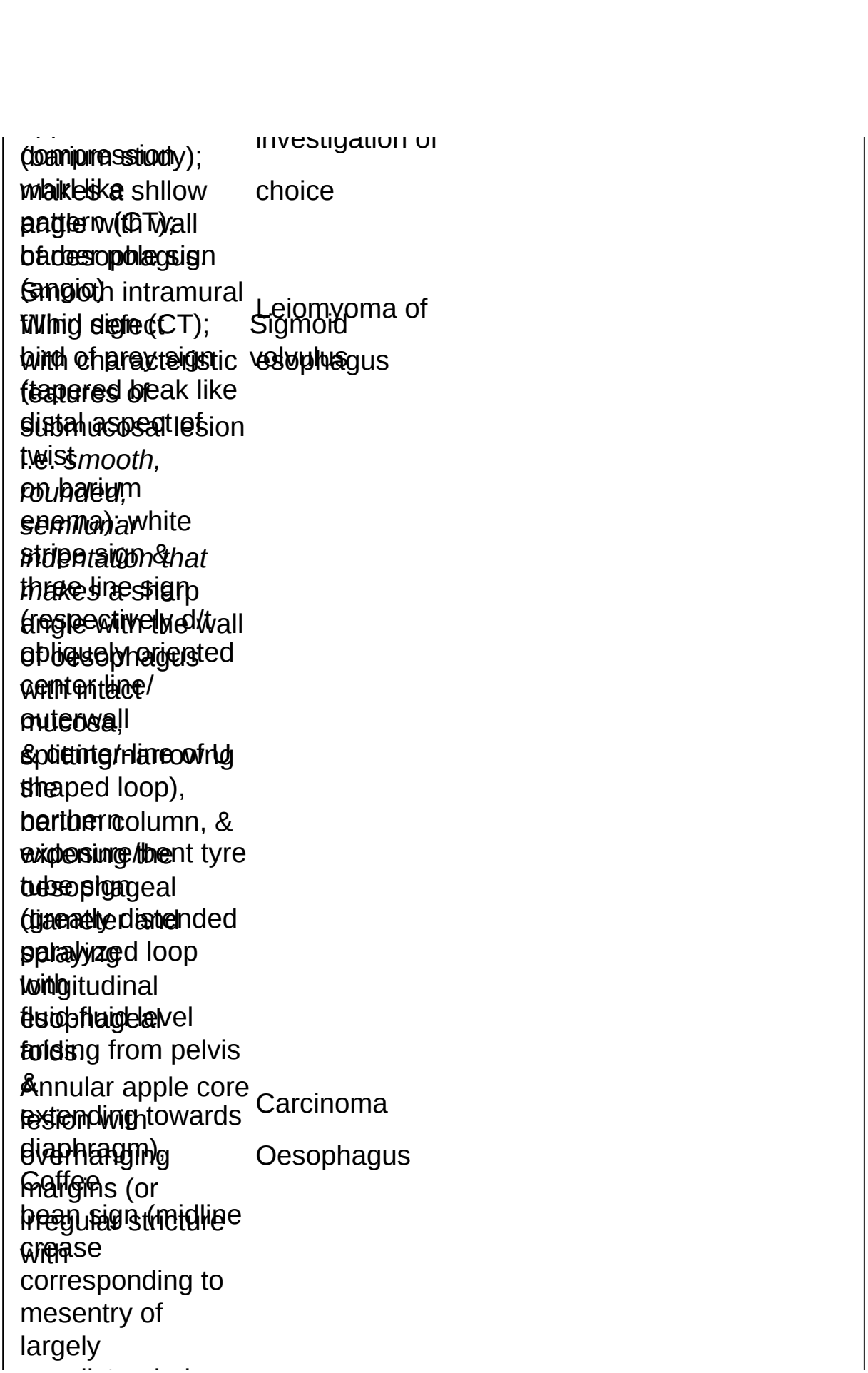
Barium meal (swallow) appearance of Oesophageal Disorders

| **Radiological features** | **Disorders** |
|---|---|
| Bird's beak appearance (very tapering oesophagus with smooth narrowing at its lower end) (barium meal) | Oesophageal achlasia |
| Double tract sign, Shoulder sign, String sign, *Seagull sign* (barium meal) | Hypertrophic pyloric stenosis |
| Corkscrew (uncoordinated) appearance d/t tertiary contractions (barium meal) | Diffuse oesophageal spasm |
| Rat tail appearance d/t (Marcondez gall | Radiation |

| | |
|---|---|
| *Bird's nest sign* | Gall stone with gas |
| *Fat sign* | Mirizzi syndrome |
| Multiple gas fluid levels (step ladder pattern) | Intestinal obstruction |
| Cigar bundle appearance | Round worm |
| Shaggy (contour) appearance | Candida |
| Within regular plaque like filling defects with intervening normal mucosa (early), cobble stone or snake skin appearance or coalescent plaques (Inflate disease) which correspond to white plaques, seen in endoscopy, foamy (tiny 1-3 mm bubble like appearance producing foamy appearance) | Oesophagitis (double contrast barium) |
| *Medusa Head colonies* on CT scan | |
| Pincer sign, *Claw appearance sign* | Intussception |
| *Coiled spring appearance*, Target sign, Meniscus sign (on barium enema) | Ileocecal valve ulcerative colitis |
| Shark mouth appearance | Chron's disease (Regional ileitis) |
| Lead pipe appearance | Cricopharyngeal/ oesophageal web |
| String sign, *Kantor's* indentation from adherent bowel loop | (when a/w Fe deficiency) |
| Bull's eye or Target localized circumferential narrowing (at CS/COJ with | |

| | | |
|---|---|---|
| antrum, wide pylorus with flared up tubular antrum opening into corpus of stomach) | minimal proximal dilatation and jet effect (on barium swallow) | deficiency anemia, glossits & pharyngeal atrophy it is k/a Plummer Vinson Syndrome) |
| Lucent, tortuous, worm like filling defectss which distort the mucosal pattern (on barium swallow); *thickened esophageal folds with fusiform* (on barium enema) | Ischemic colitis *(hallmarkQ)* also in Amoebic & Ulcerative colitis | Esophageal varices (dilated subepithelial veins d/t increased collaterals). Uphill varices (d/t *portal hypertension)* are & down hill varices |
| Thumb printing signQ *appearanceQ* Saw tooth *seperation* (on mucosal spot films); Apple core lesion, beaded or serpiginous longitudinal filling defects (best seen on *mucosal relief views of collapsed oesophagus in prone RAO position* with high density barium paste/suspension to increase mucosal adherance). * Extraluminal | Diverticula of colon (Diverticulosis) | varices (d/t *portal hypertension)* are & down hill varices |
| Napkin's sign (on barium enema) | Carcinoma confined to *distal colon half* | |
| Bilious vomiting in 1st month (hallmark); current jelly stools/ malena with *double bubble sign* (x-ray); clockwise whirlpool sign (USG); apple-peel/twisted ribbon/Corckscrew & spiral appearance | Midgut volvulus (torsion of gut around SMA) | involve *upper & middle part of oesophagus* Endoscopy is investigation of |

| | |
|---|---|
| (contrast study); makes a shllow angle with wall of oesophagus (angio) | investigation of choice |
| Smooth intramural filling defect (CT); with characteristic features of submucosal lesion i.e. *smooth, rounded, semilunar* *indentation that makes a sharp* angle with the wall of oesophagus with intact mucosa, & *tapering* on both sides | Leiomyoma of esophagus |
| Coffee bean sign (midline crease corresponding to mesentry of largely | |



gas distended loop)- on plain X-ray.

Distension of small bowel & colon (loops wider than L1 vertebral body ± air fluid level in right lower quadrant is (1st & most common sign), *loss of mosaic multifaceted bowel gaa pattern, large bowels may be impossible to differentiate from small bowel, fixed bowel or persistent loop sign, bowel wall thickening, thumb printingQ, pneumatosis intestinalisQ* (black lines of intramural gas a/b white lines of intestinal wall), bubbly appearance of bowel wall, gas in portal venous system

Necrotizing enterocolitis (ischemic bowel disease of premature infants)

| | | |
|---|---|---|
| (plain horizontal beam cross table x-ray); zebra pattern; Y pattern & ring pattern (on USG) | | |
| shouldering) on barium oesophagogram; other features may be *irregular narrowed segment of lumen, diffuse nodular filling defects,* irregular /smooth tapering strictue, bulky endophytic mass and fixed varicoid appearance (i.e. b/o submucosal spread of tumor, the appearance may mimic that of varices, however, unlike varices it is fixed & does not change in size & shape at fluoroscopy) | Adynamic ileus pattern, nodular haustral pattern (thumb printing - transverse banding = markedly thickened & distorted haustral folds most prominent in transvere colon) -on plain x-ray; accordion sign (oral contrast traps between distorted thickened closely spaced transvere edematous folds of low atenuation; is typical but seen only in severe cases), target sign and rarely pneumatosis coli ± portal vein gas - on CT; barium enema is contraindicated | Pseudomembra? nous colitis (Clostridium difficile diseas) |
| | Bowler's hat sign | Colonic polyp |

| | | | |
|---|---|---|---|
| | | Bowel's flat sign, lace like/reticular surface pattern (characteristic of villous adenoma >> tubular adenoma) | Colonic polyp |

## 1170. For pancreatic injury true is

a) Most are iatrogenic

b) Blunt trauma most common

c) Urine amylase is diagnostic

d) HRCT is investigation of choice

Correct Answer - D

**Answer- D. HRCT is investigation of choice**

- Pancreatic injuries are mostly due to penetrating injuries.
- Moderate injuries usually require operative exploration, debridement, and the placement of external drains.

## 1171. GCS minimum value

a) 3

b) 6

c) 0

d) 4

Correct Answer - A
**Answer- A. 3**

- Glasgow coma scale is used to determine the conscious level of the patient.
- Ranges from 3 to 15.

## 1172. Best imaging modality in patients with breast implants is:

a) MRI scan

b) CT scan

c) Mammography

d) Radionuclide scan

Correct Answer - A
Ans. MRI scan
It is the best imaging modality for the breasts of women with implants.
MRI can be usefirl to distinguish scar from recurrence in women who have had previous breast conservation therapy for cancer

## 1173. 75% Lymph from breast goes to

a) Axillary L.N.

b) Subclavicular L.N.

c) Internal mammary L.N.

d) Cephalic L.N.

Correct Answer - A
**Answer- A. Axillary L.N.**
**Lymphatic drainage of Breast is as follows : -**

- Axillary nodes (75%)
- Internal mammary or Paresternal nodes (20%)
- Posterior intercostal lymph nodes (5%)

## 1174. Slit shaped nipple seen in

a) Duct ectasia

b) Duct pappiloma

c) Paget's disease

d) CA breast

Correct Answer - A

**Answer- A. Duct ectasia**

- Duct ectasia is dilatation of lactiferous ducts associated with periductal inflammation.
- Chronic inflammation and scarring will lead to indrawing and slit-shaped inversion of the nipple.
- If secondary infection supervenes, a mammary duct fistula can also develop.

## 1175. A female undergone surgery for left breast cancer 3 yrs back now developed blue nodule on same side

a) Lymphangiosarcoma

b) Recurrence

c) Hemangioma

d) Cellulitis

Correct Answer - A

**Answer- A. Lymphangiosarcoma**

- Angiosarcoma is a vascular tumor which may arise de novo in the breast or as a complication of the radiation therapy.

## 1176. Female with 10 weeks of pregnancy having a breast lump lateral to areola 3x 1 cm, Usg breast Normal, what is the next level of management

a) FNAC

b) Lumpectomy

c) MRI

d) Mammogram

Correct Answer - A
**Answer- A. FNAC**

- First investigation is- FNAC

## 1177. M.C. site of Ca esophagus is ?

a) Middle '/$_3$rd

b) Upper '/3rd

c) Lower '/$_3$rd

d) Lower end of esophagus

Correct Answer - C
Ans. is 'c' i.e., Lower '/$_3$rd

- Love 24th/e p. 1009] Distribution of esophageal Ca (Harrison 17thie p. 571)
  Upper 3rd → 10%
  Middle 3rd → 35%
  Lower 3rd → 5%
- Esophageal carcinoma is of two common histological types ?
  **Squamous cell carcinoma**
- Most common type world wide.
- Most common type in India.
- Occurs in upper and middle '/3rd of esophagus.
  **Adenocarcinoma**
- Most common type in USA.
- Located in the lower J/3rd of esophagus.

## 1178. False statements about carcinoma esophagus are all of the following except:
***March 2007***

a) Most common in lower third

b) Histologically, adenocarcinoma only

c) Unrelated to tobacco chewing

d) It is more common in females

Correct Answer - A

Ans. A: Most common in lower third

**There are a number of risk factors for esophageal cancer:**

- Age-Most patients are over 60.
- Gender-It is more common in men.
- Heredity-It is more likely in people who have close relatives with cancer.
- Tobacco smoking and heavy alcohol use increase the risk. Gastroesophageal reflux disease (GERD) and its resultant Barrett's esophagus increase esophageal cancer risk due to the chronic irritation of the mucosal lining (adenocarcinoma is more common in this condition, while all other risk factors predispose more for squamous cell carcinoma).
- Human papillomavirus (HPV)
- Particular dietary substances, such as nitrosamine.
- Plummer-Vinson syndrome (anemia and esophageal webbing)
- Tylosis and Howel-Evans syndrome (hereditary thickening of the skin of the palms and soles).
- Radiation therapy for other conditions in the mediastinum.

- Celiac disease predisposes towards squamous cell carcinoma.
- Carcinoma may develop at the achalasia segment due to persistent retention esophagitis as a result of fermentation of food residues.

The location of the tumor is generally measured by the distance from the teeth.

The esophagus (25 cm or 10 inches long) is commonly divided into three parts for purposes of determining the location.

Adenocarcinomas tend to occur distally and squamous cell carcinomas proximally, but the converse may also be the case.

Worldwide squamous cell carcinoma is most common whereas adenocarcinomas predominates in the west.

Squamous cell carcinomas are similar to head and neck cancer in their appearance and association with tobacco and alcohol consumption.

Adenocarcinomas are often associated with a history of gastroesophageal reflux disease and Barrett's esophagus.

Endoscopy is the first line investigation for most patients.

## 1179. All the following polyps are premalignant except: *March 2011*

a) Juvenile polyposis syndrome

b) Familial polyposis syndrome

c) Hyperplastic polyps

d) Peutz Jegher syndrome

Correct Answer - C

Ans. C: Hyperplastic polyps

***It is now appreciated that hyperplastic polyps are without malignant potential***

Juvenile polyps that are single and have been completely excised carry no significant increased risk of malignancy. Multiple juvenile polyps can be a sign of the familial juvenile polyposis syndrome. This has a significant risk (approximately 10 per cent) of subsequent colon cancer and also a possible increased risk of cancers of the stomach and duodenum (first part of the small intestine).

**Juvenile polyposis (JP)**

- Autosomal dominant.
- Multiple hamartomatous polyps of the colorectum (98%), stomach (13%), small bowel (6%)
- Juvenile polyps are usually pedunculated, smooth, lobulated with a vulnerable surface.
- Diagnostic criteria:
  - 5 or more juvenile polyps in the colon or rectum; OR
  - One juvenile polyp and positive family history of JP; OR
  - Juvenile polyps outside the colon or rectum, i.e. stomach/small bowel

bowel.
Family history positive in 20-50%, suggesting high incidence of spontaneous mutations or low penetrance.
Children/ adolescents often presents with iron deficiency anemia, hypoproteinemia and retarded growth. Also rectal prolapse or other congenital abnormalities (15%) in CVS, Urogenital tract and CNS.
**Cancer risk:**
- Increased risk, lifetime risk of 20-60% for colorectal cancer.
- Median age at diagnosis is 35-40 years.
- Increased risk for gastric and duodenal cancers

- Genetic testing
  – Germline mutations of the SMAD4 and BMPR1A are detected in 11-25% and 18-30% of patients of JPC.
  – Gastric polyposis seems to be more frequent and severe in patients with SMAD4 mutations.
- Treatment
  – Colectomy and gastric surgery in severe polyposis.

**Familial adenomatous polyposis (FAP)**

- Autosomal dominant inherited disease, > 100 colorectal adenomas, caused by germline mutations of the tumor suppressor gene APC (detectable in 80-90% of patients with typical FAP) Prevalence 1:10000 with penetrance close to 100%.
- 25% of patients with FAP do not have positive family history. These are de novo germline mutations.
- Polyp development starts in distal colorectum at an average age of 15
- Majority of patients become symptomatic with bloody diarrhea by the age of 25
- Extracolonic manifestation:
  – Up to 90% of patients with FAP develop polyps in upper GIT
  – 30-40% gastric fundic gland polyposis and 5-10% gastric adenomas
  – Risk for gastric cancer not increased.
- Major causes of death in colectomized FAP patients are duodenal and ampullary cancer.
- Spigelman classification for polyposis in upper GIT to allow adequate follow up.
- Extra-intestinal manifestation of FAP include:

- Desmoid tumours (10-20%)
- Epidermoid cysts (30-50%)
- Fibromas
- Osteomas (often in the mandibula)

Congenital hypertrophy of the retinal pigment epithelium (70%)
- Dental abnormalities. Gardner's syndrome:

– Polyposis, epidermoid cysts, osteoma

Turcot's syndrome in FAP

– Polyposis, CNS tumours (medulloblastoma)

Increased risk observed for:

– Hepatoblastoma, follicular thyroid cancer, brain tumours (usually medulloblastoma).

- Treatment:

  – Procedure: Proctocolectomy with ileal-pouch-anal anastomosis (IPAA): Gold standard.

**Peutz Jeghers syndrome (PJS)**

- Autosomal dominant.
- Special type of hamartomatous GI polyp (PJ polyp) and mucocutaneous melanin pigmentations.
- PJ polyps occur throughout alimentary tract with predilection for the small bowel.
- Mostly jejunal. Esophagus is spared. Rarely nose, gallbladder and ureter.
- Polyps characterized by extensive smooth muscle aborization throughout polyp.
- Pigment lesions in 95% of patients but may disappear with age. Mostly lips, peri-oral and intra-oral mucosa.
- Diagnostic criteria:

  **2 or more PJ polyps**

  - One PJ polyp and mucocutaneous pigment lesion
  - One PJ polyp and positive family history of PJS.

  Endoscopic or surgical excision of large or symptomatic polyps is recommended.
- Family history is negative in up to 45% of index cases indicating de novo germline mutations.
- Recurrent colicky abdominal pain due to intussusception in adolescence or young adulthood. Also occult bleeding with iron-

deficiency anemia. Pigmentation not always present in childhood and may fade later in life.

- Intra-epithelial neoplasia predisposes to cancer - hamartoma-adenoma-carcinoma sequence
- Cancer risk:
  - 85% by age 70 years
  - 57% GI cancer.
  - Colorectal *cancer* most common with lifetime risk of 39%. Lifetime pancreatic cancer risk is 11%.
- Extraintestinal cancers include breast risk (31-50%), endometrium and ovary.
- Cancer uncommon before age 30 years.
- Almost all female patients with PJS develop potentially malignant ovarian tumour, the sex cord tumour with annular tubules (SCTAT). Malignant transformation in 20% of all cases. Sertoli cell tumours considered as male equivalent of SCTAT with gynaecomastia.
- Genetic testing
  – PJS is caused by germline mutation of the STKII tumour suppressor gene.

## 1180. Characteristic feature of pagets cells is-

a) Eosinophilic cytoplasm

b) Abundant clear cytoplasm

c) Glycogen mass

d) Multinucleated giant cell

Correct Answer - B
Ans. is 'b' i.e. Abundant clear cytoplasm

## 1181. True of early gastric carcinoma -

a) Invasion of mucosa and sub-mucosa with neighbouring lymphnode

b) Invasion of mucosa and submucosa irrespective to L.N. spread

c) Radical Gastrectomy perferred

d) b and c

Correct Answer - D
Answer 'b' i.e. Invasion of mucosa and submucosa irrespective to lymph node spread. ; 'c' i.e. Radical gastrectomy preferred

- As already explained before, *Early gastric cancer* is carcinoma limited to the mucosa and submucosa of the stomach *regardless of the lymphnode status*
- Radical subtotal gastrectomy is the *standard operation* for gastric cancers.
- Endoscopic Resection
- It has been demonstrated that some patients with early gastric cancer can be adequately treated by an *endoscopic mucosal resection.*
- Currently endoscopic mucosal resection is limited to :*early gastric cancers, confined to mucosa, < 2 cm in size, with no node involvement*

## 1182. Bismuth classification for cholangiocarcinoma, type IV is

a) Common hepatic duct

b) Bifurcation only

c) Bifurcation and B/L secondary intrahepatic ducts

d) Bifurcation and B/L right secondary intrahepatic ducts

Correct Answer - C
**Answer- C. Bifurcation and B/L secondary intrahepatic ducts**

## 1183. Mirrizi syndrome

a) Cyst present in CBD

b) Stone in cystic duct compressing CBD

c) Obstruction of pancreatic duct

d) Stone in Rt hepatic duct

Correct Answer - B

**Answer- B. Stone in cystic duct compressing CBD**

- It comprises obstructive jaundice due to stone impacted in the neck of gall bladder, which compresses the common hepatic duct and eventually ulcerates into common hepatic duct causing cholecysto-choledochal fistula

## 1184. Not true regarding hirschsprung disease is ?

a) Autosomal dominant

b) Absent ganglionic cells in myentric plexus

c) Absent ganglionic cells in submucus plexus

d) Rectal biopsy is diagnostic

Correct Answer - A

Ans is 'a' ie Autosomal dominant

- *Hirschprungs ds or Aganglionic megacolon or Congenital megacolon*
- is a congenital disorder d/t absence of ganglion cells in the neural plexus ie both myentric (Aurebach's) and submucosal (Meissner's) plexus of the intestinal wall.
- There *is* accompanying hypertrophy of the nerve trunks.
- MC site is *rectosigmoid colon.** (or *Rectum,* more specificaly)*
- The Clinical picture varies from acute intestinal obstruction in neonates to chronic constipation in later life.
- *One imp feature which distinguishes Hirschprungs disease from other types of constipation is that fecal soiling is not a feature of HD.*
- M: F ratio is 4: I
- Diagnosis:
- Barium enema: The *initial diagnostic step* in a newborn with radiographic evidence of a distal bowel obstruction is a barium enema. In a normal barium enema study, the rectum is wider than the sigmoid colon. In patients with Hirschsprung's disease, this relationship is reversed.
- Rectal biopsy *?*
  *- Diagnosis can be confirmed by full thickness rectal biopsy. Rectal biopsy is the gold standard for the diagnosis of Hirschsprung's*

*disease.*
The histopathologic features of Hirschsprung's disease are:
Absent ganglia,
hypertrophied nerve trunks, and
increased acetylcholinesterase staining

- Anorectal manometry ?
  - is a useful screening test in constipated young child or adult who is otherwise fit.
- Treatment of choice
  - ' *is pull-through procedure in which normally innervated colon is anastomosed to the distal rectum just above the internal sphincter, thus bypassing the contracted aganglionic segment and restoring normal defecation.*
- *Option a*
  Most of the cases are *sporadic,* Familial cases also occur but their inheritance pattern is not clear.

## 1185. Most common neoplasm of appendix is -

a) Lymphoma

b) Adenocarcinoma

c) Leiomyosarcoma

d) Argentaffinoma

Correct Answer - B

**Ans.** is 'b' i.e. Adenocarcinoma

*Recent editions of both Sabiston and Schwartz write that now Carcinoid tumor (i.e. Argentaffinoma) in not the most common tumor of the appendix. Mucinous adenocarcinoma is the most common tumor of the appendix.*

*Read below:*

*Sabiston writes- "Although it was previously believed that carcinoid tumors were the most common appendiceal neoplasms, analysis of the Surveillance, Epidemiology, and End Results (SEER) database indicates that mucinous tumors of the appendix are more common."*

*Schwartz writes- "Data from the SEER program identified mucinous adenocarcinoma as the most frequent histologic diagnosis (38% of total reported cases), followed by adenocarcinoma (26%), carcinoid (17%), goblet cell carcinoma (15%), and signet-ring cell carcinoma (4%)"*

**Remember these important points about Carcinoid tumor of appendix**

- Carcinoid tumours are neuroendocrine tumors arising in the *argentaffin tissue (Kulchitsky cells of crypts of Lieberkuhn)*
- They frequently contain sustentacular cells that express S-100
- These tumours can occur in any part of the appendix but most

common site is distal third i.e. tip of appendix.

- Unlike carcinoid tumours arising in other parts of the G.I.T., *it rarely gives rise to metastasis.*

## 1186. True about GIST all except

a) Most common in duodenum

b) Necrosis and ulceration present

c) PET is used to assess response to therapy

d) Well circumscribed

Correct Answer - A
Ans is a i.e. Most common in duodenum
Most common site for GIST is stomach: *Stomach 60-70%*
*Small intestine 20-30%*
*Esophagus, colon, rectum <10%*
It *is* a well circumscribed slow growing tumor that usually does not invade adjacent viscera.
Necrosis and ulceration can occur causing pain and bleeding.
FDG PET is the investigation of choice to see the response to imatinib therapy. *(Ref: Devita Oncology 8/e chapter 39)*

**1187.** **Treatment of choice of a 2cm thyroid nodule in a 50 year old man with FNAC revealing it to be a papillary carcinoma:**

a) Hemithyroidectomy

b) Subtotal thyroidectomy with modified neck dissection

c) Near total thyroidectomy with modified neck dissection

d) Hemithyroidectomy with modified neck dissection

Correct Answer - C

Surgery, either near-total or total thyroidectomy, is the initial treatment of choice for patients with papillary carcinoma.
Near-total thyroidectomy is performed for extensive unilateral tumors with local metastases.
Total thyroidectomy is performed for patients with extensive multifocal disease with metastases to the cervical lymph nodes, contiguous neck structures, or distant sites.

**Ref:** Current Medical Diagnosis and Treatment, 2012, Chapter 26; Hazzard's Geriatric Medicine and Gerontology, 6th Edition, Chapter 108

## 1188. Most common carcinoma of breast is -

a) Intra-ductal carcinoma

b) Colloid carcinoma

c) Lobular carcinoma

d) Sarcoma phylloides

Correct Answer - A
Ans. is 'a' i.e., Intraductal carcinoma
Distribution of invasive (infiltrating) ) carcinoma of breast:?
Invasive ductal carcinoma —> 79%
Mucinous (Colloid) ) Carcinoma --> 2%
Lobular carcinoma 10%
Papillary carcinoma --> 2%
Tubular /cribrifrorm - —> 6%
Metaplastic carcinoma —3 <1%

## 1189. Cystosarcoma phylloides is treated by ?

a) Simple mastectomy

b) Radical mastectomy

c) Modified radical mastectomy

d) Antibiotic with conservative treatment

Correct Answer - A

Ans. is 'a' i.e., Simple mastectomy

- Treatment of cystosarcoma phyllodes ?

a) T/T of small phyllodes tumour ---> *It should be locally excised with an obvious lcm of normal breast tissue* After excision, when the diagnosis of a phyllodes tumor with suspicious malignant elements is made, re-excision of the biopsy site to ensure complete excision of a tumour with a 1 cm margin of normal-appearing breast-tissue is indicated.

*b)* T/T of large phyllodes tumour --> *simple mastectomy*

- Remember, *cystosarcoma phyllodes does not metastasize by lymphatic route, so axillary dissection is not needed.*
- Cystosarcoma phyllodes metastasize *exclusively by blood borne route.*

<u>Other questions on cystosarcoma phyllodes</u>

*Pathologically it is similar to fibroadenoma i.e., proliferation of both duct and stroma is seen.*

- The tumor displays a range of behaviour from benign like fibroadenoma to frankly malignant

Mammographic evidence of calcifications and morphologic evidence of necrosis do not distinguish between benign, borderline, and malignant phyllodes tumors. Consequently, it is difficult to

differentiate benign phyllodes tumors from the malignant variant and from fibroadenomas.
*Peak incidence is in the fifth decade, exceedingly rare in adolescents.*
*The excised specimen is firm and rubbery and may separate into leaflike structures therefore the term (phyllodes means leaf like)*
They usually present as a large growth which is mobile and commonly there is a history of rapid growth.

## 1190. Yellow nodules over palm diagnosis

a) implantation dermoid

b) sebaceous cysts

c) Corn

d) Melanoma

Correct Answer - C

**Answer- C. Corn**

- A corn is a localized keratosis of the skin. Histologically a corn is composed of keratin masse with intact basal layer.
- It usually occurs at the sites of frictional pressure on the sole, foot and toes. This often occurs due to ill fitting or tight shoes.
- Corn is thicker than callosity and causes more cofloent to the patient.

## 1191. 6 weeks post burns, now patient is posted for surgery increased is intraop is due to

a) Succinyl choline

b) Anesthetic negligence

c) Post burn state

d) None

Correct Answer - A

**Answer- A. Succinyl choline**

- Succinylcholine can cause dangerous hyperkalemia in burn patients.

## 1192. Thimble bladder is seen in

a) Tuberculosis

b) Pyelonephritis

c) Radiation cystitis

d) Chemical cystitis

Correct Answer - A

**Answer- A. Tuberculosis**

- Bladder tuberculosis is almost always secondary to renal tuberculosis.
- Tiny white transluscent tubercles develop all over.
- These tubercles tend 'cobblestone'appearance on cystoscopy.
- There is considerable submucous fibrosis which causes diminished capacity of bladder. Scaned & fibrosed, small capacitybladder is called thimble bladder.

## 1193. Renal TB mode of infection

a) Direct from bowel

b) Ascending

c) Hematogenous

d) Lymphatic

Correct Answer - C

**Answer- C. Hematogenous**

- Genitourinary tuberculosis is always secondary to pulmonary infection, though in many cases, the primary focus has healed or is quiescent.
- Infection occurs via the hematogenous route

## 1194. MERCEDES BENZ sign seen in

a) Volvulus

b) Gall stone

c) Struvite calculus

d) Intussuception

Correct Answer - B
**Answer- B. Gall stone**

- Mercedes benz sign (Also known as fack stone sign)
- On xray → Gall stones

## 1195. True about Ogilive's syndrome are all except:

a) It is caused by mechanical obstruction of the colon

b) It involves entire / part of the large colon

c) It occurs after previous surgery

d) It occurs commonly after narcotic use

Correct Answer - A

**Ans is 'a' ie. It is caused by mechanical obstruction of the colon**

**Ogilvie syndrome,** or acute colonic pseudo-obstruction (ACPO), is a clinical disorder with the signs, symptoms, and radiographic appearance of an acute large bowel obstruction *with no evidence of actual physical cause of the obstruction.* The colon may become massively dilated; if not decompressed, the patient risks perforation, peritonitis, and death.

Pseudo-obstruction most commonly occurs in *hospitalized patients* and is associated with the use of *narcotics,* bed rest, and co-morbid disease.

Pseudo obstruction may present in acute or chronic forms. Acute form (the *Ogilive's syndrome)* usually involves only the colon whereas chronic or recurrent form affects other parts of GIT as well. Chronic form usually presents as bouts of sub acute and partial intestinal obstruction, and tends to periodically recur.

***Etiology***

- Exact pathogenesis of the syndrome is unknown and it has been assoc. with a heterogenous group of cond.
- Primary pseudo-obstruction is a *motility disorder*
  - *Familial visceral myopathy*

- *Sporadic visceral myopathy*

- Secondary pseudo obstruction
  - is *more common* associated with following conditions.

**Diagnosis**

- *Acute colonic pseudoobstruction should be suspected when a medically ill patient suddenly develops abd. distention. The abdomen is tympanic and usually non-tender, and bowel sounds are usually present.* Symptoms of true obstruction may appear late. Plain x-rays of the abdomen show marked gaseous distention of the colon. *Right and transverse segments tend* to be most dramatically affected with a cutoff at the hepatic or splenic flexure.
- The most useful investigation is a *water-soluble contrast enema* that can reliably differentiate between mechanical obstruction and pseudo-obstruction.

**Treatment**

- Initial treatment consists of nasogastric decompression, replacement of extra cellular fluid deficits, and correction of electrolyte abnormalities. All medications that inhibit bowel motility, such as opiates, anticholinergics, are discontinued. Most patients respond to this conservative treatment.
- In patients who fail to improve, *Neostigmine,* a parasympathomimetic agent is highly effective.
- *Colonoscopic decompression* can be tried if an expert is available as it carries the risk of perforation. Recurrence rate is also high.
- In comparison neostigmine has a low recurrence rate, but may produce profound bradycardia and should be avoided in patients with cardiopulmonary disease.

## 1196. Cholangiocarcinoma most commonly metastases to-

a) Liver

b) Bones

c) Lung

d) Pancrease

Correct Answer - A
**Answer- A. Liver**

- Most, patients present with abnormal liver function tests or frank jaundice
- Diagnosis by ultrasound, MDR-CT or MRCP scanning
- Most common site of metastasis is liver.

## 1197. Prehn sign is positive in

a) Acute epidydimoorchitis

b) Chronic orchitis

c) Testicular torsion

d) None

Correct Answer - A
**Answer- A. Acute epidydimoorchitis**
**On elevation of testis the-**

- Pain is not relieved in torsion (test is negative)
- Pain relieved in epidydimoorchitis (test is positive)

## 1198. Courvoiser's law exception

a) Double impaction

b) Portal lymphademopathy

c) Periampullary CA

d) None

Correct Answer - A
Answer- A. Double impaction
Courvoisier's law states that in the presence of an enlarged gall bladder which is nontender and accompanied with jaundice the cause is unlikely to be gallstones. This is because gall stones areformed over alonger period oftime, and this result in a shrunken, fibrotic gall bladder which does not distend easily.
**Exception to Courvoiser's law:**
1. Double impaction
2. Pancreatic calculus obstruction ampulla
3. Oiental cholangio hepatic
4. Mitizzisyndrome

## 1199. Piles occurs at-

a) Superior rectal vein

b) Inferior rectal vein

c) Superior Hemorrhoidal artery

d) None

Correct Answer - A

**Answer- A. Superior rectal vein**

- Internal hemorrhoids in association with superior rectal vessels are located at 3, 7 and 11 O'clock positions corresponding to left, right posterior and right anterior branches of these vessels.

## 1200. Which appendix pain is referred to suprapubic region with pain on internal rotation of hip

a) Pre ileal

b) Pelvic

c) Post ileal

d) Paracolic

Correct Answer - B
Answer- B. Pelvic
**Pelvic appendicitis can present with**

- Absence of abdominal wall rigidity and tenderness
- Tenderness in retrovescial pouch
- Hypogastric or suprapubic pain
- Obturator sign: pain on internal rotation of the hip

# 1201. All are false except one in case of hypertrophic pyloric stenosis -

a) Symptomatic within one week

b) Lump is always clinically palpable

c) T/t of choice is Finney's pyloroplasty

d) Ultrasonography is diagnostic test

Correct Answer - D

Ans is 'd' ie Ultrasonography is diagnostic test

*Hypertrophic Pyloric Stenosis (HPS)*

- The musculature of the pylorus and adjacent antrum is grossly hypertrophied, the hypertrophy being maximum in the pylorus itself.
- It occurs in approximately *3 in* 1000 live birth and is the *most common surgical cause of vomitting in infancy.*
- M > F (4 : 1)*
- Characterstically the first born male child is affected.
- The conditon is *most commonly seen at 4 wks after birth* ranging from the 3rd wk to on rare occasion, the 7th. However, 20% of infants are symptomatic from birth, and most are symptomatic within the first 2 months after birth.
- Non-bilious vomiting, becoming increasingly projectile, occurs over several days to weeks. Eventually the infant will develop a nearly complete obstruction by the second to fourth week of life and will not be able to hold down even clear liquids. This invariably proceeds to severe dehydration if not t/t.
- These infants develop a metabolic alkalosis with severe depletion of potassium and chloride ions.
- *" The diagnosis of pyloric stenosis usually can be made on physical examination by palpation of the typical 'olive' in the right upper*

*quadrant and the presence of visible gastric waves on the abdomen.*

- *When the olive cannot be palpated, ultrasound in experienced hands will diagnose the condition accurately in 95 percent of pts." - Schwartz.*
- Treatment
  - Pyloric stenosis is *never a surgical emergency* although dehydration and electrolyte abnormalities may present a medical emergency
  Fluid resuscitation and correction of electrolyte abnormalities and metabolic alkalosis is essential before surgery.
  - Surgery : *Fredet-Ramstedt pyloromyotomy.* (In it the pyloric mass is split without cutting the mucosa)
- Also know
- *Administration of erythromycin in early infancy has been linked to the subsequent development of HPS.*
- *Jaundice may be seen in HPS, although cause is not clear.*

## 1202. In Radical mastectomy, which is spared-

a) Pectorialis major

b) Pectoralis minor

c) Axillary lymph nodes

d) Supraclavicular lymph nodes

Correct Answer - D
Ans. is 'd' i.e. Supraclavicular lymph nodes

## 1203. All of the following statements about Non Small Cell Carcinoma of Lung (NSCCL) are true, Except:

a) Contralateral mediastinal nodes are a contraindication to surgical resection

b) Single Agent Chemotherapy is preferred for patient > 70 years with advanced disease

c) Squammous Cell Carcinoma is the most common NSCCL amongst Asian population

d) Gefitinib is most effective for female smokers with adenocarcinoma on histology

Correct Answer - D
Answer is D (Gefitinib is most effective for female smokers with adenocarcinoma on histology):
*Gefitinib is an oral 'small molecule Tyrosine kinase Inhibitor' (that inhibit signalling via EGFR) approved for the treatment of patients with NSCCL. Data to support the use of Gefitinib in NSCCL are however diminishing and Gefitinib is most effective in females who have never smoked with adenocarcinoma on histology.*
**Single agent cgemotherapy is prefered for elderly patients (> 70 years)**
*American Society of Clinical Oncology (ASCO)* recommends the use of single agent chemotherapy for elderly patients (> 70 years) with a poor performance status (2003 Guidelines)
*It has however now been stressed (2009 Guidelines) that age alone should not be used to select chemotherapy for patients with advanced NSCLC. Physiological Age (not chronological age) and*

*performance status should be considered when selecting the chemotherapy regimen.*

**Chemotherapy for Advanced (Stage IV) NSCLC**

**Young patient**

**Good performance status (PS < 2)**

- *Double agent chemotherapy is preferred for first line therapy*
- Platinum based combinations are preferred over non platinum based combinations

**Elderly patient**

**Poor performance status (PS 2)**

- *Single Agent Chemotherapy is preferred to reduce potential toxicity from chemotherapeutic agents.*
- Vinorelbine or docetexal are often used for single agent chemotherapy in the elderly with a poor PS.

**Gefitinib is most effective for females with adenocarcinoma histology who have never smoked**

Gefitinib is an acceptable second line agent for treatment of patients with advanced NSCLC with adequate performance status when the disease has progressed during or after first line platinum based chemotherapy.

**Clinical Features that correlate with responsiveness to Gefitinib (Harrison)**

- Female Sex
- Never smoking status
- Adenocarcinoma Histology
- Asian Ethinicity

**Contralateral Mediastinal nodes are a contraindication to Surgical Resection**

*ALB. In otherwise fit individual, direct extension of tumour into the chest wall, diaphragm, mediastinal pleura or pericardium or to within 2 cm of the main carina does not exclude surgery. Though surgically resectable, patients with N2 (ipsilateral mediastinal) nodes may require neoadjuvant or adjuvant therapy.*

**Contraindication to surgical resection in NSCLC (Davidson)**

- Distant metastasis (M1)
- Invasion of central mediastinal structures including heart, great vessels. trachea and oesophagus (T4)
- Malignant pleural effusion (T4)
- Contralateral mediastinal nodes (N3)
- FEV, < 0.8L
- Severe or unstable cardiac or other medical condition
  **Squammous Cell Carcinoma is the most common histological subtype of Lung Cancer in Asia (Including India)**

- Most common lung cancer worldwide is adenocarcinoma
- *Most common lung cancer in India (Asia) is squammous cell carcinoma*
- *Most common lung cancer in women is adenocarcinoma*
- *Most common lung cancer in smokers is squammous cell carcinoma*
- *Most common lung cancer in nonsmokers is adenocarcinoma*
- *Most common lung cancer in young patients is adenocarcinoma*
- *Most common lung cancer to metastasize is small cell carcinoma*

## 1204. Coiled spring appearance on barium enema is seen in:

a) Carcinoma colon

b) Sigmoid volvulus

c) Intussusception

d) Deal atresia

Correct Answer - C
Ans. Intussusception

## 1205. Risk factor for bladder carcinoma is

a) Clonorcis sinensis

b) Schistosoma hematobium

c) Plasmodium

d) None

Correct Answer - B

**Answer- B. Schistosoma hematobium**

- Cigarette smoking is the main etiological factor.
- Occupational exposures to chemicals
- Schistosoma haemotobium
- Drugs such as phenacetin & chlornaphazine
- Cyclophosphamidetherapy
- Pelvic radiation

## 1206. M. C. anterior mediastinum tumor is -

a) Thymoma

b) Neurogenic Fibroma

c) Lymphoma

d) Meningocele

Correct Answer - A
Ans is 'a' ie Thymoma

## 1207. Surgery of choice for pleomorphic adenoma is:
***September 2007, 2010***

a) Total parotidectomy

b) Superficial parotidectomy

c) Total parotidectomy with lymph node dissection

d) Radical parotidectomy

Correct Answer - B
Ans. B: Superficial parotidectomy
The pleomorphic adenoma is by far the most common benign salivary gland tumor, accounting for as many as 80% of all such tumors.
Although almost one half of tumors found in the minor salivary glands are malignant, the pleomorphic adenoma is still the most common tumor in these glands.
The current standard is that all pleomorphic adenomas should be surgically removed because the risk of malignancy is 25% if the tumors are left untreated.
All the tumours of the superficial lobe of the parotid gland should be managed by superficial parotidectomy (Superficiall parotidectomy is the commonest procedure done for parotid gland pathology)
Radical parotidectomy is done when there is clear histological evidence of a high grade malignant tumour.

## 1208. Surgical treatment of parotid tumor involving the deep lobe is

a) Total parotidectomy with facial nerve preservation

b) Total parotidectomy with facial nerve sacrifise

c) Sub total parotidectomy

d) Subtotal parotidectomy with facial nerve sacrifice

Correct Answer - A

**Answer- A. Total parotidectomy with facial nerve preservation**

- The primary treatment of salivary malignancies is surgical excision.
- For parotid tumors that arise in the lateral lobe, superficial parotidectomy with preservation of CN VII is indicated

## 1209. Open biopsy is done for salivary gland tumors unless they are arising from

a) Palate

b) Buccal

c) Sublingual

d) Parotid

Correct Answer - D

**Answer- D. Parotid**

- Open biopsy of the parotid or submandibular gland is not advised as it risks minor seeding and may complicate the indicated surgery.

## 1210. True about follicular carcinoma of thyroid

a) More common in endemic area

b) Non-encapsulated

c) Mean age 40 years

d) Histopathology differentiates adenoam from carcinoma easily

Correct Answer - A

**Answer- A. More common in endemic area**

- An increased incidence of cancer (usually follicular) has been reported from endemic areas. Dominant or rapidly growing nodules in longstanding goiters should always be subjected to aspiration cytology.

## 1211. Most probable malignancy that develops in a case of long-standing goiter is -

a) Follicular Ca

b) Anaplastic Ca

c) Papillary Ca

d) Medullary Ca

Correct Answer - A

Ans is 'a' i.e., Follicular carcinoma

*"An increased incidence of cancer (usually follicular) has been reported from endemic areas. Dominant or rapidly growing nodules in longstanding goiters should always be subjected to aspiration cytology." - Bailey & Love*

- About Follicular Carcinoma (FTC)
- FTC are second most common thyroid malignancies, more common in iodine-deficient areas.
- More common in women (Female : Male ratio of 3:1)
- Mean age of presentation is later than papillary Ca (— 50 yrs)
- Multiple foci are rarely seen and lymph node involvement is much less common than in papillary carcinoma.
- Blood borne metastasis is common with spread to bone, lungs, liver and elsewhere.
- In less than 1% of cases, follicular cancers may be *hyperfunctioning (warm nodule on scintiscan),* leading to symptom of thyrotoxicosis.
- Histopathology

  *Follicular carcinomas are usually solitary lesions, the majority of which are encapsulated.*

*Microscopically most follicular carcinomas are composed of fairly uniform cells forming small follicles containing colloid (quite like normal thyroid). In other cases follicular differentiation may be less apparent, and there may be nests or sheets of cells without colloid. the nuclei lack the typical features of papillary Ca.*

## 1212. The most common histologic type of thyroid cancer is

a) Medullary type

b) Follicular type

c) Papillary type

d) Anaplastic type

Correct Answer - A
Ans. is 'c' i.e., Papillary

- *"Papillary carcinoma accounts for 80% of all thyroid malignancies in iodine-sufficient areas and is the predominant thyroid cancer in children and individuals exposed to external radiation." - Schwartz*

Incidence of primary malignant tumors of thyroid gland *(Harrison 17/e)*

| *Type of thyroid carcinoma* | *Approximate Prevalence* |
|---|---|
| Papillary Carcinoma | 80-90% |
| Follicular Carcinoma | 5-10% |
| Medullary Carcinoma | 10% |
| Anaplastic Carcinoma | Rare |
| Lymphomas | 1-2% |

Also remember
- *Thyroid carcinoma is the most common malignancy of the endocrine system*

## 1213. Lymphatic spread is most commonly seen in which type of thyroid malignancy:

a) Papillary carcinoma

b) Follicular carcinoma

c) Medullary carcinoma

d) Anaplastic carcinoma

Correct Answer - A

**Ans: A. Papillary carcinoma**

**Papillary Carcinoma of Thyroid:**

- MC thyroid cancer in children and individuals exposed to external radiation

**Multifocality:**

- Common (up to 85% of cases) on microscopic examination.

**Metastates:**

- Lymph node metastases – Common especially in children and young adults.
- Distant metastases - Uncommon initially.
- Ultimately develop in 20% patients.
- Associated with an increased risk of cervical nodal metastases, rarely invade adjacent structures such as the trachea, esophagus & RLNs.

**"Lateral aberrant thyroid":**

- Denotes invaded cervical lymph node by metastatic cancer.

## 1214. Colonic diverticulosis is best diagnosed by

a) Colonoscopy

b) Nuclear scan

c) Barium enema

d) CT scan

Correct Answer - C
Ans. is 'c' i.e. Barium enema
*"Diverticula are best seen on barium enema. Colonoscopy is a less sensitive means of detecting diverticula."*
*- CMDT 2007*

- Diverticulosis refers to presence of multiple diverticula
- Diverticulitis refers to inflammation and infection associated with a diverticulum.
  *Best investigation for*
  Diverticulosis - Barium enema
  Diverticulitis - CT scan
- On barium enema diverticulosis shows characteristic *'saw tooth'* appearance

## 1215. 17-OH progesterone level in congenital adrenal hyperplasia in 1 year old child (in ng/dl)-

a) >600

b) 150-300

c) 300-600

d) <150

Correct Answer - A

Ans. is 'a' i.e., > 600

- Normal and abnormal values of 17-0H progesterone differ for babies born with low birth weight.

**In general, normal results are as follows:**

- Newborn cord blood - 1,000 - 3,000 ng/dL
- Babies more than 24 hours old - less than 100 ng/dL
- Adults - less than 200 ng/dL
- Note: ng/dL = nanograms per deciliter.

**High levels of 17-0H progesterone may be due to:**

- Tumors of the adrenal gland
- Congenital adrenal hyperplasia (CAH)
- In infants with CAH, 17-0HP levels range from 2,000 - 40,000 ng/dL

**1216. Which of the following is the major site of erythropoietin production during the fetal stage?**

a) Liver

b) Yolk

c) Bone

d) Spleen

Correct Answer - A
Ans. is 'a' i.e., Liver

- Erythropoitin is produced in fetal liver in first and second trimester.
- After birth major site of production is kidney.

## 1217. TRALI occurs within ?

a) Within 6 hour

b) 6-8 hour

c) 8-10 hour

d) > 10 hour

Correct Answer - A
Ans. is 'a' i.e., Within 6 hour

- Transfusion-Related Acute Lung Injury (TRALI) is a syndrome characterized by acute respiratory distress following transfusion.
- Symptoms of TRALI typicall$^{y}$ develop during, or within 6 hours of a transfusion.
- Patients present with the rapid onset of dyspnea and tachypnea.
- There may be associated fever, cyanosis, and hypotension. Clinical exam reveals respiratory distress and pulmonary crackles may be present with no signs of congestive heart failure or volume overload. CXR shows evidence of bilateral pulmonary edema unassociated with heart failure (non-cardiogenic pulmonary edema), with bilateral patchy infiltrates, which may rapidly progress to complete "white out" indistinguishable from Acute Respiratory Distress Syndrome (ARDS).

## 1218. Infant with double aortic arch presents with ?

a) CATCH 22

b) Digeorge syndrome

c) Velo-cardio-facial syndrome

d) All of above

Correct Answer - A
Ans. is 'a' i.e., CATCH 22
**CATCH 22 stands for -**

- Cardiac defect - double arch aorta. VSD, pulmonary atresia.
- Abnormal facies
- Thymic hypoplasia
- Cleft palate
- Hypocalcemia

## 1219. Child acquires antibody against ABO antigen at which age

a) At birth

b) 6 Months

c) 2 Years

d) 5 Years

Correct Answer - B
Ans. is 'b' i.e., 6 Months

## 1220. APGAR score - include A/E

a) Heart rate

b) Respiratory rate

c) Muscle tone

d) Color

Correct Answer - B
Ans. is 'b' i.e., Respiratory rate

## 1221. Anterior fontanelle closes at ?

a) 2-3 months

b) 4-7 months

c) 9-12 months

d) 18-24 months

Correct Answer - D
Ans. is `d' i.e., 18-24 months

## 1222. Bilateral consonants are ?

a) Pb9

b) PbMW

c) MW

d) TLMW

Correct Answer - B
Ans. is 'b' i.e., PbMW

- Pronounced or articulated with both lips, as the consonants b, p, m, and w.
- Baby starts producing bilabial words by 4th month of age.

## 1223. Neck control comes by what age ?

a) 2 months

b) 3 months

c) 4 months

d) 5 months

Correct Answer - B
Ans. is 'b' i.e., 3 months

**Age Milestone**

| | |
|---|---|
| 3 month | Neck holding |
| 5 month | Rolls over |
| 6 month | Sit with support |
| 8 month | Sit without support |
| 9 month | Stand with support |
| 12 month | Stand without support, Walk with support |
| 15 month | Walk alone, creep upstair |

## 1224. Child starts making tower of 9 cubes by ?

a) 18 months

b) 24 months

c) 30 months

d) 36 months

Correct Answer - C
Ans. is 'c' i.e., 30 months

| | |
|---|---|
| Bang 2 cube | 8 month |
| Tower of 2 cubes | 15 month |
| 4 cubes | 18 month |
| 6 cubes | 22 month |
| 7 cube | 24 month |
| 9 cube | 30 month |
| 10 cube | 36 month |

## 1225. Child rolls over by ?

a) 3 months

b) 5 months

c) 7 months

d) 8 months

Correct Answer - B
Ans. is 'b' i.e., 5 month

| Age | Milestone |
|---|---|
| 3 Month | Neck holding |
| 5 Month | Rolls over |
| 6 Month | Sit with support |
| 8 Month | Sit without support |
| 9 Month | Stand with support |
| 12 Month | Stand without support Walk with support |
| 15 Month | Walk alone, creep upstair |

**1226. 15 months old child feeding on cow milk with water wih severe wasting and bipedal edema with poor appetite ?**

a) Kwashiorkar

b) Marasmus

c) Both

d) None

Correct Answer - A
Ans. is 'a' i.e., Kwashiorkar

**1227. 4 year old child with severe wasting and voracious apetite without pedal edema ?**

a) Kwashiorkar

b) Marasmus

c) Both

d) None

Correct Answer - B
Ans. is `b' i.e., Marasmus

**1228. Child 1 year age came for vaccination, Polio virus, BCG at birth, what vaccine to be given below ?**

a) BCG, OPV, Hep-B

b) Measles, DPT, OPV, Hib, Hep B.

c) DPT, OPV, Hib, Hep B

d) DPT, OPV, Hep B

Correct Answer - B
Ans. is 'b' i.e., Measles, DPT, OPV, Hip, Hep B.

## 1229. Breast feeding contraindication

a) Hep A

b) Hep B

c) CMV

d) Active untreated T.B

Correct Answer - D
Ans. is 'd' i.e., Active untreated tuberculosis
**Contraindication of Breast feeding**
1. Galactosemia
2. Active untreated tuberculosis - only in initial period
3. HIV positive mother - especially in developed country.
4. Some medication

**Not contraindication of breast feeding**
1. Hbs Ag positive mother
2. Hepatitis C infection
3. CMV
4. Febrile
5. Tobacco smoking
6. Alcohol

## 1230. Sign of puberty in boys ?

a) Enlargement of penis

b) Enlargement of testes

c) Appearance of pubic hair

d) Appearance of axillary hair

Correct Answer - B

Ans. is 'b' i.e., Enlargement of testes

- In girls, the first visible sign of puberty is the appearance of breast buds (Thelarche), between 8-12 years of age.
- In boys the first visible sign of puberty is testicular enlargement, beginning as early as $9^{1}/2$ yr.

## 1231. Hypergonadotropic hypogonadism ?

a) Decrease FSH and LH

b) Decrease FSH and increase LH

c) Increase FSH increase LH

d) Increase FSH decrease LH

Correct Answer - C

Ans. is '-c' i.e., Increase FSH increase LH

**Hypergonadotropic hypogonadism**

- Also K/a primary or peripheral hypogonadism.
- Characterised by hypogonadism due to an impaired response of the gonads to the gonadotropin, FSH and LH.
- In turn a lack of sex steroid production and elevated gonadotropin level(FSH and LH).

**Causes : Chromosomal abnormalitis**

- Turner's syndrome
- Klinefelter syndrome
- Swyer's syndrome

**Enzyme defect**

- 17 , hydroxylase
- 17, 20 lyase deficiency

## 1232. In congenital adrenal hyperplasia, deficient enzyme is - most womon

a) 11(3 hydroxylase deficiency

b) 21 a hydroxylase deficiency

c) 3a hydroxylase deficiency

d) 17a hydroxylase deficiency

Correct Answer - B
Ans. is 'b' i.e., 21-a Hydroxylase
**Congenital adrenal hyperplasia (CAH)**

- Group of AR disorder
- MC adrenal disorder in childhood
- Most common 21-hydroxylase deficiency
- *In 21a-hyroxylese deficiency*
- There is deficiency of mineralocorticoids & glucocorticoid.
- This leads to hypoglycemia, hyponatremia

## 1233. Causes of female pseudohermaphrodism ?

a) 17-alpha hydroxylase deficiency

b) 21-alpha hydroxylase deficiency

c) Mixed gonadal dysgenesis

d) All of the above

Correct Answer - B
Ans. is 'b' i.e., 21-alpha hydroxylase deficiency
Ambiguous genitalia (Hermaphroditism)
Ambiguous genitalia are defined as discrepancy between the external genitals and internal gonads. o They can be categorized : ?
1. Female pseudohermaphroditism
2. Male pseudohermaphroditism
3. True hermaphroditism

Female pseudohermaphroditism.

Gentotype is XX
Gonads are ovaries
External genitalia are virilized (male differentiation).
As there is no mullarian inhibiting factor, mullarian duct develops into uterus tubes and ovary. But due to presence of androgen external genitalia are virilized.

*Causes are:*

i) Maternal virilizing tumor -9 Arrhenoblastoma
ii) 21 hydroxylase deficiency } Congenital adrenal hyperplasia
iii) 11 beta hydroxylase deficiency
iv) Maternal medications with androgen.

## 1234. Acromegaly is due to excess of:

a) Somatomedin

b) Growth hormone

c) Somatostatin

d) Insulin

Correct Answer - B
B i.e. Growth hormone
*Tumors of somatortopes* of the anterior pituitary secrete large amount of *growth hormone,* leading *in children to gigantism* and in *adults to acromegaly.*
Hypersecretion of GH is accompamied by *hypersecretion of prolactin* in 20 - 40% of patient with acromegaly.
Somatomedian: are polypeptide growth factors secreted by liver & other tissues. The effect of growth hormone on growth, cartilage and protein metabolism depend on interaction between GH & somatomedian.

## 1235. Normal intracranial pressure in a child is ?

a) 30-70 mm of H20

b) 50-80 mm of H20

c) 100-150 mm of H20

d) 50-150 mm of H20

Correct Answer - B
Ans. is 'b' i.e., 50-80 mm of $H_20$

**CSF finding**

| | | |
|---|---|---|
| Pressure | - | 50-80 mm of H20 |
| Leucocyte | - | < 5, . 75% lymphocyte |
| Protein | - | 20-45 mg/dl |
| Glucose | - | > 50 (2/3 of serum glucose |

## 1236. Following feature differentiate hydranencephaly from hydrocephalus ?

a) Hydranencephaly is static while hydrocephalus continue to increase in size

b) Hydranencephaly does not cause increase in head size

c) Cerebral cortex are deficiency/hypoplastic in hydranencephaly

d) All of the above

Correct Answer - C

Ans. is 'c' i.e., Cerebral cortex are deficiency/hypoplastic in hydranencephaly

**<u>Hydranencephaly is a rare encephalopathy that occurs in-utero.</u>**

- It is characterised by destruction of the cerebral hemispheres with transformation of the same into a membranous sac containing cerebrospinal fluid and the remnants of cortex and white matter . The midbrain and brainstem are relatively intact.
- The cause of hydranencephaly is unknown, but bilateral occlusion of the internal carotid arteries during early fetal development would explain most of the pathologic abnormalities.
- Affected infants may have a normal or enlarged head circumference at birth that grows at an excessive rate postnatally.
- Transillumination shows an absence of the cerebral hemispheres.
- The child is irritable, feeds poorly, develops seizures and spastic quadriparesis, and has little or no cognitive development.
- A ventriculoperitoneal shunt prevents massive enlargement of the cranium..
- Porencephaly is considered a less severe degree of the same pathology

**1237. 5 year old child with pseudomembrane in throat, fever, sore throat, organism is ?**

a) Comma shaped gram negative bacilli

b) Club shaped gram positive bacilli

c) Spore forming gram positive bacilli

d) Filamentous gram positive bacilli

Correct Answer - B
Ans. is 'b' i.e., Club shaped gram positive bacilli
**Corney bacterium diphtheria**

- Non motile, non-capsulated, club shaped gram positive bacillus.
- Infect nasopharynx & release exotoxin which cause local inflamation of epithelial surface, formation of membrane (pseudomembrane) and toxemia.

## 1238. Which of in following is the least common cause of ARDS

a) Aspiration

b) Severe pneumonia with sepsis

c) shock

d) All of above

Correct Answer - D

Ans. is 'd' i.e., All of above

- Pulmonary edema not originating from heart

**Causes**

1. Severe pneumonia followed by sepsis (MC.)
2. Shock
3. Tissue injury
4. Aspiration
5. Toxin
6. Microthrombi
7. Intravascular coagulation, uremia, raise ICT

- Increase permeability of alveolar capillarymembrane.
- Feature Initially symptoms are less & lung clear. Lateron respiratory distress followed by refractory hypoxia followed by hypercapnia.
- Mortality is high.

## 1239. Pediatirc airway differ from adult ?

a) Large tongue

b) Short epiglotitis

c) Narrowest part is glottis

d) Larynx in lower posittion

Correct Answer - A
Ans. is 'a' i.e., Large tongue
**Airway : Pediatric Vs Adult**

- Obligate nasal breather
- Large tongue
- Larynx & trachea are funnel shaped
- Larynx located higher ($C_4$) Vs C6 in adult.
- Narrowest part is cricoid (glottis in adults)

## 1240. Level of trachea bifurcation in pediatic patient is ?

a) $T_2$

b) T3

c) $T_q$

d) T5

Correct Answer - B
Ans. is 'b' i.e., $T_3$

- Bifurcation of trachea in children is at $T_3$ level while in adult at $T_4$ - $T_s$ level. In adult if may reach upto $T_6$ level during deep inspiration.
- Trachea extend from lower border of cricoid cartilage (level of $C_6$) to upper border of $T_5$ vertebra (adult).
- Tracheal diameter in mm corresponds to age in year (pediatric) eg. 4mm in 4 year old child.
- Narrower airway exert greater resistance in children so develop distress in respiratory tract infection.

## 1241. 2 week old neonate with history of stridor in prone position - what is treatment

a) Oral calcium

b) Nebulisation

c) Wait & watch

d) Antibiotic

Correct Answer - C
Ans. is 'c' i.e., Wait & watch
**Larvngomalacia**

- The most common congenital laryngeal anomaly and the most frequent cause of stridor in infants and children.
- Typically, stridor is inspiratory, low pitched, and exacerbated by any exertion (crying, agitation, feeding), supine position, and viral infections of the upper airway.
- Stridor results from the collapse of supraglottic structures inward during inspiration.
- Symptoms usually appear in the first 2 wk of life and increase in severity for up to 6 mo, although gradual improvement can begin at any time.
- The diagnosis is confirmed by flexible laryngoscopy
- Expectant observation is suitable for most infants because most symptoms resolve spontaneously

## 1242. Steeple sign is characteristis of ?

a) Acute epiglotitis

b) Laryngotrancheobronchitis

c) In both

d) None of above

Correct Answer - B
Ans. is 'b' i.e., Laryngotrancheobronchitis

## 1243. Asymptomatic infant with, Wo TB exposure, He is 3 month old and had taken 3 months of chemoprophylaxis, what is to be done next ?

a) Test sputum and then decide

b) Continue for 3 months

c) Tuberculin test then decide

d) Immunise with BCG & stop prophylasix

Correct Answer - B
Ans. is 'b' i.e., Continue for 3 month (WHO & RNTCP guideline)

- A child born to mother who was diagnosed to have TB in pregnancy should receive prophylaxis for 6 months, provi ded congenital TB has been ruled out. BCG vaccination can be delayed even if INH chemoprophylaxis is planned

## 1244. Which of the following exocrine glandular ducts are not obstructed in cystic fibrosis:

a) Pancreas

b) Lung

c) Sweat gland

d) All of above

Correct Answer - C
Answer C. Sweat gland
Most CF patients have 3 distinct abnormal characteristics:

- The ducts of the mucus-secreting glands are obstructed due to an increase in viscosity of these secretions leading to glandular dilatation and destruction.
- CF patients are prone to chronic bacterial colonization and infections.
- The sweat glands are not obstructed in CF patients because in serous glands such as sweat glands there are abnormal concentrations of inorganic ions, rather than glandular obstruction with thick mucus.
- The quantitative pilocarpine iontophoresis sweat test is a uniformly accepted method for diagnosing CF. The sweat gland ducts must be patent for this test.
- Obstruction of airways leads to bronchiectasis and atelectasis; pancreatic duct obstruction leads to pancreatitis and malabsorption; and plugging of bile ducts leads to obstructive jaundice.

**1245. The following chest X-ray was recorded from a patient presenting to emergency with breathlessness. What is the most likely diagnosis?**

a) Emphysema

b) Hydropneumothorax

c) Pneumothorax

d) Cardiac tamponade

Correct Answer - B

**Ans: B. Hydropneumothorax**

(Ref Sutton Radiology 7/e p921

- The air fluid level seen on the left side in the given X-ray is suggestive of a diagnosis of hydropneuntothorax.

**Hydropneumothorax**:

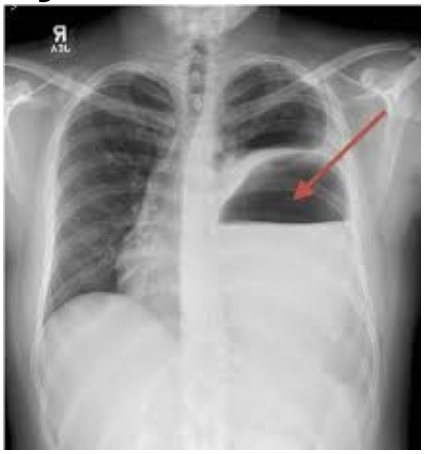
- Defined as the presence of both air & fluid within the pleural space surrounding the lung.

**X-ray Findings**:

- An upright chest X-ray will show air fluid levels.

- Horizontal fluid level is usually well-defined & extends across the whole length of hemithorax.

**1246. Diagnose the congenital malformation shown in the photograph below marked by a red arrow ?**



a) Diaphragmatic hernia.

b) Esophageal atresia.

c) Tracheo-oesophageal fistula.

d) Pneumonia.

Correct Answer - A
A **diaphragmatic hernia** is a birth defect in which there is an abnormal opening in the diaphragm. The diaphragm is the muscle between the chest and abdomen that helps you breathe. The opening allows part of the organs from the belly to move into the chest cavity near the lungs.

## 1247. Apnea of prematurity ?

a) > 10 sec

b) > 15 sec

c) 20 sec

d) > 30 sec

Correct Answer - C
Ans. is 'c' i.e., 20 sec

- Apnea of prematurity defined as sudden stoppage of breathing that lasts for 20 sec or is associated with bradycardia or cyanosis.
- Apnea of prematurity should be differentiated from periodic breathing which is normal phenomenon is preterm neonate

## 1248. Drug dosage best decided in child by

a) Weight

b) Age

c) Height

d) Investigation

Correct Answer - A
Ans. is 'a' i.e., Weight

## 1249. All of the following are true regarding Tetralogy of fallot except –

a) Ejection systolic murmur in second intercostal space

b) Single second heart sound

c) Predominantly left to right shunt

d) Normal jugular venous pressure

Correct Answer - C
Answer is C (Predominantly left to right shunt)
*Tetralogy of fallot is associated with a predominant Right to left shunt*
Tetralogy of fallot is associated with a predominant Right to left shunt
*Tetralogy offallot is associated with Right ventricular out flow tract obstruction due to Pulmonic Stenosis*
*This results in flow of blood from right to left across the VSD into the aorta – Predominant Right to left shunt*

## 1250. End stage treatment of TOF is ?

a) BT shunt

b) Modified BT shunt

c) Waterston shunt

d) Pott - shunt operation

Correct Answer - B

Ans. is 'b' i.e., Modified BT shunt

**Tetralogy of fallot: BT shunt/systemic-pulmonary artery (PA) shunts:**

1. Classic BT shunt: The subclavian artery is anastomosed to the ipsilateral pulmonary artery (PA). This procedure is usually performed in infants older than 3- months; a right-sided shunt is performed in patients with left aortic arch; a left sided shunt is performed for right aortic arch.
2. Modified Blalock-Taussig shunt: A Gore-Tex interposition graft is placed between the subclavian artery and the ipsilateral PA. This is the most popular procedure for any age, especially for small infants younger than 3 months of age. A left-sided shunt is preferred for patients with a right aortic arch. The surgical mortality rate is I% or less.
3. The Waterston shunt: Anastomosis is performed between the ascending aorta and the right PA; this shunt is no longer performed because of high incidence of surgical complications, which include too large a shunt leading to congestive heart failure (CHF) or pulmonary hypertension, or both, and narrowing and kinking of the right PA causing difficulty at the time of corrective surgery.
4. The Pott-shunt operation: Anastomosis is performed between the descending aorta and the left PA; this shunt is no longer performed.

It may result in CHF or pulmonary hypertension, as in the Waterston operation. Moreover, left thoracotomy is required to close the shunt during corrective surgery.

## 1251. Right axis deviation is seen in all except

a) VSD

b) Tricuspid atresia

c) Pulmonary atresia

d) ASD

Correct Answer - B

**Answer is B (Tricuspid Atresia)**

*Tricuspid Atresia is associated with Left Axis deviation and not Right 4xis deviation.*

Symptoms and signs of Tricuspid Atresia are similar to those of Tetralogy of Fallot.

**Features suggesting Tricuspid Atresia are**

- Left ventricular type of apical impulse
- Prominent large 'a' waves in JVP
- Enlarged liver and presystolic pulsations (a waves)
- Left axis deviation and left ventricular hypertrophy on ECG

## 1252. Down syndrome - all are seen except -

a) t (14; 21)

b) t (11: 14)

c) Trisomy 21

d) t (15: 21)

Correct Answer - B
Ans. is 'b' i.e., t (11: 14)
**In 95% of cases of Down syndrome-trisomy of 21:-**

- Extra chromosome is of maternal in origin.
- I% have mosaic with some all have 46 chromosome.
- 4% have robertsonian translocation.
- t (13 : 21)
- t (14 : 21)
- t (15 : 21)
- Very rarely long arm of chromosome 21 is triplicate (Partial trisomy).

## 1253. Which of the following is not done for antenatal diagnosis of Down's syndrome -

a) Amniotic fluid volume estimation

b) Alpha-fetoprotein estimation

c) Cordocentesis

d) Chorionic villous biopsy

Correct Answer - A

**Ans is a i.e. Amniotic Fluid Volume Estimation**

As discussed earlier.

**In patients with previous history of Down syndrome —**

***"The risk of*** *recurrence* ***is greaser than the risk of genetic diagnosis and these patients should be advised to seek genetic counseling and to have a genetic diagnosis."***

*Since amniocentesis is not given in options therefore, chorionic villous biopsy is the answer of choice.*

**Antenatal** screening for **Downs syndrome**

- Following methods are used *:?*

*1) Triple test :* It includes (i) *Unconjugated estrogen (estriol) :* decreased; (ii) *Maternal serum alpha-feto protein (MSAFP):* decreased; and (iii) *hCG : increased* (Note : *All these three markers are decreased in Edward syndrome)*

*2) New markers :* These are (i) Increased inhibin A in maternal blood; and (ii) *Decreased PAPA (pregnancy associated plasma protein).*

*3) USG :* It shows : (i) *Increased nuchal translucency (increased nuchal fold thickness) in first trimester;* (ii) *Ductus venous flow*

*reversed;* and (iii) *Nasal bone hypoplasia.*
*Karyotyping : It can be done by chorionic villus sampling at 10-12 weeks or aminocentesis*

## 1254. First trimester USG finding in Down syndrome?

a) Nuchal thickening

b) Nuchal translucency

c) Cardiac anomalies

d) GI anomalies

Correct Answer - B
Ans. is 'b' i.e., Nuchal translucency

## 1255. Most common heart lesion in down syndrome

a) ASD with ostium primum

b) ASD with ostium secundum

c) VSD

d) Coartection of aorta

Correct Answer - A
Ans. is 'a' i.e., ASD with ostium primum

- About 40% children with down syndrome have congenital heart disease.
- Endocardial cushion defect (ASD with ostium primum) account for 40-60% of cases.

## 1256. Good prognostic factor for AML are all except ?

a) Age less than 2 years

b) Acute promyelocytic leukemia

c) Acute megakaryoblastic leukemia

d) Associated with down syndrome

Correct Answer - C
Ans. is 'c' i.e., Acute Mega karyoblastic leukemia
**Good Prognostic factors for children with AML**

- Prognostic factors are not quite as important in predicting outcome or in guiding treatment for AML as they are for ALL.
- Age at diagnosis: Children younger than age 2.
- Initial white blood cell (WBC) count: Children with AML whose WBC count is less than 100,000 cells per cubic millimeter Down syndrome: Children with Down syndrome who develop AML tend to have a good outlook.
- Subtype of AMrognostic factors are not quite as important in predicting outcome or in guiding treatment for AML as they are for ALL.
- Age at diagnosis: Children younger than age 2.
- Initial L: the acute promyelocytic leukemia (APL) M3 subtype tends to have a good outlook, while undifferentiated AML (MO) and acute megakaryoblastic leukemia (M7) are harder to treat.
- Chromosome changes: Children with leukemia cell translocations between chromosomes 15 and 17 or between 8 and 21, or with an inversion (rearrangement) of chromosome 16 have a better chance of being cured.
- Response to treatment: Children whose leukemia responds quickly

to treatment.

- Body weight: Children within the normal weight range tend to do better than children who are underweight or overweight.

## 1257. AML best prognosis is seen with ?

a) Acute myelo monocytic leukemia.

b) Acute monocytic leukemia.

c) Acute promyeloblastic lukemia (M.3).

d) Erythro leukemia

Correct Answer - C
Ans. is 'c' i.e., Acute promyeloblastic leukemia (M.3)
**Acute promycloblastic leukemia**

- Also known as M-3
- Associated with t(15:17)
- DIC, chloromas common
- Very responsine to retinoic acid combined with anthracylines.
- M.7 (acute megakaryocytic leukemia) mostly seen in down syndrome.
- French-American-British (FAB) Classification of Acute Myelogenous Leukemia

## 1258. Factors associated with favourable prognosis of ALL is - A/E ?

a) Child below 1 year

b) Low counts in intial phase

c) Hyperdiploidy

d) 12, 21 translocation

Correct Answer - A

Ans. is 'a' i.e., Child below 1 year

**Good Prognostic factors for children with ALL.**

- Age at diagnosis: Children between the ages of 1 and 9 with B-cell ALL tend to have better cure rates.
- Low Initial white blood cell (WBC) count:
- Subtype of ALL: Children with pre-B, common, or early pre-B-cell ALL generally do better than those with mature B-cell (Burkitt) leukemia.
- Gender: Girls with ALL may have a slightly higher chance of being cured than boys.
- Number of chromosomes: Patients are more likely to be cured if their leukemia cells have more than 50 chromosomes (called hyperdiploicly).
- Chromosome translocations: Children whose leukemia cells have a translocation between chromosomes 12 and 21 are more likely to be cured. Those with a translocation between chromosomes 9 and 22 (the Philadelphia chromosome), 1 and 19, or 4 and 11 tend to have a less favorable prognosis.
- Response to treatment: Children whose leukemia responds completely within 1 to 2 weeks of chemotherapy have a better outlook

## 1259. Hair on end appearance is seen in?

a) Dermoid cyst

b) Thalassemia

c) Kwashiorkar

d) Tinea capitis

Correct Answer - B
Ans. is 'b' i.e., Thallasemia

- Marked vertical striations in a patient with thalassemia give the appearance of hair standing on end so called hair on end sign usually seen in Thalassemia major

**Kwashiorkor**

- Triad of :-
- Psychomotor change
- Edema ( PEG)
- Growth retardant
- Hair changes - Changes include dyspigmentation, loss of characteristic curls and sparseness over taple.
- Flag sign - Alternate band of hypopigmented and normally pigmented hair pattern

## 1260. 10 year old boy with gross hematuria, loin pain, diarrhoea urine examination is normal. Serum C3 levels are normal diagnosis is ?

a) Berger's disease

b) PSGN

c) Microangiopathic hemolytic anemia

d) None of the above

Correct Answer - A

Ans. is 'a' i.e., Berger's disease

**PSGN**

- Abrupt onset of hematuria, oliguria, edema & hypertension.
- Following infection by group A beta hemolytic streptococci.
- Throat strain 4 & 12, skin strain-49
- Granular deposition of IgG & C3 level.
- $C_3$ level is decrease

**Microangiopathic hemolytic anemia**

- Also known as HUS (Hemolytic uremic syndrome)
- Acute diarrhoea or dysentry followed by sudden onset of pallor, oliguria, seizure, alterred sensorium
- Microscopic hematuria, mild proteinuria, thrombocytopenia

**IgA Nephropathy ( Berger Nephropathy)**

- A nephropathy is the most common chronic glomerular disease worldwide.
- It is characterized by a predominance of IgA within mesangial deposits of the glomerulus in the absence of systemic diseases such as systemic lupus erythematosus or Henoch-SchOnlein purpura.

- Focal and segmental mesangial proliferation and increased mesangial matrix are seen in the glomerulus. Some children display generalized mesangial proliferation that may be associated with crescent formation and scarring. IgA is the predominant immunoglobulin deposited in the mesangium
- IgA nephropathy is seen more often in males than in females.
- Gross hematuria often occurs in association with an upper respiratory or gastrointestinal infection and may be associated with loin pain.
- Mild to moderate hypertension is most often seen in patients with nephritic or nephrotic syndrome but is rarely severe enough to result in hypertensive emergencies.
- Normal serum levels of C3 in IgA nephropathy help to distinguish this disorder from poststreptococcal glomerulonephritis.

## 1261. The most common presentation of a child with Wilms' tumor is *?*

a) As asymptomatic abdominal mass

b) Haematuria

c) Hypertension

d) Hemoptysis due to pulmonary secondary

Correct Answer - A
Ans. is 'a' i.e., As asymptomatic abdominal mass
**Presentation of Wilm's tumor :**
o Asymptomatic abdominal mass (most common)
o Heamaturia (10-25%)
o Abdominal pain (30%) o
Fever (20%)
o Hypertension (25%) o
Anorexia and vomiting

## 1262. 3 months old child with typical mewing cry and congenital heart disease, chromosome abnormality

a) 5g

b) 5p

c) 4p

d) 9p

Correct Answer - B
Ans. is 'b' i.e., 5p
**Cri-du-chat syndrome.**

- A high-pitched cry like a cat, giving the syndrome its name.
- Genetic studies have confirmed that this characteristic cry results from the deletion at 5p15
- The main features are hypotonia, short stature, characteristic cry, microcephaly with protruding metopic suture, moonlike face, hypertelorism, bilateral epicanthic folds, high arched palate, wide and flat nasal bridge, and mental retardation. Cardiac abnormalities including ventricular septal defect, atrial septal defect, patent ductus arteriosus and Fallot's tetralogy.

## 1263. 10 days old baby develops swelling left in posterior cervical area, bluish in appearance, increase in size on crying and brilliently transilluminant

a) Parotiditis

b) Hemangioma

c) Cystic hygroma

d) Lymph node

Correct Answer - C
Ans. is 'c' i.e., Cystic hygroma
**Cystic hygroma**

- Usually present in neonate or early infancy.
- Filled with lymph
- Commonly present in posterior cervical area, axilla, mediastinum, parotid, floor of mouth.
- Soft & partially compressible
- Size increase during crying, coughing
- Brilliently transilluminant
- Sometimes size increase with age or during infection.
- Treatment is complete excision.

## 1264. Most common indication for liver transplant in children is ?

a) Viral hepatitis with fulminant hepatic failure

b) Biliary atresia

c) Metabolic disease

d) Hepatic tumor

Correct Answer - B

Ans. is 'b' i.e., Biliary atresia

- Pediatric liver transplantation
- Biliary atresia is commonest indication for liver transplantation in pediatric age group.

**Other causes are : -**

- Li Progressive primary liver disease
- Stable liver disease with significant morbidity
- Metabolic liver disease
- Fulminant hepatic failure

**1265. 3 year old child come in ER with H/o vomiting, loose watey motion for 3 days. on examination, child was drowsy, sunken eye. Hypothermia and skin pinch take time to revert back, diagnosis?**

a) No dehydration

b) Mild dehydration

c) Some dehydration

d) Severe dehydration

Correct Answer - D

Ans. is 'd' i.e., Severe dehydration

- A child with severe dehydration will have at least two of the following four signs : sensorium is abnormally sleepy or lethargic, sunken eyes, drinking poorly or not at all, and a very slow skin pinch.
- A child with some signs of dehydration will have two of the following : restlessness or irritability, sunken eyes, drinking eagerly or slow skin pinch.
- A child with either one or none of these signs is classified as having no signs of dehydration.

## 1266. 4 day old newborn baby having icterus involving sole, bilirubin level (mg/dl) ?

a) 12

b) 15

c) 8

d) 6

Correct Answer - B
Ans. is 'b' i.e., 15 mg

**Dermal staining of bilirubin?**

- Described by kramer
- Jaundice progress in cephalocaudal direction
- Divided in 5 zone

**Zone Bilirubin**

| | |
|---|---|
| 4-6 mg/dl | Face |
| 6-8 mg/dl | Trun k & upper abdomen |
| 8-12 mg/dl | Lower abdomen & thign |
| 12-14 mg/dl | Arm & leg |
| > 15 mg/dl | Palm & sole |

## 1267. Cause of jaundice in day 1 of baby - A/E ?

a) Rh incompability

b) ABO incompability

c) Prematurity

d) Breast milk jaundice

Correct Answer - D
Ans. is 'd' i.e., Breast milk jaundice
**Cause of jaindice with 24 hour**
1. Hemolyses Rh, ABO, G-6PD def, spherocytosis
2. Decrease conjugation (prematurity)
3. Extravasated blood cephal hematoma.

**Prolonge jaindice beyond 3 weeks**
1. Breast milk jaindice
2. Cephal hematoma
3. Ongoing hemolytic disease
4. G-6 PD def.
5. Hypothyroidism

## 1268. Hand-foot syndrome is seen in ?

a) Frost bite

b) Sickle cell disease

c) Raynaud's phenomenon

d) Thalassemia

Correct Answer - B
Ans. is 'b' i.e., Sickle cell disease

- Dactylitis, often referred to as hand-foot syndrome, is frequently the 1st manifestation of pain in children with sickle cell anemia, occurring in 50% of children by 2 yr of age.
- Dactylitis is caused by blocked blood circulation. Symptoms include extreme pain and tenderness, usually with swelling. An episode may last 1 to 4 weeks
- Requires palliation with pain medication, often acetaminophen with codeine,
- Note- Hand-foot syndrome, also called palmar-plantar erythrodysesthesia, is a side effect of some types of chemotherapy. Hand-foot syndrome occurs when drugs used to treat the cancer affect the growth of skin cells or capillaries (small blood vessels) in the hands and feet. Once the drug is out of the blood vessels, it damages the surrounding tissues. This can cause symptoms of hand-foot syndrome that range from redness and swelling to difficulty when walking

## 1269. Drooping eyelids in evening in boy ?

a) Myasthenia gravis

b) Oculomotor nerve palsy

c) Botulism toxin

d) All of above

Correct Answer - A

Ans. is 'a' i.e., Myasthenia gravis

**Mvasthenia gravis - Two forms**

a. Neonatal transient myasthenia gravis
b. Occurs in infant of myasthenic mother
c. Due to placental transfer of anticholinesterase antibody.
d. Presented as ptosis, weak cry, letahrginess, hypotonea within first few hour of birth.
e. Resolve spontaneously within 4 weeks.

**Juvenile myasthenia gravis**

- Seen in older children
- M.C. ocular nuscle involved
- Diurnal variation seen
- Usually associated with other autoimmune disorder.

**Diagnosed by**

1. Edrophonium test
2. Repetitive stimulation test
3. Antibody testing

**Treament**

- Pyridostigmine
- Steroid
- Plasma pharesis

## 1270. Cause of hypophosphatemic rickets - A/E ?

a) Vit D deficiency

b) CRF

c) X-linked hypophosphatemic rickets

d) Fanconi syndrome

Correct Answer - B
Ans. is 'b' i.e., CRF

## 1271. Congenital rubella syndrome - true is A/E?

a) Microcephaly

b) VSD

c) Conduction defect

d) All

Correct Answer - C
Ans. is 'c' i.e., Conduction defect

## 1272. Thiamine deficiency - causes ?

a) Pellagra

b) **Beri** - Beri

c) Keshan's disease

d) Rickets

Correct Answer - B
Ans. is 'b' i.e., Beri-Berl
**Beri-beri**

- Deficiency of thiamine (Vit B])
- Can be dry (neural involvement)

## 1273. Pertussis vaccine side effect

a) Local pain

b) Excessive cry

c) Fever

d) All of above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**Pertussis vaccine**

- Available as whole cell and acellular as DTPw and DTPa
- Primary immunisation at 6, 10, 14 weeks followed by booster dose 1'/2 year and 5 year.
- Whole cell causes more side effect than acellular
- Side effect-local pain, redness, fever, irritability, excessive cry because of cortical irritation.

**Contraindication**

1. Progressive neurological disease (Relative)
2. Immediate anaphylasix
3. Encephalopathy
4. Persistent Inconsable cry
5. Hypotensive - hyporesponsive episode

## 1274. Hepatitis A vaccine scheudule - True is ?

a) Recomended at age of 12 months

b) 2 dose of killed vaccine 6 months apart

c) 1 dose of live vaccine

d) All are true

Correct Answer - D
Ans. is 'd' i.e., All are true
**Hepatitis A (HepA) vaccines**

- Routine vaccination:
- Minimum age: 12 months
- Killed HepA vaccine(available in India): Start the 2-dose HepA vaccine series for children aged 12 through 23 months; separate the 2 doses by 6 months.
- Live attenuated H2-strain Hepatitis A vaccine: Single dose starting at 12 months and through 23 months of age

## 1275. Rotavirus vaccine - contraindication is ?

a) SCID

b) Intussusception

c) Severe allergic reaction

d) All of the above

Correct Answer - D
Ans. is 'd 'i.e., All of the above

## 1276. Most common cause of acute bacterial endocarditis is:
***September 2009***

a) Staphylococcus aureus

b) Streptococcus viridans

c) Streptococcus intermedius

d) Candida albicans

Correct Answer - A
Ans. A: Staphylococcus aureus
Overall, S *aureus* infection is the most common cause **of** Infective Endocarditis (IE), including acute IE, and Intravenous drug abusers IE.
More than half the cases are not associated with underlying valvular disease.
*Streptococcus viridans* accounts for approximately 50-60% of cases of subacute disease.
Most clinical signs and symptoms are mediated immunologically.
*Streptococcus intermedius* group infections may be acute or subacute.
*S intermedius* infection accounts for 15% of streptococcal IE cases.
*S intermedius* is unique among the streptococci; it can actively invade tissue and can cause abscesses.

## 1277. Most Commmon cause of chronic osteomyelitis ?

a) Staphylococcus aureus

b) Streptococcus pyogenes

c) Mycobacterium tuberculosis

d) Staphylococcus epidermidis

Correct Answer - A
Ans. is 'a' i.e., Staphylococcus aureus
Chronic osteomyelitis is nearly always a sequel to acute osteomyelitis.
Occasionally infection is subacute or chronic from the begining.
As with acute osteomyelitis, the most common causative organism is staphylococcus areus.

## 1278. Transverse carpal ligament is ?

a) Flexor retinaculum of hand

b) Extensor retinaculum of hand

c) Radial collateral ligament

d) Intercarpal ligament

Correct Answer - A

**Ans. is 'a' i.e., Flexor retinaculum of hand**

**Transverse Carpal Ligament:**

- It is also called flexor retinaculum or anterior annular ligament.
- It is a fibrous band on the palmar side of the hand near the wrist.
- It arches over the carpal bones of the hands, covering them and forming the carpal tunnel.

## 1279. Most sensitive test for carpal tunnel syndrome

a) Phalen's test

b) Tinel's sign

c) Tourniquet test

d) None

Correct Answer - A

**Answer- A. Phalen's test**

**There are some provocative tests which act as important screening methods-**

- Wrist flexion (Phalenb test) : - The patient is asked to actively place the wrist in compiete flexion.
- If tingling and numbness develop in the distribution of median nerve, the test is positive. This is the most sensitiye provocotive test.
- Tourniquet test
- Medial nerve percussion test (Tinel's sign)
- Median nerve compression test

## 1280. Tennis elbow is characterized by ?

a) Tenderness over the medial epicondyle

b) Tendinits of common extensor origin

c) Tendinitis of common flexor origin

d) Painful flexion and extension

Correct Answer - B
Ans. is 'b' i.e., Tendinits of common extensor origin
Tennis elbow is extraarticular affection characterized by *pain and acute tenderness at the origin of the extensor muscles of the forearm from the lateral epicondyle.*
It is believed to be caused by strain of the forearm extensor muscles, particularly the *extensor carpi radialisbrevis, at* the point of their origin from lateral epicondyle.

## 1281. Golfers elbow ?

a) Medial epicondylitis

b) Lateral epicondylitis

c) Posterior elbow dislocation

d) Lateral collateral ligament injury

Correct Answer - A

**Ans. is 'a' i.e., Medial epicondylitis**

**<u>Golfer's elbow (Medial epicondylitis)</u>**

- It is about three times less common than tennis elbow.
- Patient has pain and tenderness on the medial epicondyle of the elbow.
- The bony attachment of flexor pronator origin is affected.
- Often there is an associated ulnar nerve neuropathy. A medial collateral ligament injury should be excluded.

## 1282. Identify the congenital disorder as depicted in the photograph below ?

a) Congenital Torticollis.

b) Sprengel shoulder.

c) Winging of Scapula.

d) Congenital absence of Scapula.

Correct Answer - B
The congenital disorder as depicted in the photograph above represents **sprengel shoulder (Congenital elevation of Scapula). Sprengel's deformity (also known as high scapula or congenital high scapula)** is a rare congenital skeletal abnormality where a person has one shoulder blade that sits higher on the back than the other. The deformity is due to a failure in early fetal development where the shoulder fails to descend properly from the neck to its final position. The deformity is commonly associated with other conditions, most notably Klippel-Feil syndrome,
congenital scoliosis including cervical scoliosis, fused ribs, the presence of an omovertebral bone and spina bifida. The left

shoulder is the most commonly affected shoulder but the condition can be bilateral, meaning that both shoulders are affected. About 75% of all observed cases are girls. Treatment includes surgery in early childhood and physical therapy. Surgical treatment in adulthood is complicated by the risk of nerve damage when removing the omovertebral bone and when stretching the muscle tissue during relocation of the shoulder.

## 1283. Cozen's test is used for the diagnosis of ?

a) Tennis elbow

b) Golfer's elbow

c) Base baller's pitcher elbow

d) Carpal tunnel syndrome

Correct Answer - A

**Ans. is 'a' i.e., Tennis elbow**

**Signs and Tests**

- Adson's test : for thoracic outlet syndrome
- Allen's test : for testing patency of radial and ulnar arteries
- Alli's test : for CDH
- Anvil test : for testing tenderness of the spine
- Ape thumb : for median nerve injury
- Apley's grinding test :for meniscus injury
- Apprehension test : for recurrent dislocation of the shoulder
- Barlow's test : for CDH
- Blue sclera : Osteogenesis imperfecta
- Bryant's test : for anterior dislocation of the shoulder
- Callways' test : for anterior dislocation of the shoulder
- Chovstek's sign : for tetany
- Claw hand : for ulnar nerve injury
- Coin test : for dorso lumbar tuberculosis of spine
- Cozen's test : for tennis elbow
- Drawer test : for ACL and PCL injutries
- Anterior : for ACL injury
- Posterior : for ACL injury
- Finkelstein's test : for de Quervain's tenovaginitis

- Foot drop : for common peroneal nerve injury
- Froment's sign : for ulnar nerve injury
- Gaenslen's test: for SI joint involvement
- Galleazzi sign : for CDH
- Gower's sign : for musular dystrophy
- Hamilton ruler test : for anterior dislocation of the shoulder
- Kanavel's sign : for infection in ulnar bursa
- Lasegue's test: for disc prolapse
- Lachmann test : for ACL injury
- Ludloffs sign: for avulsion of lesser trochanter
- McMurray's test : for meniscus injury
- Nagffziger test : for disc prolapse
- Ober's test : for tight ilio- tibial band (e.g., in polio)
- O' Donoghue triad: traid of MCL, ACL & medial meniscus injuries occurring together
- Ortolani's test : for CDH
- Pivot shift test : for ACL injury
- Policeman tip : for Erb's palsy
- Runner's knee : Patellar tendinitis
- Sulcus sign: for inferior dislocation of the shoulder
- Thomas' test : for hip flexion deformity
- Trendelenburg's test: for unstable hip due to any reaseon (e.g., CDH)
- Tinel's sign: for detecting improving nerve injury
- Volkmann's sign : for ischaemic contracture of forearm muscles
- Wrist drop : for radial nerve injury

## 1284. Finkelstein test used for ?

a) Carpal tunnel syndrome

b) Cubital tunnel syndrome

c) De quervains tenovaginitis

d) Median nerve injury

Correct Answer - C
Ans. is 'c' i.e., De quervainstenovaginitis

## 1285. Following is true about spinal injuries except ?

a) Forms 6% of all trauma cases

b) Neurodeficit is present in 50% of all the cases

c) Traumatic injuries most commonly affect the cervical spine

d) Cervical spine is more prone to fracture than dislocation

Correct Answer - D

**Ans. is 'd' i.e., Cervical spine is more prone to fracture than dislocation**

**<u>Spinal injuries:</u>**

- Spinal injury occurs in about 6% of all trauma cases.
- More than 50% of patients with spinal column injury have neurological deficit.
- *Motor vehicular accidents and fall from height are the two most common modes of spine injuries :-*

i. *Fall from height :- Most common cause in developing countries.*
i. *Road traffic accident :-* Most common cause in developed countries.

- *Traumatic spine injuries most commonly affect cervical spine (50-60%) followed by dorsolumbar junction.*
- The direction and size of the articular facets forming the facet joints is different in different parts of the spine. o In cervical spine, they are short and more horizontally placed; therefore, cervical spine is more prone for dislocation without associated fracture.
- In lower spine they becomes more stouter and more vertical, maximum in lumbar spine. Therefore, pure dislocation without fracture does not occur in lumbar region.

## 1286. Column concept of spine stability was given by?

a) Denis

b) Frenkel

c) Wilson

d) Todd

Correct Answer - A
Ans. is 'a' i.e., Denis
The three column concept of spinal stability

- Denis (1983) proposed the 3-column concept of spinal stability. He divided the above-enumerated bony and soft-tissue structures into three columns - anterior, middle and posterior as follows :-

1. Anterior column consisting of the anterior longitudinal ligament, the anterior portion of the annulus fibrosus and the anterior half of the vertebral body.
2. Middle column consisting of the posterior portion of the vertebral body, the posterior portion of the annulus and the posterior longitudinal ligament.
3. Posterior column consisting of the pedicles, facets, laminae and the posterior ligament complex (ligamentum flavum, interspinous ligament, supraspinous ligament and the facet joint capsule).

## 1287. Galeazzi fracture is ?

a) Fracture distal 1/3 radius with DRUJ subluxation

b) Fracture proximal 1/3 radius with DRUJ subluxation

c) Fracture distal 1/3 radius without DRUJ subluxation

d) Fracture proximal 1/3 radius without DRUJ subluxation

Correct Answer - A

**Ans. is 'a' i.e., Fracture distal 1/3 radius with DRUJ subluxation**

Galeazzi fracture dislocation is *fracture of distal third of radius with dislocation or subluxation of inferior (distal) radio-ulnar joint.* It is also called as Reverse monteggia.

**It occurs due to :-**

.. Fall on an outstretched hand with marked pronation of the forearm.

2. Direct blow on the dorsolateral side of the forearm.

**<u>Treatment</u>**

- Closed reduction is usually not successful due to the deforming forces of the muscles. o Hence, open reduction and internal fixation is the preferred method of treatment.

## 1288. Boxer's fracture is ?

a) Radial styloid fracture

b) Reverse colle's fracture

c) $5^{th}$ metacarpal fracture

d) $_1$st metacarpal fracture

Correct Answer - C
Ans. is 'c' i.e., $_5$th metacarpal fracture

| **Eponym** | **Fractures of Upper limb** |
|---|---|
| Montegia fracture dislocation | Fracture of the proximal third of ulna with radial head dislocation. |
| Galeazzi fracture dislocation | Fracture of the distal third of the radius with dislocation of the distal radio-ulnar joint |
| Colle's fracture | Fracture at cortico-cancellous junction of the distal-end of radius with dorsal tilt. |
| Bennet's fracture | Oblique intra-articular fracture of the base of the 1st metacarpal |
| Night stick fracture | Isolated fracture of the shaft of the ulna |
| Smith's fracture | A fracture of distal end of radius at cortico-cancellous junction with ventral tilt and displacements (reverse Colle's fracture). |
| Barton's fracture | A vertical, marginal intra-articular fracture of the distal end of radius occurring with volar or dorsal displacement. |
| Chauffeur | An intra-articular oblique fracture of the styloid process |

| | |
|---|---|
| fracture | of the radius. |
| Boxer's fracture | A fracture through the neck of the 5th metacarpal. |

## 1289. Bartons fracture ?

a) Volar fracture of distal end radius

b) Dorsal fracture of distal end radius

c) Radial styloid fracture

d) Ulnar styloid fracture

Correct Answer - A

**Ans. is 'a' i.e., Volar fracture of distal end radius**

**Barton's fracture**

- The true Barton's injury is a volar fracture of the distal radius associated with volar subluxation of the carpus. o It is sometimes mistaken for a Smith's fracture, but it differs from the latter in that the fracture line runs obliquely across the volar lip of the radius into the wrist joint; the distal fragment is displaced anteriorly, carrying the carpus with it.
- Because the fragment is small and unsupported, the fracture is inherently unstable.
- *Treatment:* The fracture can be easily reduced, but it is just as easily re-displaced. Internal fixation, using a small anterior buttress plate, is recommended.

## 1290. Posada's fracture is ?

a) Trascondylar fracture of humerus

b) Fracture lateral condyle of humerus

c) Fracture medial condyle of humerus

d) Fracture anatomical neck of humerus

Correct Answer - A
**Ans. is 'a' i.e., Transcondylar fracture of humerus**
**<u>Posada's fracture</u>**

- Transcondylar humeral fracture with displacement of the distal fragment anteriorly and dislocation of the radius and ulna from the bicondylar fragment.

## 1291. Anterolateral avulsion fracture of the distal tibial physis is known as ?

a) Potts fracture

b) Tillaux fracture

c) Chopartracture

d) Jones fracture

Correct Answer - B

**Ans. is 'b' i.e., Tillaux fracture**

**<u>Tillaux fractures</u>**

- Fracture occurring in older adolescents.
- Mechanism of injury is an external rotational force with stress placed on the anterior tibio - fibular ligament, causing avulsion of the distal tibial physisanterolaterally.
- It occurs after the medial part of the physis has closed but before the lateral part closes.
- It is either Salter-Harris type III or IV fracture.

## 1292. Injury to popliteal artery in fracture lower end of femur can be caused by ?

a) Proximal fragment

b) Muscle haematoma

c) Distal fragment

d) Tissue swelling

Correct Answer - C
Ans. is 'c' i.e., Distal fragment
In distal third shaft fracture or supracondylar femur fracture, the distal fragment is tilted backward due to strong gastrocnemius pull. This posteriorly tilted distal fragment can cause popliteal artery injury.

## 1293. Pen test is done for which nerve injury ?

a) Median

b) Ulnar

c) Radial

d) Axillary

Correct Answer - A

**Ans. is 'a' i.e., Median**

**Tests/Features of Median Nerve Injury**

1. *Pointing index or oschner's clasp test :-* When patient is asked to clasp his hand, index finger fails to flex.
2. *Benediction test :* - Patient is unable to flex the index and middle finger on lifting the hand due to paralysis of long flexors of these two fingers.
3. *Pen test :* - Patient is unable to touch the pen, held above the thumb (due to APB paralysis).
4. *Ape thumb (Simian thumb) deformity :-* The thumb is adducted and laterally rotated so that the thumb lies in the same plane as the other fingers. It is due to over action of adductor pollicis (supplied by ulnar nerve).
5. *Loss of opposition* due to paralysis of opponens pollicis.
6. Atrophy of thenar eminence.

## 1294. French osteotomy is used in treatment of ?

a) Cubitus varus

b) Cubitus valgus

c) Coxa vara

d) Coxa valga

Correct Answer - A

**Ans. is 'a' i.e., Cubitus varus**

**Cubitus yarns**

- Cubitus varus, also known as a *"gunstock deformity",* is the most common complication of supracondylar fracture humerus, due to malunion. It is called gunstock because the deformity resembles a rifle gunstock.
- The three static deformities of cubitus varus are (all with respect to distal fragment):-i) Extension, ii) Medial rotation, iii) Varus (corona! tilt). All these three components should be corrected during the initial reduction of the fracture otherwise cubitus varus deformity results.

**Treatment of cubitus varus**

- Cubitus varus is only a cosmatic deformity with no functional impairment of the elbow. Treatment of choice is *corrective supracondylar osteotomy.* Surgery is deferred until skeletal maturity for the fear of recurrence of deformity, if surgery is done before skeletal maturity. Osteotomy methods are :-

1. *Lateral close wedge osteotomy (French or modified French)*
2. *Medial open wedge osteotomy (King's osteotomy)*
3. *Derotation osteotomy*

## 1295. Which of the following fracture needs a violent force?

a) Fracture Neck of femur

b) Intertrochanteric fracture

c) Clavicle fracture

d) Colles fracture

Correct Answer - C
Ans. is 'c' i.e., Clavicle fracture
*"Fractures of first two or three ribs and of the clavicle indicate a violent trauma since they are thicker and well protected by the thoracic muscle"*

- Essentials of orthopaedics Fracture neck femur, IT fracture and colle's fracture are more common in old age and with trivial injury. o Important fractures caused by violent trauma are :- Clavicle, fracture shaft femur, subtrochanteric femur fracture, fracture shaft tibia, cervical and lumbar spine fractures.

## 1296. Holstein Lewis sign is related which nerve ?

a) Median

b) Radial

c) Ulnar

d) Axillary

Correct Answer - B

**Ans. is 'b' i.e., Radial**

**<u>Complications of humerus shaft fracture</u>**

1. *Nerve injury : - Radial nerve is the most commonly injured nerve* in fracture shaft humerus. It is particularly common in oblique fractures at the junction of middle and distal third of the bone (Holstein- Lewis sign).
2. *Vascular injury :* - Brachial artery damage.
3. *Delayed union or non-union :* - Delayed union or non-union may occur, especially in transverse fracture of the midshaft. *The cause of non-union is distraction at fracture site due to gravity and weight of plaster.*
4. *Joint stiffness :* - Shoulder & elbow stiffness.

## 1297. Physiological interruption of transmission is ?

a) Neuropraxia

b) Neurotmesis

c) Axonotmesis

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e., Neuropraxia**

**Seddon's classification of nerve injuries**

- Seddon identified three types of injuries

1) Neuropraxia

- There is contusion of the peripheral nerve which causes *reversible physiological nerve conduction block.* The axis cylinder (i.e., axon with its endoneurium) is preserved. Thus, *there is physiological conduction block without anatomic disruption.* The injury is temporary and recovery is complete. It is seen in *crutchpalsy, tourniquet palsy, and saturday night palsy.*

2) Axonotemesis

- There is *injury to axon* but *endoneurium is preserved.* Spontaneous recovery is expected in some cases. This is seen in closed fractures and dislocations.

3) Neurotemesis

- There is *complete anatomical section of nerve.* No recovery possible. It is seen in open wound.

## 1298. Ape thumb deformity is seen in involvement of :

a) Median nerve

b) Ulnar nerve

c) Radial nerve

d) Axillary nerve

Correct Answer - A
A i.e. Median Nerve

## 1299. Which nerve mostly damaged in post dislocation of hip ?

a) Sciatic nerve

b) Femoral nerve

c) Obturator nerve

d) Superior gluteal nerve

Correct Answer - A
Ans. is 'a' i.e., Sciatic nerve

## 1300. Which nerve is damaged in fracture surgical neck humerus ?

a) Axillary

b) Radial

c) Ulnar

d) Median

Correct Answer - A
**Ans. is 'a' i.e., Axillary**
**Complications of fracture surgical neck humerus**

- Shoulder stiffness.
- *Axillary nerve is particularly vulnerable, both from the injury and from surgery* o Axillary artery injury
- Malunion
- Nonunion
- Myositis ossificans

## 1301. Tardy ulnar nerve palsy is seen in

a) Medial condyle # humerus

b) Lateral condyle # humerus

c) Humerus shaft fracture

d) Fracture shaft radius

Correct Answer - B

**Ans. is 'b' i.e., Lateral condyle # humerus**

**Causes of tardy ulnar nerve palsy are : -**

1. *Malunited lateral condyle humerus fracture (cubitus valgus)*
2. Displaced medial epicondyle humerus fracture
3. Cubitus varus deformity *(due to supracondylar fracture humerus)*
4. Elbow dislocation
5. Contusions of ulnar nerve
6. Shallow ulnar groove
7. Hypoplasia of humeral trochlea
8. *Joint deformity after prolonged arthritis of elbow*

## 1302. Meralgia paraesthetica is ?

a) Medial cutaneous nerve of thigh

b) Lateral cutaneous nerve of thigh

c) Lateral cutaneous nerve of hand

d) Medial cutaneous nerve of hand

Correct Answer - B

**Ans. is 'b' i.e., Lateral cutaneous nerve of thigh**

The neuropathy affecting the lateral cutaneous nerve of thigh is called meralgia paraesthetica.

- Cheralgia paraesthetica is a neuropathy of the hand - superficial branch of the radial nerve.

**The area affected includes:**

1) Base of thumb, near the anatomical snuffbox
2) Back of thumb and index finger
3) Back of hand

**Thus,**

- Meralgia paraesthetica - Lateral cutaneous nerve of thigh
- Cheralgia paraesthetica - Lateral cutaneous nerve of hand

## 1303. Which of the following nerves has the best prognosis for repair after injury

a) Ulnar

b) Radial

c) Median

d) Lateral popliteal

Correct Answer - B
**Answer- B. Radial**
Excellent :- Radial, Musculocutaneous, femoral, digital aerves

## 1304. Limbs elevated against gravity but not against force is which power

a) Grade I

b) Grade II

c) Grade III

d) Grade IV

Correct Answer - C

**Ans. is 'c' i.e., Grade III**

**Evaluation of Strength of Muscles**

- The strength of a muscle is graded from 0 to 5 as follows:

i. 0, zero-no contraction
i. 1, trace-palpable contraction only
i. 2, poor-moves joint but not against gravity
v. 3, fair-moves joint against gravity
v. 4, good-moves joint against gravity and resistance
i. 5, normal-normal strength

## 1305. False about osteoarthritis is ?

a) Involves synovial joints

b) Progressive softening of the articular cartilage

c) It is an inflammatory arthritis

d) Marginal osteophytes are produced

Correct Answer - C
Ans. is 'c' i.e., It is an inflammatory arthritis
Osteoarthritis (OA) is a chronic disorder of synovial joints in which there is progressive softening and disintegration of articular cartilage accompanied by new growth of cartilage and bone at the joint margins (osteophytes), cyst formation and sclerosis in the subchondral bone, mild synovitis and capsular fibrosis.
The term osteoarthritis is a misnomer as it is a *non-inflammatory condition.*
The right term is osteoarthrosis or degenerative joint disorder because it is a degenerative wear - and - tear process occuring in joints.

## 1306. Bouchard's nodes are seen in ?

a) Proximal IP joints

b) Distal IP joints

c) Sterno-clavicular joints

d) Knee joint

Correct Answer - A
Ans. is 'a' i.e., Proximal IP joints
Proximal interphalangeal joint---> Bouchard' s node

## 1307. Distal interphalangeal joints are involved in all except ?

a) Psoriatic arthritis

b) Rheumatoid arthritis

c) Reactive arthritis

d) Osteoarthritis

Correct Answer - B
Ans. is 'b' i.e., Rheumatoid arthritis
Distal interphalangeal joint- Osteoarthritis, Psoriatic arthritis, Reactive arthritis
Proximal interphalangeal joint- Osteoarthritis, RA, SLE, Psoriatic arthritis

## 1308. Osteoarthritis involves all except ?

a) Hip

b) Knee

c) PIP

d) Wrist

Correct Answer - D

**Ans. is 'd' i.e., Wrist**

**<u>Joints involved in OA</u>**

- OA affects certain joints, yet spares others.
- *Commonly affected joint include Hip, knee, cervical & lumbosacral spine, and first metatarsophalangeal joint.*
- *In Hands, the distal interphalangeal joints (DIP), proximal interphalangeal joints (PIP) and first carpometacarpal joint (base of thumb) are involved while sparing metacarpophalangeal (MCP) joints.*
- Shoulder joint may be affected but uncommonly.
- Usually spared joints are the wrist, elbow, metacarpophlangeal and ankle.
- This may simply reflect the fact that some joints are more prone to predisposing abnormalities than others.

## 1309. Feature of osteoarthritis is -

a) Heberden node

b) Increased ESR

c) Onycholysis

d) Z deformity

Correct Answer - A

**Ans. is 'a' i.e., Heberden node**

**<u>Joint involvement in OA</u>**

- *Common joints :* Knee, Hip, Spine (cervical, lumbosacral), Hand (PIP, DIP, first carpometacarpal), first tarsometatarsal.
- *Uncommon joint :* Shoulder
- *Spared :* Wrist, elbow, ankle, *metacarpophalangeal.*
- In osteoarthritis of hand :

1. *Distal interphalangeal joint :- Heberden's node.*
2. *Proximal interphalangeal joint :- Bouchard's node*

## 1310. Involvement of the joints of hand is relatively uncommon in which of the following arthritis?

a) Ankylosing spondylitis

b) Reactive arthritis

c) Psoriatic arthritis

d) Rheumatoid arthritis

Correct Answer - A

**Ans. is 'a' i.e., Ankylosing spondylitis**

**Joints involved in ankylosing spondylitis**

- Ankylosing spondylitis primarily affects axial skeleton.
- The disease usually begins in the sacro-iliac joints and usually extends upwards to involve the lumbar, thoracic, and often cervical spine.
- In the worst cases the hips or shouldersare also affected. Hip joint is the most commonly affected peripheral joint.
- Rarely knee and ankle are also involved.

## 1311. Crystal of pseudogout is made up of ?

a) CPPD

b) Urate

c) Calcium carbonate

d) Xanthine

Correct Answer - A
Ans. is 'a' i.e., CPPD
Crystal of Pseudogout :-
. Made up of calcium pyrOphosphate
. WeaKLY  positive birefringent, rhomboid

## 1312. All of the following are diaphyseal tumors except?

a) Ewings sarcoma

b) Histiocytosis

c) Fibrosarcoma

d) Aneurysmal bone cyst

Correct Answer - D
Ans. is d i.e., Aneurysmal bone cyst
Fibrosarcoma
Fibrous cortical defect
Non ossifying sarcoma
Lymphomas
Ewing sarcoma
Fibrous dysplasia
Osteoid osteoma

## 1313. Diaphyseal aclasis is ?

a) Multiple exostosis

b) Multiple enchondromatosis

c) Multiple hemagioma

d) Multiple osteoid osteoma

Correct Answer - A

**Ans. is 'a' i.e., Multiple exostosis**

**<u>Hereditary multiple exostoses</u>**

- The ordinary osteochondroma is single; but in the condition known as Diaphysial aclasis (multiple exostosis) the tumor affect several or many bones. Hereditary multiple exostoses is an autosomal dominant hereditary disorder.
- The risk of malignant changes to a chondrosarcoma is higher in these multiple lesions than in the solitary lesion.
- Metaphysis of long bones is affected, however, skull and pelvis may also be affected.
- Multiple exostoses can lead to shortening and bowing of bones; affected individuals often have a short stature.

## 1314. Most common site for vertebral cancer is ?

a) Cervical

b) Lumbosacral

c) Thoracic

d) Cervicodorsal

Correct Answer - C
Ans. is 'c' i.e., Thoracic
All the vertebral cancer pathologies tend to involve mainly the thoracic and the lumbar areas commonly (thoracic >>> lumbar) and hence the most common site for vertebral cancers in thoracolumbar.

## 1315. Breech presentation is a risk factor for the following condition ?

a) CTEV

b) SCFE

c) DDH

d) Perthes disease

Correct Answer - C

**Ans. is 'c' i.e., DDH**

**Risk factors for DDH/CDH (Remember 4Fs 1H0)**

- Females
- First borns
- Familial :- DDH is found in families
- Faulty intrauterine position (Breech presentation)
- Hormone induced laxity
- Oligohydramnion

## 1316. What is the treatment for a newborn child with CTEV?

a) Jess fixation

b) Manipulation and strapping or serial cast

c) Posteromedial soft tissue release

d) Triple arthrodesis

Correct Answer - B

**Ans. is 'b' i.e., Manipulation and strapping or serial cast**

**<u>Treatment of CTEV in new born:</u>**

- Treatment should begin early, preferably within a day or two of birth (as early as possible or when the newborn presents to the surgeon).
- This consists of repeated manipula- tion and adhesive strapping that maintains the correction; the manipulations are taught to the child's mother, who is then able to carry out gentle stretches on a regular basis with the strapping still in place.
- Treatment is supervised by a physiotherapist, who alters the strapping as correction is gradually obtained.
- If this level of care is not available, it may be better to hold position by applying a light plaster cast (over a protective layer of strapping), which is soaked off and changed every week.

## 1317. Osteoclasts remove bone a which of the following sites?

a) Howships lacunae

b) Resorption bays

c) Both the above

d) None of the above

Correct Answer - C
**Ans. is 'c' i.e., Both the above**
**Osteoclasts**

- These are bone removing cells.
- They are found in relation to surfaces where bone removal is taking place. (Bone removal is essential for maintaining the proper shape of growing bone). At such locations the cells occupy pits called *resorption bays* or *lacunae of Howship.*
- Osteoclasts are very large cells (20 to 100 m or even more in diameter). They have numerous nuclei: up to 20 or more. The cytoplasm shows numerous mitochondria and lysosomes containing acid phosphatase.
- At sites of bone resorption the surface of an osteoclast shows many folds that are described as a *ruffled membrane.* o Removal of bone by osteoclasts involves demineralisation and removal of matrix.
- Bone removal can be stimulated by factors secreted by osteoblasts, by macrophages, or by lymphocytes. It is also stimulated by the parathyroid hormone.
- Recent studies have shown that osteoclasts are derived from monocytes of blood.
- It is not certain whether osteoclasts are formed by fusion of several monocytes, or by repeated division of the nucleus, without division of

cytoplasm.

## 1318. Bohler's angle is used in fracture of ?

a) Scaphoid

b) Talus

c) Calcaneum

d) Navicular

Correct Answer - C
Ans. is 'c' i.e., Calcaneum
The Angle of Gissane, or "Critical Angle", is the angle formed by the downward and upward slopes of the calcaneal superior surface. On a lateral radiograph, an angle of Gissane of > 130° suggests fracture of the posterior subtalar joint surface.
Bohler's angle, or "Tuber Angle", is another normal anatomic landmark seen in lateral radiographs. It is formed by the intersection of (1) a line from the highest point of the posterior articular facet to the highest point of the posterior tuberosity, and (2) a line from the former to the highest point on the anterior articular facet. An angle < 20° suggests a depression posterior facet and possible calcaneal fracture.

## 1319. Which of the following is the marker of bone formation ?

a) Procollagen type I

b) Unrine N Telopeptide

c) Urine hydroxyproline

d) Osteonectin

Correct Answer - A

**Ans. is 'a' i.e., Procollagen type I**

**<u>Markers of bone formation</u>**

- Bone specific alkaline phosphatase
- Osteocalcin
- *Serum peptide of type I procollagen / Type I collagen extension peptide.*

**<u>Markers of bone resorption</u>**

- Urine & serum cross linked N telopeptide
- Urine & serum cross linked C telopeptide
- *Urine total free deoxvpyridinoline*
- Urine hydroxyproline
- *Urine hydroxylysine glycosides*
- Serum tartarate resistant acid phosphatase
- Serum bone sialoprotein

**1320. 24 yr old woman walking up experiences pain in heel which decreases on walking down. X-ray shows bone spur. Diagnosis ?**

a) Plantar fasciitis

b) Calcaneal exostosis

c) Osteomyelitis of calcaneum

d) Achillis tendinitis

Correct Answer - D
Ans. is 'd' i.e., Achillis tendinitis
Heel pain when walking up hill or up stairs is typical of Achillis tendinitis.
Other three options can also cause heel pain, but pain in these conditions has no relation to going up or down. It is consitent throughout.

## 1321. Genu valgum deformity is seen in all except ?

a) Rickets

b) Bone Dysplasia

c) Rheumatoid arthritis

d) Medial compartment osteoarthritis

Correct Answer - D

**Ans. is 'd' i.e., Medial compartment osteoarthritis**

**<u>Genu valgum (knock knee)</u>**

Genu valgum is a condition in which the lower legs are positioned at an outward angle with abnormal approximation of knees and abnormally divergent ankles. Genu valgum is a condition in which the knees touch, but the ankles do not touch. Normally, a child is born with genu varum. Therefore, neonates and infants normally have genu varum. When the infant begins to stand and walk, the lower limb straighten and this physiological genu varus disappear at around years of age. The leg become straight. Then, between the age of 2-3 years genu valgum starts developing gradually with maximum genu - valgum of 12° at the age of 31/4 years. Finally genu-valgum spontaneously get corrected by the age of 7 years to that of normal adult genu valgum of 7 - 8°. *So upto 7 years, exagerated genu valgum is physiological. If this exaggerated genu valgum persists after 8 years, then it is pathological genu valgum.*

## 1322. Green extra articular arthrodesis done for -

a) Genu Valgum

b) Coxa vara

c) Congenital vertical talus

d) Cubitus varus

Correct Answer - C
Ans. is 'c' i.e., Congenital Vertical Talus
Grice and Green procedure is an extra articular fusion (arthrodesis) of the subtalar joint.
It is used in the treatment of patients of congenital vertical talus between age of 4 to 8 years old along with open reduction of the deformity.

## 1323. Ewings sarcoma clinically mimics ?

a) Osteomyelitis

b) Osteochondroses

c) Osteosclerosis

d) Heterotopic ossification

Correct Answer - A
Ans. is 'a' i.e., Osteomyelitis
Ewing sarcoma is one of the differential diagnosis for subacute osteomyelitis. (see following table)

## 1324. Gustilo Anderson classification is used for ?

a) Compound fractures

b) Closed fractures

c) Distal end radius fractures

d) Femur head fractures

Correct Answer - A

**Ans. is 'a' i.e., Compound fractures**

**<u>Compound fracture</u>**

- Compound fracture, also called open fracture, in which *fracture communicates with external environment, i.e., overlying soft tissue coverage (skin and muscles) is breached.*
- Open fractures are typically caused by high energy injuries such as car crashes, falls, or sports injuries.
- *Gustila and Andersion* classified open fracture into following types.

## 1325. Wormian bones are seen in all except ?

a) Fibrous dysplasia

b) Osteogenesis inperfecta

c) Cretinism

d) Rickets

Correct Answer - A

**Ans. is 'a' i.e., Fibrous dysplasia**

**Wormian bones**

- Wormian bones are extra bone pieces that occur within a suture in the cranium.
- These are irregular isolated bones which appear in addition to the usual centers of ossification of the cranium.
- They occur most frequently in the course of the lambdoid suture.
- Causes of wormian bones (Mnemonic - PORKCHOPS)

1. Pyknodysostosis
2. *Osteogenesis imperfecta*
3. *Rickets*
4. Kinky hair syndrome
5. Cleidocranial dysostosis
6. *Hypothyroidism (cretinism) /* Hypophosphatasia

- Otopalatodigital syndrome
- Progeria

1. Syndrome of Downs

- Wormian bone appears radiographically as islands of ossification in the skull in nonossified membranous bone.
- *To be diagnostic value, the wormian bones should be 4 mm by 6 mm in size, 10 in number and arranged in a mosaic pattern.*
- Wormian bones are not present in normal skull.

**1326. A person comes with fracture tibia with swelling of lower leg pulse feeble but palpable. Intacompatmental pressure is raised. What is the next step in management?**

a) Fasciotomy

b) External fixation

c) Lower limb venography

d) Interlock nail

Correct Answer - A

**Ans. is 'a' i.e., Fasciotomy**

A person with fracture tibia with swelling of lower leg and pulse feeble but palpable and Intacompatmental pressure raised is in compartment syndrome of the involved leg. Always in such patients immediate fasciotomy is the next step in management.

***Management* of compartment syndrome (Volkmann's ischemia)**

- It is a surgical emergency and the *treatment should begin immediately.*
- *All encircling tight bandages, and cast are removed, if present.*
- *Limb should be elevated.*
- If definitive clinical signs of compartment syndrome are present urgent fasciotomy should be done.
- If there is no improvement and there is doubt about clinical signs, record the pressure within the compartment and if it is more than 30 mm Hg, fasciotomy *should be done which is the definitive treatment of compartment syndrome.*

**1327. A football player came with twisting injury to left leg with pain, X ray was normal, but on clinical examination anterior drawer test, lachman test positive diagnosis ?**

a) Medial meniscus tear

b) ACL tear

c) PCL tear

d) Proximal tibia fracture

Correct Answer - B
Ans. is 'b' i.e., ACL tear
Patient with positive Lachmann test and anterior drawer test suggests diagnosis of ACL tear.

## 1328. Antalgic hip gait is related to which of the following?

a) Waddling gait

b) Painful hip gait

c) Trendelenberg gait

d) Short leg gait

Correct Answer - B
Ans. is 'b' i.e., Painful hip gait
*Antalgic gait* is a limp adopted so as to *avoid pain* on weight bearing structures, characterized by very short stance phase.
Stance phase of the gait is shortened on the injured side to alleviate pain experienced when bearing weight on that side.

## 1329. Milwalkee brace is used in treatment of ?

a) Scoliosis

b) Kyphosis

c) Cubitus varus

d) Genu varum

Correct Answer - A
Ans. is 'a' i.e., Scoliosis
The Milwaukee brace is principally a thoracic support consisting of a pelvic corset connected by adjustable steel supports to a cervical ring carrying occipital and chin pads.
Its purpose is to reduce the lumbar lordosis and encourage active stretching and straightening of the thoracic spine.
It is used in the conservative management of idiopathic scoliosis.

## 1330. Osgood schlatter disease is osteochondritis of ?

a) Tibial tuberosisty

b) Lunate

c) Calcaneum

d) Navicular

Correct Answer - A
Ans. is 'a' i.e., Tibial tuberosity
Osgood Shlatter's disease- Tibial tubercle

**1331. Ramesh singh, a 40 yrs old man, was admitted with fracture shaft femur following a road traffic accident. Three days after tauma he was tachypnoeic, and had conjunctival petechiae. Most likely diagnosis is ?**

a) Pulomary embolism

b) Sepsis syndrome

c) Fat embolism

d) Hemothorax

Correct Answer - C

**Ans. is 'c' i.e., Fat embolism**

**This patient in question has femur fracture has developed classical triad of fat embolism :-**

i. Respiratory symptom :- Tachypnea
i. Neurological symptom :- Disorientation
i. Petechial rash :- Conjunctivalpetechiae

- So, the most probable diagnosis is fat embolism syndrome.

## 1332. Triple deformity of knee includes following except?

a) Flexion of knee

b) External rotation of tibia

c) Posterior subluxation of tibia

d) Extension of knee

Correct Answer - D

**Ans. is 'd' i.e., Extension of knee**

**Triple deformity of knee refers to : -**

1. *Flexion of knee*
2. *External rotation of tibia*
3. *Posterior subluxation of tibia*

*Triple deformity is seen in RA, TB of knee and Polio.*

## 1333. All are the features of rheumatoid arthrtitis except?

a) Osteosclerosis of joint

b) Soft tissue swelling

c) Narrowing of joint space

d) Periarticular osteoporosis

Correct Answer - A

**Ans. is 'a' i.e., Osteosclerosis of joint**

**<u>Radiological features of RA</u>**

**Following features are seen on X-ray :-**

1. Reduced joint space
2. Erosion of articular margins
3. Subchondral cysts
4. Juxta-articular rarefaction
5. Soft tissue shadow at the level of the joint because of joint effusion or synovial hypertrophy
6. Deformities of the hand and fingers
7. Periarticular osteopenia (osteoporosis)

## 1334. Common sites of fracture non union are the following except -

a) Waist of scaphoid

b) Neck of femur

c) Distal 1/3 tibia fibula

d) Distal end radius

Correct Answer - D

**Ans. is `d' i.e., Distal end radius**

**<u>Non-union</u>**

- When a fracture fails to unit completely even after the stipulated time, it is termed as non-union.
- Both, In non-union and delayed union, fracture does not unite in the usual stipulated time. The difference between two is that
- In delayed union, union occurs but at a slower rate, i.e. there is presence of clinical and radiological progressive signs of union though at a slower rate. Healing may occur without surgical intervention by just prolonging the duration of immobilization.
- In non-union, union does not occur at all, i.e. there is complete cessation of healing process in which fibrous tissue is never replaced by bony matrix. So, there is absence of clinical and radiological progressive signs of union. Fracture healing will not occur without surgical intervention, e.g. bone grafting, illizarov's technique.
- *Common sites of non-union are neck of femur, scaphoid, lower third of tibia, lateral condyle of humerus and lower third of ulna.*

## 1335. Pearl's index indicates :

a) Malnutrition

b) Population

c) Contraceptive failure

d) LBW

Correct Answer - C

**Ans. is c i.e. Contraceptive Failure**

*Pearl Index indicates the effectiveness of a contraceptive or it is an index of contraceptive failure.*

- Oral contraceptive pills have least chances of pregnancy as they have minimum failure rate (evaluated by pearl index).

| **Contraceptive Method** | **Pearl Index (per HWY)** |
|---|---|
| *No method used* | 80 |
| *Rhythm (calendar) Method* | 24 |
| *Coitus interruptus*18 | 18 |
| *Male condoms*2-14 | 2-14 |
| *Female condoms*5-21 | 5-21 |
| *Diaphragm*12 | 12 |
| *Vaginal sponge* | |
| Parous women | 20 - 40 |
| Nulliparous women | 9-20 |
| *IUD* | 0·5 - 2.0 |
| Oral pill | 0·1 - 0.5 |
| *Centchroman (Saheli)* | 1·83 - 2.84 |

## 1336. Clinical findings suggestive of adequacy of pelvis for vaginal delivery are all except?

a) Diagonal conjugate > 11·5 cm

b) Interspinous diameter > 8 cm

c) Sacrosciatic notch 2.5 - 3 finger breadths

d) Bituberous diameter > 8 cm

Correct Answer - B

**Ans. is 'b' i.e., Interspinous diameter > 8 cm**

**Clinical findings suggestive of adequacy of pelvis for vaginal delivery are:**

**Findings indicating adequate pelvis**

| | |
|---|---|
| Forepelvis (pelvic brim) | Round |
| Diagonal conjugate | 11.5 cm |
| Symphysis | Average thickness, parallel to sacrum |
| Sacrum | Hollow, average inclination |
| Side walls | Straight |
| Ischial spines | Blunt |
| Interspinous diameter | 10.0 cm |
| Sacrosciatic notch | 2.5-3 finger - breaths |
| Bituberous diameter | 4 knuckles (> 8.0 cm) |
| Coccyx | Mobile |
| Anterposterior diameter of outlet | 11.0 cm |

## 1337. Incorrect about external cephalic version is :

a) Done at 34 week

b) Abruption of placenta is a complication

c) Done under general anesthesia

d) All

Correct Answer - D
All

## 1338. Elements of bishop's score is all except ?

a) Cervical dilatation

b) Cervical effacemat

c) Endometrial consistency

d) Fetal station

Correct Answer - C
Ans. is 'c' i.e., Endometrial consistency

- Bishop score, also Bishop's score, also known as cervix score is a pre-labor scoring system to assist in predicting whether induction of labor will be required.
- The total score is achieved by assessing the following five components on vaginal examination:
- Cervical  dilation
- Cervical effacement
- Cervical consistency
- Cervical position
- Fetal station
- If the Bishop score is 8 or greater the chances of having a vaginal delivery are good and the cervix is said to be favorable or "ripe" for induction.
- If the Bishop score is 6 or less the chances of having a vaginal delivery are low and the cervix is said to be unfavorable or "unripe" for induction

## 1339. What does the CTG depicts?

a) Fetal Heart rate monitoring

b) Growth monitoring

c) Size monitoring

d) Amniotic index monitoring

Correct Answer - A
Ans. is 'a' i.e., Foetal heart rate monitoring

- Cardiotocography or CTG is a test usually done in the third trimester of pregnancy.
- It is done to see if your baby's heart beats at a normal rate and variability.
- Normally, a baby's heart rate is anywhere between 110 and 160 beats per minute and increases when the baby moves.
- Checking that your baby's heart rate responds to his movements is an indirect way of knowing if he gets enough oxygen from the placenta.
- The test will also see how baby's heart rate is affected by your contraction.
- A CTG done in your third trimester is also known as a 'non stress test' because your baby is not under the 'stress' oflabour.
- Early deceleration - Head compression
- Late deceleration - Utero placental insufficiency
- Variable deceleration - umblical cord compression

## 1340. The Spinnbarkeit of cervical mucous in a woman is maximum at one of the following phases of the cycle :

a) Early proliferative

b) Ovulatory phase

c) Post-ovulatory phase

d) Menstrual phase

Correct Answer - B
Ovulatory phase

**Spinnbarkeit (Egg White) Cervical Mucus:**

- Most fertile
- Stringy, stretchy
- Usually a result of high estrogen levels.
- Allows the sperm to swim easily into the cervix
- Similar to raw egg white consistency
- Stretchable—Mucus can hold a stretch which can be up to 4 or 5 inches
- At the time of ovulation, you have 2 or 3 days of egg white cervical mucus and then your temperature will take a little dip before rising the next day.

**Watery Cervical Mucus**

- Second best for conception
- Allows sperm to move into the cervix, but not as easy for the sperm to swim
- Watery CM is clear in color and drips or runs off your fingers.

## Creamy Cervical Mucus

- Considered non-fertile since it greatly restricts the movement of sperm.
- Often pearly white or creamy yellow.
- Thick and feels like lotion when rubbed between the fingers.

## Sticky Cervical Mucus

- Least fertile
- Thick and chunky and feels kind of like paste or like glue from a glue stick, making it hard for sperm to swim through

## 1341. pH of vagina in pregnancy is:
***September 2009***

a) 2-4

b) 4- 6

c) 6-8

d) 8-10

Correct Answer - B
Ans. B: 4- 6
Vaginal walls becomes hypertrophied and more vascular.Increased blood supply of the venous plexus surrounding the walls gives the bluish colouration of the mucosa (Jacquemier's sign)
Vaginal secretion becomes copious, thin and curdy white, due to marked exfoliated cells and bacteria. The pH becomes acidic (3.5-6) due to more conversion of glycogen into lactic acid by the lactobacillus.

## 1342. Volume of ovary after menopause is -

a) 7·8 $cm^3$

b) 6.5 $cm^3$

c) 5·4 $cm^3$

d) 3·0 $cm^3$

Correct Answer - D

**Ans. is 'd' i.e.,3·0 $cm^3$**

- Volume of ovary can be calculated based on a simple formula:
- Volume = 1/2 x Length x height x width

**Ovarian Volume in women**

| Age | Mean ovarian vol. |
|---|---|
| 0 | 0.2 |
| 2 | 0.7 |
| 4 | 0.9 |
| 6 | 1.2 |
| 8 | 1.7 |
| 10 | 2.5 |
| 12 | 3.7 |
| 14 | 5.0 |
| 16 | 6.4 |
| 18 | 7.3 |
| 20 | 7.7 |
| 22 | 7.6 |
| 24 | 7.2 |
| 26 | 6.7 |
| 28 | 6.3 |

| | |
|---|---|
| 30 | 6.0 |
| 32 | 5.9 |
| 34 | 5.9 |
| 36 | 5.8 |
| 38 | 5.7 |
| 40 | 5.4 |
| 42 | 4.9 |
| 44 | 4.4 |
| 46 | 3.8 |
| 48 | 3.3 |
| 50 | 2.8 |

**1343.** **In a 29 day menstrual cycle ovulation takes place at:**

a) 14th day

b) 15th day

c) 16th day

d) 17th day

Correct Answer - B

If the menstrual cycle is 29 days long, ovulation takes place on 15th day. **Date of ovulation is calculated by substracting 14 days from the duration of menstrual cycle.**

A surge in LH secretion triggers ovulation, and ovulation normally occurs about 9 hours after the peak of the LH surge at midcycle. The follicle that ruptures at the time of ovulation fills with blood and is called corpus hemorrhagicum. The granulosa and theca cells lining the follicle begin to proliferate and gets filled with yellowish lipid rich luteal cells forming the corpus luteum.

**Ref:** Ganong's Review of Medical Physiology, 24e, chapter 22

## 1344. Average reproductive life span of ovum is?

a) 6-12 hrs

b) 12-24 hrs

c) 24-36 hrs

d) 3 days

Correct Answer - B

**Ans. is 'b' i.e.,12-24 hrs**

- Reproductive life of ovum → 24 hours (12 - 24 hours)
- Reproductive life of sperm → 24 - 72 hours

## 1345. Weight gain during pregnancy:
***March 2013***

a) 4-6 Kg

b) 7-9 Kg

c) 10-12 Kg

d) 13-15 Kg

Correct Answer - C
Ans. C i.e. 10-12 Kg

## 1346. Maximal level of cardiac output is seen at:

***September 2009***

a) 22-26 weeks of pregnancy

b) 26-30 weeks of pregnancy

c) 30-34 weeks of pregnancy

d) 34-38 weeks of pregnancy

Correct Answer - C

Ans. C: 30-34 Weeks of Pregnancy

The cardiac output starts to increase from $5^{th}$ week of pregnancy and reaches its peak 40-50% at about 30-34 weeks. Cardiac output increase further during labour (+50%) and immediately following delivery (+70%) It returns to pre-pregnancy level by 4 weeks time after labour.

**1347. Which of the following is correct for urinary system changes in pregnancy:**
***March* 2013**

a) Renal blood flow decreased

b) Decreased creatinine clearance

c) GFR is increased

d) Kidneys shrink by 1 cm

Correct Answer - C
Ans. C i.e. GFR is increased

## 1348. Diameter of engagement in face presentation is :

a) 9·5 cm

b) 10 cm

c) 11.5 cm

d) 14 cm

Correct Answer - A
9.5 cm
Submento-bregmatic diameter :

- The diameter extending from just behind chin to the centre of bregma
- Measures 9.5cm
- Head is fully extended
- Associated with face presentation
- Face presentation :
- Incidence : 1:600- 1:1500
- Due to hyper-extension of fetal head
- Presenting diameter 9.5 cm (submento-bregmatic diameter )
- Engagement of fetal head late
- Progression of labour slow
- Probably due to lack of molding of facial bone

**1349.** **Which among the following is the smallest diameter of true pelvis?**

a) Interspinous diameter

b) Diagonal conjugate

c) True conjugate

d) Intertuberous diameter

Correct Answer - A

***Interspinous*** *or* ***bispinous diameter*** *is the distance between the tip of the two ischial spines. It measures 10.5 cm.*

**Diagonal conjugate** is the distance between the lower border of symphysis pubis to the midpoint on the sacral promontory. It measures 12 cm.

**True conjugate** or **anatomical conjugate** or **conjugate vera** is the distance between the midpoint of the sacral promontory to the inner margin of the upper border of symphysis pubis. It measures 11 cm.

**Intertuberous diameter** is the distance between the inner borders of ischial tuberosities. It measures 11 cm.

**Ref:** Textbook of Obstetrics by D C Dutta, 6th edition, Page 91.

**1350.** **In Downs syndrome, the 2nd trimester quadruple test done at 14-20 weeks measure levels of all of the following, EXCEPT:**

a) Alpha fetoprotein

b) HCG

c) Inhibin A

d) Progesterone

Correct Answer - D

**The triple test** (14 -20 weeks) measures the following three levels in the maternal serum:

- Alpha-fetoprotein (AFP)
- Human chorionic gonadotropin (hCG)
- Unconjugated estriol (UE3)

**Quadruple test** done (14-20 weeks) measures levels of:

- Alpha-fetoprotein (AFP)
- Human chorionic gonadotropin (hCG)
- Unconjugated estriol (UE3)
- Inhibin A

## 1351. Triple test for Down syndrome is by using all EXCEPT: *September* 2012

a) Maternal HCG

b) Maternal Estriol

c) Maternal Alphafetoprotein

d) Maternal Inhibin A

Correct Answer - D
Ans. D i.e. Maternal Inhibin A
*Inhibin A is counted in Quadruple test for Down syndrome.*

## 1352. Gender from external genitalia of foetus becomes clearly distinguished by -

a) 10 weeks

b) 16 weeks

c) 12 weeks

d) 20 weeks

Correct Answer - A
Ans. is 'a' i.e., 10 weeks
External genitals are distinguishable by 10th week of fetal life.

## 1353. Increased nuchal fold thickness is a feature of :

a) Paul-Bunnel syndrome

b) De-pan syndrome

c) Down's syndrome

d) Cri-duchat syndrome

Correct Answer - C
Answer is C (Down's Syndrome) :
*Ultrasonography in a case of Down's syndrome may reveal increased nuchal fold thickness*
Increased Nuchal fold thickness is associated with :-

- Aneuploidy
- Turner syndrome
- Trisomies (eg. Down syndrome)
- Congenital Heart defects
-

## 1354. Arterial embolization done in all except ?

a) Uterine AV malformation

b) PPH

c) Bleeding fibroid

d) Prevent bleeding in endometriosis

Correct Answer - D

**Ans. is 'd' i.e., Prevent bleeding in endometriosis**

**<u>Indications for embolization in Obstetrics and Gynecology are the following:</u>**

- Postpartum hemorrhage: Uterine atony / tears, Abnormal placentation
- Post abortion/ ectopic
- Post hysterectomy
- Uterine AV malformation/ Gestational trophoblastic tumors
- Gynecological malignancies
- Fibroids (acute bleeding)

## 1355. Small size placenta is seen in ?

a) Peripheral vascular disease in mother

b) Pre eclampsia

c) Maternal weight < 50 Kg

d) Multiple pregnancy

Correct Answer - B

**Ans. is 'B' i.e., Pre eclampsia*[Ref Internet]***

- Small placenta on antenatal ultrasound USG may be due to :-
- Variation in placental morphology :Only post of placenta is seen.
- Bibbed placenta :Only one lobe is seen.
- Succenturiate lobe.
- Hypertensive states (pre-eclampsia, eclampsia)
- Chromosomal disorders :Trisomy 18, Dysgenic triploidy, IUGR or intrauterine infection

## 1356. Placenta previa mouth is associated with all of the following except :

a) Large placenta

b) Previous C. S. scar

c) Primigravida

d) Previous placenta previa

Correct Answer - C

Ans. **is c** i.e Primigravida

*Placenta previa is implantation of the placenta partially or completely over the lower uterine segment. Damage to the endometrium or myometrium due to previous surgery or infection can predispose to low implantation and placenta previa.*

**Risk factors for placenta previa :**

- Prior surgery° ***(cesarean section /*** Myomectomy Hysterotomy)
- Previous uterine curettage°
- Endometritis°
- Increasing maternal age (>35 years)°
- Increasing parity°
- *Placental sire* ***–increased*** (as in multiple pregnancy)
- Placental abnormality –Succenturiate lobe
- Smoking (due to defective decidual vascularisation)

**Note :**

- The probability of placenta accreta and need for cesarean hysterectomy is increased in patients with prior cesarean section and placenta previa.
- Smoking increases the risk of placenta previa by two fold times.
- Previous cesarean section increases the risk of placenta previa by 4 fold time.

- According to the latest edition of Williams—Women with otherwise unexplained elevated screening level of maternal serum alpha feto protein are at a greater risk of placenta previa.

**1357.** **Which of the following laboratory findings is known as 'biochemical marker of pre-eclampsia'?**

a) Low platelets

b) Raised serum Na

c) Elevated liver enzymes

d) Serum uric acid

Correct Answer - D

*A serum uric acid level* ***(biochemical marker of pre-eclampsia)*** *of more than 4.5 mg/dl indicates the presence of pre-eclampsia.*

Blood urea level remains normal or slightly raised.

Serum creatinine level may be more than 1 mg/dl.

There may be thrombocytopenia and abnormal coagulation profile of varying degrees.

Hepatic enzyme levels will be increased.

**Ref:** Textbook of Obstetrics D C Dutta, 6th edition, Page 227.

## 1358. Following features are suggestive of severe eclampsia except?

a) Blood pressure > 150/100 mmhg

b) Proteinuria of > 5gms in 24hrs

c) Oliguria of < 500 ml in 24 hrs

d) Thrombocytopenia

Correct Answer - A

**Ans. is 'a' i.e., Blood pressure > 150/100**

**<u>Preeclampsia is considered severe if one or more of the following criteria is present:</u>**

- Blood pressure of 160 mm Hg systolic or higher or 110 mm Hg diastolic or higher on two occasions at least 6 hours apart while the patient is on bed rest.
- Proteinuria of 5 g or higher in a 24-hour urine specimen or 3+ or greater on two random urine samples collected at least 4 hours apart.
- Oliguria of less than 500 ml in 24 hours
- Cerebral or visual disturbances
- Pulmonary edema or cyanosis
- Epigastric or right upper-quadrant pain
- Impaired liver function
- Thrombocytopenia
- Fetal growth restriction

## 1359. True about complete hydatidiform mole is :

a) Chromosome pattern is XX

b) Associated with preeclampsia

c) Enlarged ovarian cyst occurs

d) All

Correct Answer - D

**Ans. is a, b and c i.e. Chromosome pattern is XX; Enlarged ovarian cyst occurs; and Associated with preeclampsia**

- The incidence of H. mole is maximum in oriental and south east countries (maximum incidence is in Philippines: 1 in 80 pregnancies) Le., it is more common in developing countries ***option 'a*** ruled out).

**H, mole can be categorized as either complete or partial mole on the basis of Gross morphology, histopathology and karyotype.**

Com[p]lete H. mole - *shows* no evidence (If fetal tissue at all,

- Complete hydatiform moles exhibit characteristic swelling and trophoblastic hyperplasia. *Most common karyotype is 46XX (10% may have a 46XY karyotype).*
- The molar chromosomes are *entirely of paternal origin,* although mitochondrial DNA is of maternal origin.
- The complete moles arises from an ovum that has been fertilized by a haploid sperm, which then duplicates its own chromosomes called as *Androgenesr.* The ovum nucleus may be either absent or inactivated.

Clinical features;

Symptoms:

- *Amenorrhea* of varying duration followed by continuous or intermittent brown or bloody discharge (usually not profuse) evident by - 12 weeks.
- *Passage of vesicles per vaginum*
- *Hyperemesis* (due to the high levels of circulating HCG).

Signs:

- *Uterus:*
  - The fundal height of uterus is more than the period of amenorrhea in 50% cases. In 35% it corresponds to the gestational period and in the rest it may be smaller.
  - Uterus is doughy in consistency (due to absence of amniotic fluid).
  - Fetal parts will not be felt.
  - Fetal heart sounds will not be heard (even on doppler).
  - External and internal ballottement can not be elicited.
- *Theca lutein cysts :*
  - May be felt in the ovaries in about 25 to 60%.
  - *Due to overstimulation of the luteal elements by the large amounts of circulating HCG°*
  - Persistent trophoblastic disease is more likely in women with theca lutein cysts.
- *Early onset preeclampsia*
  - When hypertension appears before 24 weeks, it is important to rule out hydatidiform mole.
- Thyrotoxicosis seen due to the thyrotrophin-like effect of HOG.°
- *Spontaneous expulsion occurs at around 18 weeks° and rarely delayed beyond 28 weeks.°*

Characteristics of partial H. mole

- Some embryonic or fetal tissue identifiable.
- *Partial moles generally have a triploid karyotype (69 chromosomes); the extra haploid set of chromosomes usually is derived from the father*
- Chorionic villi of varying size with focal hydatidiform swelling, cavitation, and trophoblastic hyperplasia whereas complete mole shows diffuse hydatidiform swelling and trophoblastic hyperplasia.
- Marked villous scalloping.
- Prominent stromal trophoblastic inclusions.

- When a fetus is present in conjunction with a partial mole. it generally exhibits the stigmata of triploidy, including growth retardation and multiple congenital malformations such as syndactyly and hydrocephaly.

## 1360. Most reliable diagnosis of hydatidiform mole Is by:

a) HCG estimation

b) Amniography

c) Ultrasound

d) Absence of FHS

Correct Answer - C
Ultrasound

## 1361. Vulvar carcinoma accounts for what percentage of genital tract malignancies?

a) 0·5 - 1%

b) 3 - 5%

c) 7 - 11%

d) 13 - 15%

Correct Answer - B

**Ans. is 'b' i.e.,3 - 5%**

**Vulval Carcinoma**

- /t occurs in 17/100,000 females.
- It accounts for 3 - 5% of the genital tract malignancies
- It usually occurs in post menopausal females with median age of 60 years.
- It has increased association with obesity, hypertension, diabetes and multiparity.

## 1362. Most common histopathological variety of carcinoma vulva ?

a) Squamous cell carcinoma

b) Basal cell carcinoma

c) Adenocarcinoma

d) Lymphoma

Correct Answer - A

**Ans. is 'a' i.e.,Squamous cell carcinoma**

- Squamous cell carcinomas are the most common histological type accounting for 85% of all vulval cancers.

## 1363. Most common type of HPV associated with cervical cancer ?

a) 6, 11

b) 5, 8

c) 16, 18

d) 6, 8

Correct Answer - C
Ans. is `c' i.e., 16, 18

- HPV DNA of oncogenic types (High risk) in HPV-16, 18, 31, 33 and 45 → associated with cervical cancer
- HPV-6 and 11 (Low risk HPV) → associated with precursor lesions of cervical cancer (CIN) and Condyloma Acuminatum.
- In patients with epidermodysplasia verruciformis, Squamous cell cancer develop frequently at sites infected with specific HPV types, including 5 and 8.
- E6 and E7genes of HPV are responsible for carcinogenicity.

## 1364. A 50 year old woman, nulliparous, diabetic and obese presenting with post-menopausal bleeding likely diagnosis is :

a) Carcinoma in situ of cervix

b) Carcinoma endometrium

c) DUB

d) None of the above

Correct Answer - B

**Ans. is b i.e. Carcinoma Endometrium**
*A 50 year old woman Nulliparous, Diabetic and obese (all predisposing factors for carcinoma Endometrium) is presenting with postmenopausal bleeding most common complaint in Ca endometrium). The most likely diagnosis is carcinoma endometrium.*
Note-In older women endometrial cancer presents as :

- Postmenopausal bleeding
- Abnormal vaginal discharge

Extra Edge :
*"Causes of Post Menopausal Uterine Bleeding with their frequency of occurrence."*

**Cause**

- Endometrial atrophy

(MC)

- Estrogen

Replacement therapy

- Endometrial Polyps

- Endometrial hyperplasia
- Endometrial cancer

60-80%

## 1365. Maximum teratogenic effect on heart of fetus is between?

a) 2 - 4 weeks

b) 4 - 6 weeks

c) 6 - 8 weeks

d) 8 - 10 weeks

Correct Answer - C

**Ans. is 'c' i.e.,6 - 8 weeks**

- Period of organogenesis (Embryonic - 2 - 8 weeks of conception) is the time of maximum vulnerability, and each embryonic system has a period of maximum susceptibility.
- Heart is typically affected if the teratogen acts between 6 - 8 weeks of gestation.
- CNS maximum susceptibility between 17 - $30^{th}$ post fertilization days.

## 1366. Colposcopy is used to visualize all except:
***March 2005***

a) Upper 2/3rd endocervix

b) Lower 1/3rd endoCervix

c) Lateral fornix

d) Vault of vagina

Correct Answer - A
Ans. A: Upper 2/3rd endocervix
Colposcopy

- *Colposcopy includes gross visualisation of the vulva and vagina, examination of the cervix before and after application of acetic acid (common household vinegar) using colposcope.*
  *The colposcope consists of two* parts:
- *Stereoscope.*
- *Binocular microscope with built-in light source that magnifies the cervix* 3 *to 10 times.*
- *By varying magnifications, the examiner can identify abnormal tissue from surrounding normal tissue.*
- *It is equipped with a green filter to filter out red, thereby enhancing the vascular appearance of the cervix by the vascular appearance of the cervix by making the vessels dark.*
- *Used to diagnose cervical cancer, usually after an abnormal Pap smear.*
- *Cervical biopsy allows for histologic evaluation of any abnormal lesions visualised.*
  *Purpose of the examination:*

- *Grade the lesion.*
- *Determine its size and location.*
- *Exclude invasive cancer by fully visualising the area at risk.*
- *Excise any suspicious lesions for biopsy.*

## 1367. Pregnant women with obesity are at higher risk of following except?

a) Fetal macrosomia

b) Fetal distress

c) Gestational hypertension

d) Infections

Correct Answer - D

**Ans. is 'd' i.e.,Infections**

**In a prospective multicenter study, pregnant females with obesity (BMI of 30-39.9) was associated with an increased risk of the following compared to non obese females:**

- Gestational diabetes mellitus
- Preeclampsia
- Gestational hypertension
- Fetal macrosomia

## 1368. All of the following indicate Fetal distress except:

a) Thick (pea-soup) meconium

b) Fetal heart rate 100/minute

c) Loss of beat-to-beat variation

d) Fetal skull blood pH>7.32

Correct Answer - D
Fetal skull blood pH>7.32

## 1369. Placenta grade 3, 35+3 weeks pregnancy, and absent end diastolic flow in Doppler; next management is:

a) Dexamethasone and terminate after 48 hours

b) Terminate after 37 weeks

c) Talk with pediatrician and termination

d) Monitor and do nothing

Correct Answer - A

**Ans. a. Dexamethasone and terminate after 48 hours**

- Antenatal Corticosteroid Therapy
- A single dose of corticosteroids is recommended for pregnant women with gestational age 23-34 weeks of gestation who are at risk of preterm delivery within 7 days.
- A complete course is
- Betamethasone two 1M 12 mg doses given 24 hours apart
- OR
- Dexamethasone four IM 6 mg doses given 12 hours apart.

## 1370. Indication for induction of labour is :

a) Placenta previa

b) PIH at term

c) Heart disease at term

d) Breech

Correct Answer - B
PIH at term

**1371. Red degeneration in a case of fibroid with pregnancy occurs most often during :**

a) First trimester

b) Second trimester

c) Third trimester

d) Puperium

Correct Answer - B
Second trimester

**1372.** **A pregnant woman presents with red degeneration of fibroid, Management is:**

a) Myomectomy

b) Conservative Rx

c) Hysterectomy

d) Termination of pregnancy

Correct Answer - B

In a pregnant female with red degeneration of fibroid, management is essentially conservative treatment with analgesia and rest.

**Ref:** Textbook of Obstetrics By D.C.Dutta, 5th Edition, Page 1327 ; Essentials of Obstetrics By Arulkumaran, 2004, Page 200

## 1373. Regarding medical termination of pregnany, all of the following are true except-:
***September 2007***

a) Professional secrecy has to be maintained

b) Woman has the right to abort his fetus without consent of husband

c) In an emergency,termination of pregnancy can be done by a single doctor

d) Termination of pregnancy up to 20 weeks can be done by medical practitioner without consulting specialist

Correct Answer - D

Ans. D: Termination of pregnancy up to 20 weeks can be done by medical practitioner without consulting specialist

**If the period of pregnancy is:**

- Below 12 weeks, it can be terminated by on the opinion of a single doctor.
- If the period is between 12-20 weeks, two doctors must agree, though only one can do it once the opinion is formed
- In an emergency, even after 20 weeks a single doctor can perform it. Consent of the husband for MTP is not required

## 1374. Cryptomenorrhea occurs due to :

a) Imperforate hymen

b) Asherman's syndrome

c) Mullerian agenesis

d) All

Correct Answer - A
Imperforate hymen

**1375. IUCD with maximum incidence of ectopic pregnancy :**

a) Progestasert

b) Lippes loop

c) Copper - T

d) Multiload device

Correct Answer - A
Progestasert

## 1376. IUCD is contraindicated in :

a) Anemia

b) Hypertension

c) Infection

d) All of the above

Correct Answer - C
Infection

## 1377. Which method of contraception is not used in patient with active syphilis?

a) IUCD

b) Oral contraceptive pills

c) Barrier devices

d) Calendar method

Correct Answer - A

**Ans. is 'a' i.e.,IUCD**

- Syphilis is a sexually transmitted disease.
- Use of IUCD is strictly contraindicated in patient with active genital tract infection thus use of IUCD is contraindicated in in patient with active syphilis

## 1378. Natural method of contraception is:
*September 2005*

a) Rhythm method

b) Coitus interruptus

c) Breast feeding

d) All of the above

Correct Answer - D

**Ans. D: All of the above**

Natural methods of contraception are:

- Abstinence

Refraining from penetrative sex provides 100% protection from pregnancy, and offers effective prevention of transmission of sexually transmitted infections as well.

Withdrawal or Coitus interruptus

The withdrawal method of family planning is unlike other natural methods in that it is male-controlled. Calendar methods - based on calculations of cycle length

In calendar rhythm methods, a woman makes an estimate of the days she is fertile based on past menstrual cycle length. This involves setting the days of avoidance of unprotected intercourse.

- Methods based on symptoms and signs

- Ovulation Method, Billings Method, Cervical Mucus Method

These methods are based on the changes in cervical secretions due to the effects of circulating levels of estrogen and progesterone

- Basal Body Temperature (BBT) Method

Due to the actions of progesterone on the hypothalamus, a woman's body temperature rises slightly after she ovulates (0.2 to 0.5 degrees C) and remains elevated until the end of the cycle, until

menstruation. Women who use this method must chart their temperature every day, immediately after waking up and before getting out of bed or drinking any liquids.
- Sympto-Thermal Method
- This method combines several techniques to predict ovulation. It typically includes monitoring and charting cervical mucus and position and temperature changes on a daily basis and may include other signs of ovulation, such as breast tenderness, back pain, abdominal pain or "heaviness," or light intermenstrual bleeding.

- Lactational Amenorrhea Method (LAM)
Breastfeeding to achieve contraception, called the lactational amenorrhea method, or LAM, is more than 98% effective during the first 6 months following delivery.

## 1379. Which of the following is an absolute CONTRAINDICATION to OCP use:

a) Chronic renal disease

b) DVT

c) Diabetes mellitus

d) History of amenorrhea

Correct Answer - B

**Ans. B. DVT**

**Contraindications to combined oral contraceptives**

- They are generally accepted to be contraindicated in women with pre-existing cardiovascular disease, in women who have a familial tendency to form blood clots/ thrombosis (such as familial factor V Leiden), women with severe obesity and/or hypercholesterolemia (high cholesterol level), and in smokers over age 40.
- COCP are also contraindicated for women with liver tumors, hepatic adenoma or severe cirrhosis of the liver, and for those with known or suspected breast cancer.

## 1380. Following are the characteristic features of an ideal IUCD candidate except?

a) Has borne at least two children

b) Has no history of pelvic disease

c) Has normal menstrual periods

d) Is willing to check the IUCD tail

Correct Answer - A

**Ans. is 'a' i.e., Has borne atleast two children**

**The Planned Parenthood Federation of America has described an ideal IUCD candidate as a woman who:**

- Has borne atleast one child
- Has no history of pelvic disease
- Has normal menstrual periods
- Is willing to check the IUCD tail
- Has access to follow up and treatment of potential problems
- Is in monogamous relationship.

**1381. All of the following drugs are effective for cervical ripening during pregnancy except :**

a) Prostaglandin E2

b) Oxytocin

c) Progesterone

d) Misoprostol

Correct Answer - C
**Ans. is c i.e. Progesterone**

## 1382. Causes of dysfunctional uterine bleeding can be:

a) Uterine polyp

b) Fibroid

c) Granulosa cell tumour

d) Irregular ripening of endometrium

Correct Answer - D

**Ans. is d and e i.e. Irregular ripening of endometrium**

**Irregular ripening of the endometrium**

- There is a poor formation and inadequate function of corpus leuteum.
- Secretion of both progesterone and estrogen is inadequate to support the endometrial growth.
- *Slight bleeding occurs and continues* prior *to the start of proper flow*
  - *The endocrine profile in the leuteal phase shows persistent low level of urinary pregnanediol level of less than 3 mg or plasma progesterone level less than 5ng/mL.*
  - *Endometrial study prior to or soon after spotting reveals patchy area of secretory changes amidst proliferative endometrium.*

DUB **is** defined as a state of abnormal uterine bleeding without any clinically detectable organic pelvic pathology.

**DUB is of two types :**

1. Anovulatory (80%)
2. Ovulatory (20%)

**Anovulatory (80%) :** • Threshold bleeding of puberty menorrhagia

- Metropathia hemorrhagica°/cystic glandular hyperplasia°
- **Premenopausal DUB** (Atrophy of endometrium).

**Ovulatory (20%) :**

- Irregular ripening°
- Irregular shedding°
- IUCD **insertion**
- Following sterilization operation.

## 1383. In Medical termination of pregnancy, according to FDA, Misoprostol is given after how many hours of Mifepristone?

a) 24 hours

b) 48 hours

c) 72 hours

d) 96 hours

Correct Answer - B

**Ans. is 'b' i.e., 48 hours**

**FDA approved protocol - (Original protocol)**

- 600 mg of mifepristone (i.e., 3 tablets) given orally on day 1 followed 2 days (48 hours) later by oral misoprostol 400 tig (2 tablets) on day 3.
- The treatment should be started no more than 48 days from the start of the last menstrual period.

**But according to the recent protocol**

- 200 mg of mifepristone (it is as effective as 600 mg of mifepristone) is given orally on Day 1 followed 2 days (48 hours) later by vaginal misoprostol 800 pg.
- This regime provides highest efficacy within 63 days of amenorrhea.

## 1384. According to WHO guidelines, which of the following is true about management of second stage of labor?

a) Manual support of perineum to maintain continuous deflexion of head

b) Episiotomy should be performed as a routine

c) A warm cloth should be applied to the perineum to prevent trauma

d) Delivery should he ideally performed in a lithotomy position

Correct Answer - A

Answer- A. Manual support of perineum to maintain continuous deflexion of head

- Do not perform perineal massage in 2nd stage of labor.
- Either the hands on'(guarding the perineum & deflexing the baby's head) or the 'hands poised' (with hands off the perineum and baby's head but in readiness) technique can be used to facilitate spontaneous birth.
- Do not offer lidocaine spray to reduce pain in 2nd stage oflabor.
- Do not carry out a routine episiotomy during spontaneous vaginal birth.
- Do not offer episiotomy routinely at vaginal birth after previous third- or fourth-degree trauma

## 1385. What is not included in active management of third stage of labour:

a) Early cord clamping

b) Uterine massage

c) Use of oxytocin

d) Controlled cord traction

Correct Answer - A
Ans: A. Early cord clamping

| Stage | Starts/ Ends | Duration | | Abnormalities |
|---|---|---|---|---|
| | | Primi-parous | Multip-arous | |
| 3rd | Delivery of infant to delivery of placenta. | 0-0.5 hour | 0-0.5 hour | **Prolonged third stage:**<br>• Failure to deliver placenta within 30 minutes<br>**Cause:** Consider placenta percreta/accreta/increta<br>**Management:**<br>• IV oxytocin<br>• If oxytocin fails, attempt manual removal<br>• Hysterectomy may **be** needed |

## 1386. Hormone replacement therapy is not

a) Urogenital atrophy

b) Vasomotor symptoms

c) Prevention of osteoporosis

d) Prevention of CAD

Correct Answer - D
Answer- D (Prevention CAD)

- Hormone replacement therapy increases the risk of MI (coronary artery disease). The increased risk is attributed to progestin component.

o HRT restore Ca++ balance, further bone loss is prevented and the excess fracture risk is nullified. o There is a higher incidence of breast cancer.
o Risk for endometrial carcinoma is not increased as protective effect of progestin nullify the carcinogenic effect of estrogen.
o There is increased risk for gall stone and migraine.
o There is a small protective effective of HRT on colorectal cancer.
Note :?
o Usually in HRT combination of estrogen and progestin is given (combined HRT), except in hysterectimized women where estrogen alone is given.
o With estrogen alone there is increased risk of endometrial cancer and decrease risk of coronary artery disease (as estrogen increases HDL and decreases LDL and triglyceride level).
o So for HRT with estrogen alone the answer of this question will change. In that case it will be option 'a' i.e., increased risk of coronary artery disease.

**1387.** **Which of the following condition is associated with dysfunctional uterine bleeding?**

a) Metropathia haemorrhagica

b) Polycystic ovary

c) Endometrial TB

d) Hypothyroidism

Correct Answer - A

Metropathia haemorrhagica is a condition associated with cyclic endometrial hyperplasia and is the best documented type of dysfunctional uterine bleeding.
In this, ovary is refractory to normal levels of pituitary gonadotropins, the follicles ripen but do not rupture and the endometrium become hyperplastic under persistent oestrogenic stimulation.
Patient develop heavy painless hemorrhage after a variable duration of amenorrhea when the exuberant endometrium is shed as relative estrogen deficiency occur.

**Dysfunctional uterine bleeding is defined as:** Abnormal vaginal bleeding not associated with any demonstrable pathology.

**Aeitiologic classification:**
**Ovular:**

- Functional epimenorrhea
- Ovulation
- Functional menorrhagia

**Anovular**

- Metropathia haemorrhagica
- Threshold bleeding

**Ref:** Gynaecology and Obstetrics By Balaram Jana page 43.

## 1388. Hysteroscopy is used in all EXCEPT :

a) Uterine synechiae

b) Abnormal vaginal bleeding

c) Infertility

d) None

Correct Answer - D
None

## 1389. Hysteroscopy is indicated in all of the following except:
***March 2011***

a) Asherman syndrome

b) Infertility

c) Misplaced intrauterine devices

d) Active pelvic infection

Correct Answer - D
**Ans. D: Active pelvic infection**
Genital tract infection is a contraindication to hysteroscopic therapeutic procedures

## 1390. Le Fort's operation is done in :

a) Elderly menopausal patients with advanced prolapse

b) Young woman suffering from second or third degree prolapse

c) Women under 40 years who are desirous of retaining their menstrual and reproduction function

d) Women over 40 years, those who have completed their families

Correct Answer - A
Elderly menopausal patients with advanced prolapse

## 1391. Following are the complications of gonococcal cervicitis except?

a) Fitz hug Curtis syndrome

b) Salpingitis

c) Endometritis

d) Vaginitis

Correct Answer - D
**Ans. is 'd' i.e., Vaginitis**
**Complications of cervicitis**

- Infection of Bartholin's gland
- **Urethritis**
- Acute endometritis
- Acute salpingitis
- Pelvic peritonitis infertility
- Peri hepatitis
- Ectopic pregnancy

## 1392. Following are the early causes of death in criminal abortion except?

a) Hemorrhage

b) Vagal inhibition

c) Fat embolism

d) Septicemia

Correct Answer - D

**Ans. is 'd' i.e., Septicemia**

**Death in criminal abortion**

| **Early Causes** | **Delayed causes** | **Late causes** |
|---|---|---|
| Hemorrhage | General peritonitis | Hepatitis |
| shock | Pelvic tetanus | Meningitis |
| vagal inhibition | Pyemia | Pneumonitis |
| Fat embolism | Septicemia | Endocarditis |
| Air embolism | Secondary hemorrhage | Pulmonary embolism |
| Cervix and vagina Perforation of uterus | | Systemic poisoning |

## 1393. Partogram is used for:
*March 2011*

a) Determining pattern of fetal heart rate

b) Determining position of cervix

c) Assessing integrity of utero-placental unit

d) Recording progress of labour

Correct Answer - D
Ans. D: Recording progress of labour
Partograph is a composite graphical record of key data (maternal and fetal) during labour, entered against time on a single sheet of paper

**Remember:**

- Assessment of labour is best done by partogram
- Graph showing relationship between cervical dilatation and labour is cervicograph

**Bishop's score includes:**

- Position of cervix
- Consistence of cervix
- Dilatation of cervix
- Effacement of cervix
- Station of head

## 1394. Post menopausal bleeding is most commonly due to :

a) Carcinoma cervix

b) Fibroid

c) Endometriosis

d) Genital TB

Correct Answer - A
Carcinoma cervix

## 1395. Anti-D Rh is given for:
***September 2005***

a) Rh positive father,Rh positive mother

b) Rh negative father,Rh positive mother

c) Rh negative father,Rh negative mother

d) Rh positive father,Rh negative mother

Correct Answer - D
Ans. D: Rh positive father,Rh negative mother
Rho(D) Immune Globulin is given by intramuscular injection that is used to prevent the immunological condition known as Rhesus disease (or hemolytic disease of newborn) particularly when father is Rh positive and mother is Rh negative.
It is a solution of IgG anti-D (anti-RhD) antibodies that bind to, and lead to the destruction of, fetal Rh D positive red blood cells that have passed from the fetal circulation to the maternal circulation. Therefore, in a Rhesus negative mother it can prevent sensitization of the maternal immune system to Rh D antigens, which can cause rhesus disease in the current or in subsequent pregnancies

## 1396. Hemolytic disease of newborn is least common with which blood group female -

a) A

b) B

c) 0

d) AB

Correct Answer - C

**Ans. is 'c' i.e., O**

- ABO incompatibility has a protective effect to the development of Rh sensitization and thus the development of hemolytic disease of newborn

## 1397. Best fertility result in?

a) Bicornuate

b) Unicornuate

c) Septate

d) Arcuate

Correct Answer - D
**Ans. D. Arcuate**
**Delivery rate and uterine malformations**

- The overall term delivery rate with uterine malformations is poorer and obstetrical complications are more common.
- Arcuate uterus has the best reproductive outcome with the live birth rates similar to normal uteri.

**1398.** **28 year old Nebisa has attended the obstetician for a routine anti-natal check up. It is confirmed that she has twins. She is now referred for an USG.**

## Assertion: Twin peak sign is an ultrasound feature of dichorionic diamniotic twin gestation

## Reason: Space in the intertwine membrane filled by proliferating placental villi give rise to twin peak sign.

a) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion

b) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion

c) Assertion is true, but Reason is false

d) Assertion is false, but Reason is true

Correct Answer - A

In dichorionic diamniotic twin gestation, the chorion and amnion of each twin reflect away from the fused placenta to form the intertwine membrane.

Number of intertwine membrane here are 4.

This space in the intertwine membrane is filled by proliferating placental villi give rise to **twin peak sign.**

**Reference:**

Textbook of Obstetrics By DC Dutta, 6th Edition, Page 206

**1399.** **The following causes can make an infant large for gestational age, EXCEPT:**

a) Hydrops fetalis

b) Genetic predisposition

c) Maternal diabetes mellitus

d) Maternal smoking

Correct Answer - D

When the infant's weight is above the ninetieth percentile, the infant is considered large for gestational age. It can be a consequence of genetic predisposition with similar large infants in previous pregnancies of the mother. Glucose crosses the placenta but insulin cannot. Consequently, fetal hyperglycemia and hyperinsulinemia develop and results in increased somatic growth of the fetus.

Beckwith-Wiedemann syndrome is multifactorial disorder which includes macrosomia, omphalocele, macroglossia, and hypoglycemia. Hydrops fetalis, is characterized by severe chronic anemia and hypoproteinemia, and it can also become apparent as an infant large for gestational age. On the other hand, maternal smoking results in asymmetric growth retardation due to adverse effect on fetal nutrition. Exposed infants are small for gestational age.

**Ref:** Burns D.M. (2012). Chapter 395. Nicotine Addiction. In D.L. Longo, A.S. Fauci, D.L. Kasper, S.L. Hauser, J.L. Jameson, J. Loscalzo (Eds), *Harrison's Principles of Internal Medicine*, 18e.

## 1400. Placental abnormality related to PPH is?

a) Placenta accreta

b) Placenta percreta

c) Retained placental

d) All the above

Correct Answer - D

**Ans. is 'd' i.e., All the above**

- Placenta: morbidly adherent placenta (accrete, percreta), partially or completely separately separated placenta but with retained bits of placental tissue leads to PPH.

## 1401. Following are the common histological types of bartholingland carcinoma except?

a) Adenocarcinoma

b) Squamous cell carcinoma

c) Adenosquamous carcinoma

d) Transitional cell carcinoma

Correct Answer - D

**Ans. is 'd' i.e., Transitional cell carcinoma**

| **Histological type** | **% of total bartholin gland carcinomas** |
|---|---|
| Adenocarcinoma | 40 |
| Squamous cell carcinoma | 40 |
| Adenocystic carcinoma | 15 |
| Adenosquamous carcinoma | 5 |
| Transitional cell carcinoma | rare |
| Small cell carcinoma | rare |

**1402. True about Braxton-Hick's contraction are all, *except:***
***Maharashtra 09***

a) Felt at 4th month

b) Painful

c) Contraction last for 1 min

d) Present even when fetus is dead

Correct Answer - B
Ans. Painful

## 1403. Polyhydroaminosis is volume of amniotic fluid more than: *September 2005*

a) 1000 ml

b) 2000 ml

c) 3000 ml

d) 4000 ml

Correct Answer - B
Ans. B: 2000 ml
Because the normal values for amniotic fluid volume increase during pregnancy, the actual volume that constitutes polyhydramnios is dependent on the gestational age of the fetus.
Polyhydramnios usually refers to amniotic fluid volumes greater than 2000 ml.
The range of fluid values diagnostic of oligohydramnios is not as wide as that for polyhydramnios. Less than 200 ml, or when amniotic fluid index is less than 5 cm, is usually considered to be indicative of oligohydramnios.

## 1404. Polyhydramnios is associated with all except :

a) Diabetes

b) Open spina bifida

c) Multiple pregnancy

d) Renal agenesis

Correct Answer - D
Renal agenesis

## 1405. Saline infusion sonography is also called?

a) Sonohysterography

b) Sonosalpingography

c) Hysterosalpingography

d) None of the above

Correct Answer - A

**Ans. is 'a' i.e.,Sonohysterography**

**Saline Infusion Sonography**

- It is also called Sonohysteorgraphy.
- In this procedure sterile saline is instilled into the uterine cavity before ultrasound evaluation for more precise visualization of the endometrial structures.
- It is often used as second step in the evaluation of abnormal uterine bleeding.
- It is particularly useful when ultrasonography suggests a focal lesion, when endometrial biopsy is nondiagnostic, or when abnormal bleeding persists despite normal initial work up.

## 1406. Following are the brachytherapy techniques for carcinoma cervix except-

a) Paris technique

b) New York technique

c) Manchester technique

d) Stockholm technique

Correct Answer - B

**Ans. B. New York technique**

- The Manchester system of cervical brachytherapy was one of the most commonly used methods of cervical brachytherapy, till the arrival of computer-based dosimetry.
- Before a look into the reason why this system was so popular we must look into the history of cervical brachytherapy and dosimetric systems as a whole
- In the Paris system of cervical brachytherapy, a single application of radium was specified.the system incorporated two cork colpostats in the form of a cylinder and an intrauterine tube.
- The Stockholm system of cervical brachytherapy was the predecessor of modern-day cervical brachytherapy dosimetric systems.
- In this system of fractionated course of radiotherapy was delivered and the total course of radiation therapy was delivered over a period of one month.
- Usually 2-3 applications were used, with each application lasting for a period of 20 to 30 hours.

## 1407. Tumor marker relevant with ovarian carcinoma is:

a) CA-125

b) CA-19.9

c) CD-30

d) CD-25

Correct Answer - A

**Answer is A (CA 125) :**

*Manual of Clinical Surgery by Kirk* CA *125 is the most* ***commonly*** *used tumor marker for ovarian cancer – Kirk*

*CA-125 is found in derivatives of Coelomic epithelium, including pleura pericardium and peritoneum but is not detected in normal ovarian tissue.*

# 1408. Normal upper limit of CA - 125 is ?

a) 25 U/ ml

b) 45 U/ ml

c) 65 U/ ml

d) 85 U/ ml

Correct Answer - A

**Ans. is `a' i.e., 25 U/ ml**

The normal value is less than 35 U/mL

**1) Carcinoembryonic antigen (CEA)**

- It is a glycoprotein produced by fetal gut, pancreas and liver.
- It is used as tumor marker for colorectal cancer (major use), *lung cancer, breast cancer and ovarian cancer.* It is also increased in non-neoplastic conditions like *alcoholic cirrhosis, hepatitis, IBD (CD, UC), smoking and pancreatitis.*
- In colorectal cancer it is used for screening; *response and follow up after surgery* (CEA *should diseapper in 6 weeks after resection), prognosis (higher levels suggests high tumor burden)* and *to see recurrence on follow up.* CEA antigen has no correlation with hepatic metastasis.
- *CEA lacks sensitivity as well as specificity, hence cannot be used to confirm the diagnosis.*

**2) Alpha-feto protein (AFP)**

- It is a glycoprotein synthesized normally early in fetal life by yolk sac, fetal liver and fetal GIT. *It is structurally and genetically related to albumin.*
- AFP is raised in *liver cancer (hepatocellular carcinoma), lung carcinoma, pancreatic carcinoma, colon carcinoma,* and *non-seminoma germ cell tumor of testis/ovary* (yolk sac

tumor/endodermal sinus tumor, *embryonal carcinoma, teratoma).*

- AFP is also raised in some non-neoplastic conditions like *cirrhosis, hepatitis, and pregnancy.*

**3) Human chorionic gonadotropin (HCG)**

- It is a placental hormone synthesized by syncytiotrophoblasts. It is glycoprotein with two subunits (dimer) : *a-subunit and /3-subunit. But only the P subunit of HCG is typically measured as a tumour marker because of specificity of the* 13 *subunit.* The i3 subunit of HCG has unique sequences that are not shared with other human glycoprotein hormones.
- It is detected by radioimmunoassay using antibodies to the 13 chain. a-HCG is not used as tumour marker because a unit of the FSH, LH and TSH are identical. So there can be cross reactivity between a subunits of these hormone. That is why in case of testicular tumours the patients also undergo simultaneous assay of LH to be certain that the marker detected is 13 HCG.
- HCG (13-HCG) is raised in *gestational trophoblastic disease (hydatidiform moles), gonadal germ cell tumor (embryonal carcinoma, choriocarcinoma), and pregnancy.*

**4) CA-125**

- Most important cancer with elevated CA-125 is *epithelial ovarian cancer.* CA-125 is also elevated in cancers of *endometrium, cervix,* fallopian tubes, pancreas, breast, lung and colon.
- Non-neoplastic conditions causing elevation of CA-125 are pregnancy, mensturation, *endometriosis,* PID, *abdominal TB,* peritonitis and uterine fibroid.

**Tumor markers for testicular/ovarian tumor**

1. *AFP (alpha-feto protein) : Teratoma, Yolk sac tumor (endodermal sinus tumor),* embryonal carcinoma.
2. *HCG (human chorionic gonadotrophin):* Choriocarcinoma, embryonal carcinoma.
3. *a,-antitrypsin :* Yolk sac tumor (endodermal sinus tumor).
4. *Placental alkaline phosphatase : Seminoma.*
5. *Other :* Placental lactogen, *LDH.*

## 1409. At what level of testosterone ovarian pathology should be searched ?

a) > 4 nmol/L

b) > 6 nmol/L

c) > 8 nmol/L

d) >10 nmol/L

Correct Answer - D
Ans. is 'd' i.e.,> 10 nmol/L
**Testosterone in females**

- It is secreted by the ovary (60%) and also derived from the peripheral conversion of androstenidione (40%), which is secreted in equal amounts by the ovary and adrenals.

**1410.** **Misoprostol has been found to be effective in all of the following except:**

a) Missed abortion

b) Induction of labour

c) Menorrhagia

d) Prevention of post-partum hemorrhage (PPH)

Correct Answer - C

Treatment of Menorrhagia involves administration of prostaglandin inhibitors. Misoprostol (PGE1) is a prostaglandin and is therefore certainly not indicated for treatment of metrorrhagia.

**Ref:** Textbook of Gynecology By D C Dutta, 6th Edition, Page 505

**1411.** **Which of the following is the chromosomal composition of the complete mole?**

a) 46 XX

b) 45X0

c) 69 XXY

d) 69 XXX

Correct Answer - A

- The chromosomal composition of **complete moles** is usually diploid and of paternal origin.
- About 85 percent are **46,XX** with both sets of chromosomes paternal in origin.
- Termed androgenesis, the ovum is fertilized by a haploid sperm, which duplicates its own chromosomes after meiosis.
- The chromosomes of the ovum are either absent or inactivated.
- In other complete moles, the chromosomal pattern may be 46,XY due to dispermic fertilization.

**Ref:** Cunningham F.G., Leveno K.J., Bloom S.L., Hauth J.C., Rouse D.J., Spong C.Y. (2010). Chapter.11. Gestational Trophoblastic Disease. In F.G. Cunningham, K.J. Leveno, S.L. Bloom, J.C. Hauth, D.J. Rouse, C.Y. Spong (Eds), Williams Obstetrics, 23e.

## 1412. Asherman syndrome is due to :

a) Overdose drugs

b) Postabortion curettage

c) Speticemia

d) Contraceptal pills

Correct Answer - B
Postabortion curettage

**1413.** **All the following are vaginal procedures done for urinary incontinence, EXCEPT:**

a) Transobturator tape

b) Anterior colporrhaphy

c) Marshall - Marchetti - Krantz procedure

d) Kelly's stitch

Correct Answer - C

In Marshall - Marchetti - Krantz procedure the paraurethral tissue at the level of the bladder neck is sutured the periosteum of the posterior surface of the pubic symphysis. It is an abdominal procedure.

**Also know**

**Burch colposuspension** - Paraurethral tissue is sutured to the iliopectineal ligament.

**Ref:** Essentials of Gynaecology by Lakshmi Seshadri, Edition 1, page - 341.

## 1414. Polycystic ovarian disease is associated with :

a) Ovarian cancer

b) Endometrial carcinoma

c) Congenital adrenal hyperplasia

d) Vaginal carcinoma

Correct Answer - B
Endometrial carcinoma

## 1415. In which case homologus artificial insemination is used in females :

a) Hormonal disturbance

b) Tubal block

c) Cervical factor

d) All of the above

Correct Answer - C

**Ans. is c i.e. Cervical factor**

Artificial insemination is mainly a method for overcoming male factor infertility, it can also be used in specific cases of female factor infertility viz.:

- Anatomical detect of the vagina and cervix.
- In cases of Vaginismus where sexual counselling has failed.
- Antisperm antibodies in cervical mucus. Indications for Artificial insemination :
- Oligospermia after sperm washout.
- Impotency
- Premature / Retrograde ejaculation
- Hypospadias
- Antisperm antibodies in the cervical mucus
- Unexplained infertility
- XY fractionation of sperm for sex selection, in genetic and chromosomal abnormalities.

Techniques used for artificial insemination include :

1. intrauterine and intrafallopian transfer done via hysteroscope
2. intracervical transfer
3. pericervical and vaginal transfer
4. direct intraperitoneal insemination (in case of unexplained infertility)

The semen is concentrated and its quality improved by the swim up technique or by use of percoll gradient.

The semen with normal sperms with good motility thus obtained is then inseminated into the female genital tract. **Timing –** It is done around ovulation.

Extra **Edge :** *Bijoy Shree Gupta*

**Indications for donor insemination :**

1. Azoospermia
2. Vasectomy (where reversal has failed or has a poor prognosis)
3. Untreatable oligospermia and other seminal fluid anomalies associated with male infertility
4. Hereditary or genetic disorder in the male partner example : Haemophilia, Tay-Sachs disease, Huntington's chorea.
5. Male partner has incorrectible ejaculatory dysfunction secondary to trauma, surgery, medication, psychological or neurological disorder.
6. The female recepient is Rh negative and severely rhesus isoimmunized with a Rh positive male partner.
7. Male partner has an ineradicable STD eg : HIV
8. Females without male partners.

**1416.** **A hypertensive primigravida developed Sheehan’s syndrome after the delivery. All of the following are seen with Sheehan's syndrome, EXCEPT:**

a) Obesity

b) Amenorrhoea

c) Failure to lactate

d) Absence of secondary sexual characteristics

Correct Answer - A

Severe intrapartum or early postpartum hemorrhage and associated hypotension is followed by **pituitary failure** or ***Sheehan syndrome***.
It refers to panhypopituitarism.
Abrupt, severe hypotension leads to pituitary ischemia and necrosis.
*It is characterized by failure of lactation, amenorrhea, breast atrophy, loss of pubic and axillary hair, hypothyroidism, and adrenal cortical insufficiency.*

## Also know:

The pituitary cell types are differentially sensitive to damage. For this reason, prolactin secretion deficiency is the most common, followed by loss of gonadotropin and growth hormone release, loss of ACTH production, and least commonly, by decreases in thyroid-stimulating hormone (TSH) secretion.

**Ref:** Leveno K.J., Hauth J.C., Rouse D.J., Spong C.Y. (2010). Chapter 35. Obstetrical Hemorrhage. In K.J. Leveno, J.C. Hauth, D.J. Rouse, C.Y. Spong (Eds), *Williams Obstetrics,* 23e.

## 1417. Best for unruptured ectopic pregnancy is:

a) Per abdominal US

b) HCG

c) Trans vaginal US

d) Amniocentesis

Correct Answer - C
C i.e. Tranvaginal US

**1418.**

## Which of the following is not a part of HELLP syndrome?

a) Hemolysis

b) Elevated liver enzymes

c) Thrombocytopenia

d) Retroplacental hemorrhage

Correct Answer - D
Ans. d. Retroplacental hemorrhage
Retroplacental hemorrhage is not a part of HELLP syndrome.
HELLP syndronte is an acronymfor Hemolysis (H), Elevated liver enzymes (EL) and Low Platelet count (LP) of < 1,00,000/$mm^3$
Clinical Features:
. Manifested by nausea, vomiting, epigastric or right upper quadrant pain, along with biochemical and
haematological changes.
. Parenchymal necrosis of liver iauses elevation in hepatic enzymes (AST and ALT > 70 IU/L and LDH > 600 IU/L).
. There may be subcapsular hematoma formation (which may need CT scanning) and abnormal peripheral smear.
. Eventually liver mav rupture to cause sudden hypotension, due to hemoperitoneum

**1419. The dose of anti D gamma globulin given after term delivery for a Rh negative mother and Rh positive baby is :**

a) 50 micro gram

b) 200 micro gram

c) 300 micro gram

d) 100 micro gram

Correct Answer - C
300 micro gram

## 1420. Atypical endometrial hyperplasia undergoes malignant transformation in :

a) 10 %

b) 25%

c) 45 %

d) 70 %

Correct Answer - B
25%

## 1421. The most important indication for surgical repair of a Bicornuate Uterus is :

a) Infertility

b) Dysmenorrhoea

c) Menorrhagia

d) Habitual abortion

Correct Answer - D
Habitual abortion
Bicornuate uterus is caused by incomplete lateral fusion of the mullerian ducts is (only the lower parts of the duct fuse, leaving the cornua separate). it is characterized by 2 separate but communicating endometrial cavities and a single uterine cervix. Failure of fusion may extend to the cervix resulting in a complete bicornuate uterus or may be partial causing a milder form.
Bicornuate uterus causes :

- Menorrhagia° (because of larger bleeding surface)
- Spasmodic dysmenorrhea.°

But most of the cases are first recognized during pregnancy as a result of pregnancy mishap like :

- Abortions and premature labour.°
- Malpresentations - Transverse lie is favoured.°
- Insufficient uterine action leading to retained placenta and PPH.°

Diagnosis — On bimanual examination it may be possible to feel the two separate uterine horns or uterus may appear unusually wide.°

- HSG is the initial diagnostic step in evaluating a possible bicornuate uterus but HSG does not differentiate between a bicornuate and

septate uterus.

- To distinguish a septate uterus from bicornuate uterus — USG should be done.

Management : Bicornuate uterus re•uires sur al treatment onl h- it causes habitual abortions.°

"When a bicornuate or se tate uterus has caused not less than three Miscarriages and no pregnancy has resulted in a viable child, surgery may be indicated."

"Surgical reconstruction of the bicornuate uterus has been advocated in women with multiple spontaneous abortions and in whom no other causative factors are identified."

Surgery done is : Stressmann Metroplasty° where an incision is made over the uterus and the two horns are sutured together to form a single cavity.

After such a surgery : if woman conceives she should be taken up forEleativelaCaat 38 weeks of Gestation.°

## 1422. Twin pregnancy of the same age and sex rules out ?

a) Superfetation

b) Maternal twins

c) Superfecundation

d) None of the above

Correct Answer - A
**Ans. is 'a' i.e., Superfetation**
**Superfetation**

- It is the simultaneous occurrence of more than one stage of developing offspring in the same animal.
- In mammals, it manifests as the formation of an embryo from a different estrous cycle while another embryo or fetus is already present in the uterus.

## 1423. Fibroid with maximum symptoms is ?

a) Submucous

b) Subserous

c) Intramural

d) Cervical

Correct Answer - A
**Ans. is 'a' i.e., Submucous**

**1424.**

## Common indications for caesarian section in primigravidae are all except ?

a) Failed induction

b) Cephalopelvic disproportion

c) Dystocia

d) Malpresentation

Correct Answer - D
**Ans. is 'd' i.e., Malpresentation**
**Primigravidae**

- Failed induction
- Fetal distress (non-reassuring FHR)
- Cephalo-pelvic disproportion
- Dystocia
- Malpresenation, malposition

**Multigravidae**

- Previous caesarean delivery
- APH
- Malpresenation

## 1425. Gardasil protects against following HPV strains except ?

a) 6

b) 16

c) 18

d) 33

Correct Answer - D

**Ans. is 'd' i.e.,33**

**HPV Vaccines**

- Cervarix - Protects against HPV-16, 18.
- Gardasil 4 Protects against HPV - 6, 11, 16, 18.
- Gardasil -9 - Protects against HPV - 6, 11, 16, 18, 31, 33, 45, 52, 58.

## 1426. Primary amenorrhoea is a feature of all EXCEPT:
## September 2012

a) Turner's syndrome

b) Stein-Leventhal syndrome

c) Rokitansky-Kustner-Hauser syndrome

d) Kallman syndrome

Correct Answer - B
Ans. B i.e. Stein Leventhal syndrome

## 1427. Lichen planus all are true except ?

a) Pruritic lesion

b) Involves nails

c) Involves mucus membranes

d) Steroid is not used in treatment

Correct Answer - D
Ans. is 'd' i.e., Steroid is not used in treatment

## 1428. Patient with leprosy, smear sample taken show 10 - 100 bacilli in one field. Bacterial index is ?

a) 1+

b) 2+

c) 3+

d) 4+

Correct Answer - D
Ans. is 'd' i.e., 4+
**Bacteriological Index For Leprosy**

- It is a rough index expressing probable number of acid fast bacilli for standardized microscopic field in skin smear.
- It is indicative of the load of bacteria at the site from which smear is taken.
- It does not differentiate between live and dead bacilli.
- It is not an indication of total bacillary load in the body.
- Ridleys scale is followed to calculate the bacterial index.
- = no bacilli in 100 fields
  1+ = 1 - 10 bacilli in 100 fields 2+ = 1 - 10 bacilli in 10 fields 3+ = 1 - 10 bacilli in 1 fields 4+ = 10 - 100 bacilli in 1 field 5+ = 100 - 1000 bacilli in 1 field 6+ = >1000 bacilli in 1 field.
- Our patient has 10 - 100 bacilli in 1 field thus the bacteriological index is - 4+

**1429. Patient with pruritic lesion over Left shoulder showing cigarette paper atrophy and poikiloderma with generalized lymphadenopathy. Histopathology exmanination of lesion shows CD4 positive sezary leutzner cells. What is the dermoepidermal manifestation of this disease?**

a) Pautrier's micro abscess

b) Pin point ulcers

c) Discharging sinus

d) Miliaria

Correct Answer - A

Ans. is 'a' i.e., Pautrier's micro abscess

- Patient with pruritic lesion over Left shoulder showing cigarette paper atrophy and poikiloderma with generalized lymphadenopathy. Histopathology exmanination of lesion shows CD4 positive sezary leutzner cells —> points to the diagnosis of Mycosis fungoides.

**Histological features of mycosis fungoides**

- Histological hallmark is the presence of sezary-Lutzner cells (CD4 positive).
- These sezary-Lutzner cells form band like aggregates within superficial dermis and invade epidermis as single cells and small clusters, referred to as pautrier microabscess.
- There is pronounced infiltration of sezary-lutzner cells into epidermis

which is referred to as epidermotropism.

- In more advanced nodular stage these malignant T cells (sezary cells) lose their epidermotropic tendency and grow deeply into the dermis, and eventually seed lymphatics and peripheral circulation.

## 1430. Following are the differential diagnosis of congenital disorders of pigmentation ?

a) Teitz syndrome

b) Piebaldism

c) Tuberous sclerosis

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
**Differential diagnosis of congenital disorders of pigmentation**

- Waardenburg syndromes types 1-4
- Tietz syndrome
- Piebaldism
- Woolf's syndrome
- Generalized vitiligo
- Segmental vitiligo
- Vogt-Koyanagi-Harada syndrome
- Chemical leukoderma
- Tuberous sclerosis (hypopigmented macules and patches)
- Ziprkowski-Margolis syndrome (X-linked albinism-deafness syndrome)

## 1431. Causes of localized hypopigmented macule or patch are all except ?

a) Vitiligo

b) Piebaldism

c) Pityriasis alba

d) Freckle

Correct Answer - D
Ans. is 'd' i.e., Freckle

## 1432. Koenen's tumor associated with ?

a) Tuberous sclerosis

b) Neurofibromatosis

c) Psoriasis

d) Alopecia aerata

Correct Answer - A
Ans. is 'a' i.e., Tuberous sclerosis

- Koenen's periungual fibroma is seen in tuberous sclerosis

## 1433. Enzyme deficient in occulocutaneous albinism type 1 is ?

a) Tyrosinase

b) Pink protein

c) Tyrosinase related protein 1

d) Membrane associated transport protein (MATP)

Correct Answer - A
Ans. is 'a' i.e., Tyrosinase

**1434. Tinea corporis is commonly caused by all the following except ?**

a) T. rubrum

b) T. verrucosum

c) E. floccosum

d) M. canis

Correct Answer - D
Ans. is 'd' i.e., M. Canis

## 1435. Telogen phase of hair growth lasts for ?

a) 1 day

b) 10 days

c) 100 days

d) 1000 days

Correct Answer - C
Ans. is 'c' i.e., 100 days

- The most important feature of hair follicle is that their activity is cyclic. Hair grows at *0.4 mm per day* and as it reaches a definitive length, it is shed to be replaced by a new hair. Hair undergoes through 3 different phases of hair cycle :?

**1) Anagen phase (Phase of activity and growth)**

- This is the phase in which *growth of hair* takes place -4 Cells in the root of hair are dividing rapidly. *Melanogenesis* also occurs during anagen phase. This phase lasts for 3 years (2-6 years). Most of the *hair (75-80%)* are in anagen phase at a given time.

**2) Catagen phase (Transition phase)**

- It is the *transition phase* between anagen and telogen. *3% of hair* are in this phase. During this phase *growth stops* and outer root sheat shrinks and attaches to root of hair known as *club hair.* This phase lasts for *2-3 weeks.*

**3) Telogen phase (Resting or degenerative phase)**

- This phase is the *resting phase* and lasts for *100 days (3 months). About 25-100 telogen hair are shed normally each day.* 10-15% of hair are in this phase. After telogen phase the cycle is complete and the new hair, which starts growing in same follicle, pushes this old hair (who has completed the hair cycle) —> Old hair is lost and new hair starts growing.

- This hair cycle of one hair is independent of the cycle of neighboring hair, i.e., the *neighboring hair follicles are not synchronized in growth,* this is called Mosaic. The proportion of hair in each phase can be estimated by looking at the plucked hair called as trichogram.

## 1436. RAST test is used in diagnosis of

a) Allergic dermatitis

b) Seborrhoeicdematitis

c) Mycosis fungoides

d) Squamous cell carcinoma

Correct Answer - A
Ans. is 'a' i.e., Allergic dermatitis
**Diagnostic tests in allergic contact dermatitis**

- Diagnostic Tests (if indicated)
- Patch testing
- Photopatch testing
- Tests for immediate hypersensitivity

**Radioallergosorbent assay test (RAST)**

- Open and semiopen patch tests (read at 10 and 45 minutes)
- Prick test
- Scratch-chamber test
- Repeat open application "use" test
- Potassium hydroxide examination to fungi, glass fibers
- Fungal, bacterial, and viral smears and cultures
- Skin biopsies
- Dimethylglyoxime test for detecting nickel, other tests (detection of chromates and formaldehyde)
- Chemical analysis

## 1437. Darriers sign seen in -

a) Lichen nitidus

b) Urticariapigmentosa

c) Vitiligo

d) Lichen sclerosis

Correct Answer - B
Ans. is 'b' i.e., Urticariapigmentosa

- Urticaria pigmentosais a familial cutaneous disorder characterised by generalised distribution of red brown macules.
- Each lesion represents a collection of mast cells in the dermis with hyperpigmentation of overlying epidermis. o The most characteristic features is that these lesions urticate on scratching.
- Light scratching with the point of forceps or rounded tip of a pen or even rubbing causes these mast cells to degranulate leading to localized urticaria (become red swollen and enlarged) —> Darrier's Sign o Extensive release of histamine from mast cell degranulation may result in - Headache, flushing diarrhea and pruritis.

## 1438. Wood lamp is used to diagnose ?

a) Psoriasis

b) Tinea versicolor

c) Pityriasis rosae

d) Erysipelas

Correct Answer - B
Ans. is b i.e., Tinea versicolor
**<u>Diagnosis of TineaVersicolor</u>**

1. Examination of scales in 10% KOH shows short hyphae and round spores (Sphagetti and meat ball appearance).
2. Wood lamp shows apple green fluorescence (blue-green fluorescence).
3. Skin surface biopsy --> A Cyanoacrylate adhesive (Crazy glue) is used to remove the layer of stratum coreum on glass slide and then stained with PAS reagent.

## 1439. Auspitz sign is seen in ?

a) Psoriasis

b) Lichen Planus

c) Vitiligo

d) Contact dermatitis

Correct Answer - A
Ans. is 'a' i.e., Psoriasis

- See explanation- 5 of session- 5 of Skin of All India 2014-15 pattern of this book.

## 1440. Dew drops on rose petal appearance is seen infection with ?

a) Varicella zoster virus

b) Herpes genitalis

c) Candida

d) T. rubrum

Correct Answer - A
Ans. is 'a' i.e., Varicella zoster virus
**Chickenpox - Varicella Zoster virus infection**

- Etiology : Varicella-zoster virus.
- Prodrome : Fever and malaise.
- Morphology : Crops of papules with erythematous halo; rapidly become vesicular (dew drops on rose petal appearance), then pustular. Eruption at different stages present. Heal with minimal scarring unless complicated by secondary infection or hemorrhagic lesions (as seen in immunocompromised). Adults usually have a more severe eruption.
- Site : Centripetal distribution.
- Prophylaxis : Live attenuated vaccine.
- Treatment : Specific antiviral therapy (acyclovir 800 mg, five times daily x 7-10 days) in adults and in immunocompromised individuals. None needed in children.

## 1441. Soft sore is caused by?

a) H ducreyi

b) Calymmatobacteriumgranulomatis

c) Chlamydia trachomitis

d) T. Pallidum

Correct Answer - A
Ans. is 'a' i.e., H ducreyi

- Lesion of primary syphilis —> Chancre (Hard - chancre).
- Lesion of H. Ducreyi —f Chancroid (Soft - chancre).

## 1442. Wavelength of UVB rays is -

a) 290 - 320 nm

b) 320 - 360 nm

c) 360 - 390 nm

d) 390 - 420 nm

Correct Answer - A

Ans. is 'a' i.e., 290 - 320 nm

- UV rays are used directly to treat skin conditions. It is simply referred to as phototherapy.

**These may be : ?**

a. UVB phototherapy (290-320 nm)
b. Narrow band UVB phototherapy (311 nm)
c. UVA1 phototherapy (360-380 nm)

## 1443. Following is/ are the clinical feature/ s of lepromatous leprosy ?

a) Leonine facies

b) Loss of libido and impotence

c) Saddle nose

d) All the above

Correct Answer - D
Ans. is 'd' i.e., All the above
**Important clinical features of lepromatous leprosy**

- Diffuse erythema, tingling, nasal stuffiness or epistaxis are earliest manifestations.
- Nodules with predeliction for external ears.
- Madarosis (loss of eye lashes and eye brows).
- Saddle nose (Collapse of nasal bridge) and perforation of palate.
- Testicular involvement results in loss of testicular sensation, loss of libido, impotence & gynaecomastia.
- Leonine face (Diffuse dermal infiltration of face).
- Symmetrical thickening of peripheral nerve.?
- Trophic ulcer/neuropathic ulcer/Perforating ulcer develop frequently in lepromatous leprosy because sensory impairment appears before motor weakness and the patient continues to misuse his hands and feet.
- Systemic involvement :- Lymphadenopathy, Hepatomegaly, ocular involvement.

## 1444. Vitamin D analogue calcitriol is useful in the treatment of ?

a) Lichen planus

b) Psoriasis

c) Phemphigus

d) Leprosy

Correct Answer - B
Ans. is 'b' i.e., Psoriasis

## 1445. Tense itching bulla is seen in ?

a) Bullous pemphigoid

b) Dermatitis herpetiformis

c) Pemphigous vulgaris

d) Erythema multiforme

Correct Answer - A
Ans. is 'a' i.e., Bullous pemphigoid

## 1446. The premalignant skin lesions are all except ?

a) Bowen's disease

b) Actinic keratoses

c) DLE

d) Miliaria

Correct Answer - D
Ans. is `d' i.e., Miliaria

## 1447. Which of the following is associated with sun exposure

a) Actinic keratosis

b) Seborrhoeic keratosis

c) Sebaceous cell carcinoma

d) Syringoma

Correct Answer - A

Ans. a. Actinic keratosis

Actinic keratosis or solar keratosis is a reflection of abnormal skin cell development due to exposure to ultraviolet radiation

**Actinic/Solar Keratosis**

- Premalignant lesions occurring on the sun exposed part of the body in persons of fair complexion.
- It is raised, pink or grey, scaling or warty hyperkeratotic plaque or papule
- 0.2% transform to squamous cell carcinoma

**Treatment:**

- Liquid nitrogen application is therapy of choice.
- 5-FU for multiple superficial actinic keratosis.
- Imiquimod can also be used

## 1448. Shingles is the other name for ?

a) Herpes simplex

b) Varicella?zoster

c) Herpes Zoster

d) Herpes labialis

Correct Answer - C
Ans. is 'c' i.e., Herpes Zoster

- Herpes zoster is also referred to as shingles.

## 1449. Immunoflorescence pattern in pemphigus vulgaris is suggestive of ?

a) Intercellular IgG deposition

b) C3 and IgG deposition at dermo-epidermal junction

c) IgA deposition at dermo-epidermal junction

d) IgA at pappilary tip

Correct Answer - A
Ans. is 'a' i.e., Intercellular IgG deposition

## 1450. Recurrent genital ulcer is caused by

a) HSV 1

b) HSV 2

c) HSV 3

d) HSV 4

Correct Answer - B
Ans. is 'b' i.e., HSV 2

- Most common cause of recurrent genital ulcer is HSV.
- Infact, the characteristic feature of Herpes genitalis is that it is recurrent.
- Genital ulcer is caused by HSV 2.

## 1451. Most common association with Acanthosis nigricans ?

a) Hypertension

b) DM

c) Obesity

d) Hypothyroidism

Correct Answer - C

Ans. is 'c' i.e., Obesity

- Acanthosis nigricans is a *brown to black, velvety hyperpigmentation* of the skin. It is usually found in *body folds,* such as posterior & lateral folds of neck, *axilla,* groin, umblicus, forehead. It typically occurs in individuals younger than 40 years of age.
- Histopathologically papillomatosis is characteristically seen; however, there is no hypermelanosis and there is only mild acanthosis, if present.
- It is associated with :

i. Obesity (most common)

i. Endocrinopathies —> Hypothyroidism, hyperthyroidism, insuline resistance diabetes, Cushing's disease, PCOD, Bloom syndrome.

i. Internal malignancy —> Gastric adenocarcinoma.

## 1452. Which is a secondary skin lesion ?

a) Plaque

b) Macule

c) Abscess

d) Scales

Correct Answer - D
Ans. is 'd' i.e., Scales
**Basic skin lesions**

i. Primary -4 *Macule, papule,* plaque, nodule, vesicle, bulla, cyst, *abscess,* wheals (hives).
i. Secondary -4 Scales, crusts, excoriation, erosion, ulcer, atrophy, lichenification.

- B. Special lesions —> Burrow, comedones, milia, telangiectasia.

## 1453. Histological finding of Lichen planus ?

a) Acanthosis

b) Hyperkeratosis

c) Basal cell degeneration

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**Histopathology in Lichen planus**

1. The basic pathology in lichen planus is the damage to the basal cell layer of epidermis leading to hydropic degeneration of basal cells.
2. Epidermal thickening especially of granular cell layer --* Hypergranulosis.
3. Hyperkeratosis (Thickening of stratum cornuem)
4. Acanthosis (Thickening of Stratum) malpighi.
5. Subepidermal - lichenoid band due to deposition of lymphocytes & histiocytes in upper dermis.
6. Dropping of melanin pigment from damaged keratinocytes of epidermis into dermis —>pigment incontinence.
7. This melanin is engulfed by macrophages which results information of cytoid bodies (civatte or colloid bodies).
8. Mox Joseph Histological cleft —> Separation of epidermis in small clefts.

## 1454. Bromhidrosis affect which gland ?

a) Eccrine sweat gland

b) Apocrine sweat gland

c) Both eccrine and apocrine sweat gland

d) None of the above

Correct Answer - B
Ans. is 'b' i.e., Apocrine sweat gland
**Osmidrosis or bromhidrosis:**

- It is defined by a foul odor of the sweat.
- This is mainly due to a water-rich environment that supports bacteria, which is caused by an abnormal increase in perspiration (Hyperhydrosis).
- This can be particularly strong when it happens in the axillary region involving the apocrine sweat glands.

## 1455. Carpet tack sign seen in ?

a) Syphilis

b) Psoriasis

c) Lupus vulgaris

d) DLE

Correct Answer - D
Ans. is 'd' i.e., DLE

- See explanation- 1 of session- 6 of Skin of All India 2014-15 pattern of this book.

## 1456. Alternative to succinylcholine which muscle relaxant can be used while endotracheal intubation

a) Atracurium

b) Pancuronium

c) Mivacurium

d) Vecuronium

Correct Answer - C
Ans. is 'c' i.e., Mivacurium

## 1457. Dibucain number refers to ?

a) Ach cholinestrase activity derangement

b) Potency of muscle relaxants

c) Potency of general anaesthetics

d) None

Correct Answer - A
Ans. is 'a' i.e., Ach chlinestrase activity derangement

- Dibucain number : Dibucain (a local anaesthetic) inhibits 80% of normal pseudocholinesterase and 20% of atypical (non-functional) pseudocholinesterase. Therefore normal dibucain number is 70-80%. Dibucain number is used to measure the activity of atypical pseudocholinesterase.

## 1458. Which of the following skeletal muscle relaxants undergo Hoffman's elimination ?

a) Atracurium

b) Succinylcholine

c) Mivacurium

d) Vecuronium

Correct Answer - A
Ans. is 'a' i.e., Atracurium

- Atracurium is inactivated by —> 1) Hoffman's elimination, 2) Alkaline ester hydrolysis. o Cisatracurium is inactivated by Hoffman's elimination.

## 1459. Succinylcholine causes hyperkalemia in patients with ?

a) Burn

b) Severe infection

c) High velocity trauma

d) All of the above

Correct Answer - D
Ans. is'd' i.e., All of the above

## 1460. Local anaesthetics act by?

a) Na channel inhibition inside gate

b) Na channel inhibition outside gate

c) K channel inhibition inside gate

d) K channel inhibition outside gate

Correct Answer - A

Ans. is 'a' i.e., Na channel inhibition inside gate

- Local anesthetics act by inhibiting Na' channels from inside.
- Mechanism of action of LA
- *Local anaesthetics block generation and conduction of nerve impulse at all part of neuron where they come in contact, without causing structural damage.*
- Thus not only sensory but motor impulses and autonomic control is also interrupted.
- Mechanism of action
- Normally *$Na^+$ channel* in axonal membrane has following phases :

  Recovery

  Resting (close) → Active (open) → Inactive (open)
- LAs prolong the inactive state —> channel takes longer to recover → refractory period of the fiber is increased.
- LAs first penetrate the axonol membrane to come inside and then their *active species (cationic form) bind to Net' channel from inside.*
- Cationic form (active form) is able to approach its receptor only when the channel is open at the inner face → So resting nerve is resistant to block as Na' channels are not activated and cationic form is not able to approach its receptor.
- So blockade develops rapidly when the nerve is stimulated repeatedly.

- Degree of blockade is frequency dependent greater blockade at higher frequency of stimulation.
- Exposure to higher concentration of Ca' reduces inactivation of Na' channels and lessens the block.
- Order of blockade of fibres B > C > AS> Ace, (3 & y (Autonomic > Sensory > Motor). Order of recovery is in reverse order.
- Among sensory afferent order of block is : Temperature (cold before heat) > Pain > touch > deep pressure.
- When applied to tongue, bitter taste is lost first followed by sweet and sour, and salty taste last of all.
- Myelinated nerves are blocked earlier than nonmyelinated.
- Smaller fibres are more sensitive than larger fibres.

## 1461. About lignocaine, all are true except ?

a) It is ester group of local anaesthetic

b) It has antiarrhythmic property

c) Can penetrate through mucous membrane

d) It can precipitate malignant hyperthermia

Correct Answer - A

Ans. is 'a' i.e., It is ester group of local anaesthetic

**<u>Lidocaine</u>**

- It is the most commonly used local anaesthetic.
- It also has *antiarrhythmic property.*
- Systemic toxicity *is* less than bupivacaine. CNS involvement occurs at much lesser dose than CVS involvement.
- It can precipitate *malignant hyperthermia* --> should not be used in these patients.
- For regional anaesthesia, it is used in different concentraions for different type of anaesthesia *Surface (topical) analgesia : 4%, nerve block : 1 - 2%, Spinal anaesthesia : 5%, Epidural : 1 - 2 %, Beir's block (intravenous regional anaesthesia) : 0·5% and infiltration block : 1 - 2%.*
- *Maximum safe* dose of lidocaine wihout adrenaline is 300 mg (4·5 mg/kg) and with adrenaline is 500 mg (7 mg/kg).
- Besides local anaesthesia lidocaine is used : -
- To treat ventricular arrhythmias.
- To blunt the cardiovascular response to laryngoscopy and intubation, (i.v. or intrathecal administered lidocaine).

## 1462. Local anaesthetic with maximum ionized form at physiological pH

a) Lignocaine

b) Etidocaine

c) Bupivacaine

d) Chloroprocaine

Correct Answer - D
Ans. is 'd' i.e., Chloroprocaine

## 1463. Local Anaesthetic in wound/ulcer management?

a) Prilocaine

b) Chlorprocaine

c) Benzocaine

d) Bupivacaine

Correct Answer - C
Ans. is 'c' i.e., Benzocaine

- For management of wound/ulcer, local anaesthetic with topical anaesthetic action is used.
- Among the given options, only benzocaine has topical action.

## 1464. Most commonly used local anaesthetics ?

a) Dibucaine

b) Bupivacaine

c) Prilocaine

d) Tetracaine

Correct Answer - B
Ans. is 'b' i.e., Bupivacaine
**Bupivacaine**

- Bupivacaine is *2nd most commonly used* local anaesthetic (after lidocaine).
- Bupivacaine has the highest local tissue irritancy amongst local anaesthetics.
- It is the most cardiotoxic local anaesthetic.
- *Levobupivacaine* (The S(-) enantiomer of bupivacaine) is less cardiotoxic and less prone to cause seizure.
- Concentrations used for bupivacaine are : - Nerve block : 0·5%, Epidural : 0·25 - 0·5 %, and spinal : 0.5%.
- Maximum safe dose is 2 mg/kg without adrenaline and 3mg/kg with epinephrine

## 1465. Eutectic mixture of local anaesthetic (EMLA) cream is

a) Bupivacaine 2.0% + Prilocaine 2.5%

b) Lidocaine 2.5% + Prilocaine 2.5%

c) Lidocaine 2.5% + Prilocaine 5%

d) Bupivacaine 0.5% + Lidocaine 2.5%

Correct Answer - B

Ans. is 'b' i.e., Lidocaine 2.5% + Prilocaine 2.5%

**Eutectic mixture of local anaesthetic (EMLA)**

- This is unique topical preparation which can anaesthetise intact skin.
- It is a mixture of 2.5% lidocaine and 2.5 prilocaine.
- It acts slowly and the cream must held in contact with skin for at least 1 hour.
- EMLA is used : to make venepuncture painless especially in children, and for procedure like skin grafting & circumcision.
- As systemic absorption of prilocaine can cause methemoglobinemia, EMLA should not be used on mucocutaneous membrane or in very small child.

## 1466. True about post-spinal headache are all except

a) Relieved by lying down position

b) Frontal or occipital

c) Can be prevented by using small bore needle

d) Old age is a risk factor

Correct Answer - D
Ans. is'd' i.e., Old age is a risk factor

**Post spinal headache**

- Post dural puncture headache is due to CSF leak. Typical location is bifrontalor occipital.
- Headache gets worsen on sitting or upright posture and is relieved by lying down position and abdominal
- pressure pressure → The hallmark of postdural puncture headache i.e., association with body position.
- The onset of headache is usually 12-72 hours following the procedure, however, it may be seen almost immediately. In most cases it lasts for 7-10 days.
- PDPH is believed to result from leakage of CSF from a dural defect and decreased 1CT. Loss of CSF at a rate faster that it can be produced causes traction on structure supporting the brain, particularly dura and tentorium. Traction on cranial nerve (particularly 6th nerve) produces diplopia.
- Factors that increase the incidence of PDPH are young age, female sex, Pregnancy, large bore needle and multiple punctures.
- Use of small bore needle can prevent PDPH .
- Intially conservative treatment is given which includes analgesics (NSAIDs), oral or i.v., fluids, Sumatriptan, cosyntropin, caffeine and

recumbent position.

- If conservative treatment fails, epidural blood patch can be used. It involves injecting 15-20 ml of autologus blood into the epidural space which stop leakage of CSF by coagulation and mass effect.

## 1467. Long acting local anaesthetic ?

a) Procaine

b) Lignocaine

c) Prilocaine

d) Dibucaine

Correct Answer - D
Ans. is 'd' i.e., Dibucaine

## 1468. Not as used as induction agent among the following is ?

a) Midazolam

b) Etomidate

c) Ketamine

d) Propofol

Correct Answer - A
Ans. is 'a' i.e., Midazolam

- See explanation- 1 of session- 4 of Anaesthesia of CET Nov. 14 of this book.

## 1469. All of the following anesthetics are used in children except

a) Desflurane

b) Sevoflurane

c) Propofol

d) Halothane

Correct Answer - A
Ans. is 'a' i.e., Desflurane

- Inhalational agent with mask is the induction method of choice in children.
- Sevoflurane is the inhalation agent of choice for induction. Sevoflurane is used in $N_20+0_2$ gas mixture. Halothane is second choice inhalational agent for induction. Isoflurane and desflurane are not used for induction as they are more pungent and associated with more coughing & laryngospasm.
- Intravenous induction is preferred when induction by mask is contraindicated i.e., in full stomach patients or of child comes in the operation theatre with IV line in situ.
- Thiopentol or propofol are commonly used agents. Propofol is particularly suitable for out patient surgery. Ketamine is preferred in children with hypovolemia. Etomidate can be used in child with unstable cardiovascular status as it is most cardio-vascular stable intravenous inducing agent.

## 1470. Halothane causes -

a) Bradycardia

b) Fall in BP

c) Uterine relaxation

d) All of the above

Correct Answer - D
Ans. is 'd' i.e., All of the above
**Halothane**

- It is a volatile liquid with sweet odour, nonirritating and noninflammable.
- It is a potent anaesthetic with poor analgesic and muscle relaxant properties.
- Halothane causes direct depression of myocardial contractility by reducing intracellular Ca+2.
- It causes fall in BP and CO.
- Heart rate decreases due to vagal stimulation.
- It tends to sensitize the heart to arrhythmogenic action of adrenaline --> contraindicated in pheochromocytoma.
- It causes greater depression of respiration and ventilation perfusion mismatch.
- It dilates the bronchi -4 inhalation agent of choice in asthmatics (intravaneous anaesthetic of choice in asthmatics is ketamine).
- It is a hepatotoxic drug and can also cause malignant hyperthermia (Succinylcholine accentuate it).
- Recovery is smooth and reasonably quick.
- It causes postanaesthetic shivering and chills.
- It inhibits intestinal and uterine contractions -4 agent of choice for assisting external or internal version during late pregnancy.

- Because its uterine relaxant action it is contraindicated during labour.
- It is particularly suitable for induction and maintenance in children and as maintenance anaesthetic in adults.

## 1471. Speed of onset of action of local anaesthetics is indicated by -

a) Minimum alveolar concentration

b) Blood : gas partition coefficient

c) Oil : gas partition coefficient

d) All of the above

Correct Answer - B

Ans. is 'b' i.e., Blood : gas partition coefficient

**Minimal alveolar concentration**

- It is the lowest concentration of the anaesthetic in pulmonary alveoli needed to produce immobility in response to a painful stimulus (surgical incision) in 50% individuals.
- It is the measure of potency of inhalation GAs.

**Blood : gas partition cofficient**

- It is the measure of solubility of agent in blood.
- It determines the *speed of onset and recovery.*
- Higher the blood : gas partition cofficient, lesser the speed of induction and recovary —> more blood soluble agents have slower induction and recovery.

**Oil : gas partition cofficient**

- It is the measure of lipid solubility of the agent, and therefore solubility in the fat - rich tissues of the CNS.
- This equates with the potency of individual agents.
- There is a direct relationship between the minimum alveolar concentration (MAC) value of inhaled anaesthetic agents and lipid solubility in terms of the oil/gas partition cofficient.

## 1472. Second gas effect is ?

a) Displacement of N20 by Oxygen

b) Displacement of oxygen by N20

c) Facilitation of inhalation of Halothane by N20

d) Removal of oxygen by N20 from alveoli during recovery from general anaesthesia

Correct Answer - C
Ans. is 'c' i.e., Facilitation of inhalation of halothane by N20

## 1473. Which of the following drugs produces dissociative anaesthesia: *March 2013 (g)*

a) Ketamine

b) Propofol

c) Thiopentone

d) Enflurane

Correct Answer - A
Ans. A i.e. Ketamine
**Ketamine**

- Is a phencyclidine,
- Causes dissociative anaesthesia,
- Causes
  - Hallucination,
  - Delusion and
  – Illusion
- Causes profound analgesia
- Increases all pressures:
  – Intracranial Tension,
  - Intraocular pressure,
  - BP
- C/I in: Intracerebral mass/hemorrhage etc

## 1474. Percentage of adrenaline with lignocaine for local infilteration is?

a) 1:1000

b) 1:10000

c) 1:100

d) 1:50000

Correct Answer - D
Ans. is 'd' i.e., 1:50000

- The most common concentrations of epinephrine combined with local anaesthetics are 1:50,000 (0.02 mg/ml), 1:100,000 (0.01 mg/ml) and :200000 (0.005 mg/ml).
- The 1:50000 concentration is manufactured in combination with 2% lidocaine.
- The 1:100,000 concentration is manufactured in combination with 2% lidocaine and 4% articaine.
- The 1:200,000 concentration is manufacture in combination with 4% prilocaine, 4% articaine and 0.5% bupivacaine

## 1475. Stage of analgesia in anaesthesia is ?

a) Stage-1

b) Stage-2

c) Stage-3

d) Stage-4

Correct Answer - A
Ans. is 'a' i.e., Stage-1

## 1476. Ketamine acts an which receptors

a) GAGA

b) Muscarinic

c) 5-HT4

d) NMDA

Correct Answer - D
Ans. is 'd' i.e., NMDA

- See explanation- 5 of session- 2 of Anaesthesia of All India 2014-15 pattern of this book

## 1477. Gas cylinder with single pin index ?

a) Oxygen

b) Air

c) Nitrogen

d) Entonox

Correct Answer - D
Ans. is'd' i.e., Entonox

## 1478. All of the following are advantages of LMA except?

a) More reliable than face

b) Prevent aspiration

c) Alternative to Endotracheal intubation

d) Does not require laryngoscope & visualization

Correct Answer - B
Ans. is 'b' i.e., Prevent aspiration

- LMA is intermediate between the face mask and Endotracheal intubation in terms of reliability, invasiveness and facilitation of gas exchance (face mask has minimum and endotracheal intubation has maximum).
- LMA does not prevent aspiration —) should not be used in full stomach patients.
- LMA can be used as an alternative to endotracheal intubation for minor surgeries, where anaesthetist wants to avoid intubation.
- LMA is introduced blindly (without laryngoscopy).

## 1479. Following ventilation mode is not used for weaning?

a) Pressure support ventilation (PSV)

b) Synchronized Intermittent Mandatory Ventilation (SIMV)

c) Controlled Mechanical Ventilation (CMV)

d) Assist Control Ventilation (ACV)

Correct Answer - C
Ans. is 'c' i.e., Controlled Mechanical Ventilation (CMV)

## 1480. Use of dexemditomidine ?

a) Prolong action of LA in hypertensive patients

b) Sedative agent for intubated patients

c) Increases bioavailability of regional anaesthetic drug

d) Helps in reducing bispectral index of general anaesthetic drug with low potency

Correct Answer - B
Ans. is 'b' i.e., Sedative agent for intubated patients
**Dexmeditomidine**

- It is a centrally acting a-2 adrenergic agonist
- It is approved by F.D.A. for short term (<24 hours) continuous IV sedation of adults who are tracheally intubated.
- Its use as an anaesthetic agent is not recommended but it is useful in patients with brain injury and ongoing sedation needs

## 1481. Modern monitors to measure ETCO2 make use of ?

a) Infrared absorption spectroscopy

b) Ultra violet rays

c) Laser technology

d) Scatter technology

Correct Answer - A
Ans. is 'a' i.e., Infrared absorption spectroscopy

- Measurements of variations in the respiratory cycle of expired carbon di oxide by displayed waveform and by
- absolute numerical values is defined as Capnography and Capnometry respectively.
- Measurement of the exhaled CO2 at the level of upper airway at the end of expiration (when CO2 is at its maximum) is referred to as end tidal CO2 (EtCO2).
- Modern monitors used to measure EtCO2 in the exhaled air make use of infrared absorption spectroscopy

## 1482. Machine used noninvasively to monitor an external chest compression during cardiopulmonary resuscitation is ?

a) Zoll AED - plus automatic external defibrillator

b) Zoll depth synchronizer

c) Zoll strength sensor

d) Zoll pA02 monitor

Correct Answer - A
Ans. is 'a' i.e., Zoll AED - plus automatic external defibrillator
**Monitor for chest compressions in cardio pulmonary resuscitation**

- A novel monitor for the chest compressions is a device incorporated into the chest compression pad of the ZOLL AED - PLUS automatic external defeibrillator.
- The sternal compression pad located between the stick on defibrillating electrodes includes an accelerometer.
- The signal from this device is doubly integrated to produce a measure of compression depth monitored by the device.
- Auditory feedback can be provided to the rescuer if chest compression depth so monitored falls outside the recommended range.
- Such technical aids improve the efficacy of external chest compressions and thus the rescue of patients.

## 1483. Most important factor determining the affect of anaesthetic agent on fetus ?

a) Duration of pregnancy

b) MAC

c) Protein binding

d) Route of anaesthetic

Correct Answer - A

Ans. is 'a' i.e., Duration of pregnancy

- All the given options determine the effect of anaesthetic on fetus. But, duration of pregnancy is the most important.
- Almost all anaesthetic agents can be potentially teratogenic.
- Day $15^{th}$ to day 60 is the most critical period.

## 1484. For the evaluation of blunt abdominal trauma, which of the following imaging modalities is ideal?

a) Ultrasonography

b) Computed tomography

c) Nuclear scintigraphy

d) Magnetic resonance imaging

Correct Answer - B
B i.e. Computed tomography
- CT *ScanQ* is the imaging modality of choice in all blunt abdominal trauma (both in children as well as adults).
- *Spleen is the most commonly injured organ in blunt injury abdomen.Q*
- *Contrast - enhanced CT Q* is the investigation of choice for detecting splenic injuries
- *Kehr signQ* (after elevating foot end referred pain over left shoulder d/t irritation of under surface of diaphragm by blood) is seen in splenic ruptures.
- On X-ray fracture of left lower ribs, obliteration of splenic & psoas shadows, elevation of left diaphragm, indentation of stomach & presence of free fluid between coils of intestine are suggestive of splenic repute.

## 1485. Extradural hematoma CT scan finding is

a) Hypodense biconvex lesion

b) Hyperdense biconvex lesion

c) Concavo convex hyperdense lesion

d) Low attenuated biconvex lesion

Correct Answer - B
Ans. Hyperdense biconvex lesion

## 1486. An absolute contraindication of MRI is:

a) Pacemaker wires

b) Intravascular stents

c) Prosthetic cardiac valves

d) Severe hypertension

Correct Answer - A
A i.e. Pacemaker Wires

## 1487. One gray of radiation is equal to:

a) 1 rad

b) 10 rad

c) 100 rad

d) 1000 rad

Correct Answer - C
Ans. 100 rad

**1488.** **Which of the following is the most radio sensitive phase of the cell cycle?**

a) G2M

b) G2

c) S

d) G1

Correct Answer - A

Studies on synchronously dividing cells in culture have revealed greatest radio sensitivity for cells in G2 and M phase, and relative radio resistance for cells in late S phase, and intermediate radio sensitivity between these two extremes.

**Ref:** Progress In Cell Cycle Research By Laurent Meijer, Armelle Jezequel,Lernard Ducommun, Volume 4, Page 202; Basic Radiation Oncology By Beyzadeoglu, Murat Beyzadeoglu, Gokhan Ozyigit, Cuneyt Ebruli, Pages 75-77

## 1489. Perihilar fluffy opacities on chest X-ray is seen in:

a) Pulmonary embolism

b) Pericardial effusion

c) Pulmonary arterial hypertension

d) Pulmonary venous hypertension

Correct Answer - D
Ans. Pulmonary venous hypertension

## 1490. Radiocontrast is contraindicated in all except -

a) Renal failure

b) Ptient on metformin

c) Dehydration

d) Obesity

Correct Answer - D
D i.e. Obesity

## 1491. Half life of Technetium 99 is:

a) 2 hours

b) 6 hours

c) 12 hours

d) 24 hours

Correct Answer - B
Ans. 6 hours

## 1492. Radium gives:

a) α-rays

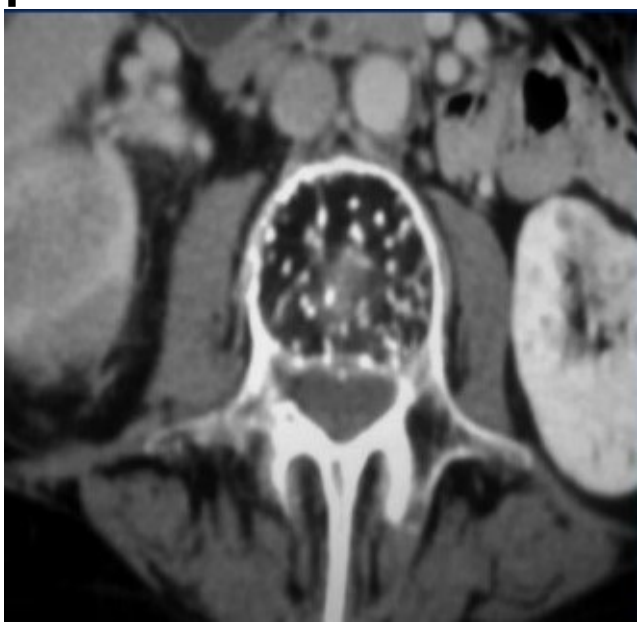
b) β rays and γ rays

c) X-rays

d) All of the above

Correct Answer - A
Ans. α-rays

## 1493. The following type of radiological picture is seen in the case of?



a) Osteomyelitis

b) Tuberculosis

c) Poliomyelitis

d) Vertebral Hemangioma

Correct Answer - D
Ans:D.)Vertebral Hemangioma.
The polka-dot sign is the result of the replacement of the normal cancellous bone by thickened vertical trabeculae surrounded by fat marrow or vascular lacunae in vertebral intraosseous haemangiomas

## 1494. Investigation of choice for multiple sclerosis:

a) MRI

b) CT scan

c) X-ray

d) EEG

Correct Answer - A
Ans. MRI

## 1495. Intra uterine hydronephrosis of 32-34 weeks-management?

a) Intrauterine drainage

b) Wait until 3 weeks

c) Immediate delivery

d) Require serial USG and other associated anomalies

Correct Answer - D

Ans. is `d' i.e., Require serial USG and other associated anomalies

- Antenatal hydronephrosis (ANH) is transient and resolves by the third trimester in almost one-half cases.
- The presence of oligohydramnios and additional renal or extrarenal anomalies suggests significant pathology. o All patients with ANH should undergo postnatal ultrasonography
- The intensity of subsequent evaluation depends on anteroposterior diameter (APD) of the renal pelvis and/or Society for Fetal Urology (SFU) grading.
- Patients with postnatal APD exceeding 10 mm and/or SFU grade 3-4 should be screened for upper or lower urinary tract obstruction and vesicoureteric reflux.
- Surgery is considered in patients with increasing renal pelvic APD and/or an obstructed renogram with differential renal function <35-40% or its subsequent decline.

**1496. "Double bubble" sign with air shadows absent in distal bowel coils on X-ray abdomen is characteristic of**

a) Duodenal webs

b) Duodenal atresia

c) CHPS

d) All of the above

Correct Answer - B
Ans. Duodenal atresia

## 1497. Hummingbird sign in brain MRI is seen in ?

a) Multiple sclerosis

b) Progressive supranuclear palsy

c) Parkinson's disease

d) Alzheimer disease

Correct Answer - B
**Ans. is 'b' i.e., Progressive supranuclear palsy**
[Ref Clinical neurology - 113]

- Hummingbird sign on brain MRI is a radiological sign of progressive supranuclear palsy.

## 1498. Ring of fire on USG signifies?

a) H. mole

b) Ectopic pregnancy

c) PCOD

d) Aneuploidy

Correct Answer - B

**Ans. is'b'i.e., Ectopic pregnancy**

[Ref: Diagnostic Ultrasound: Abdomen and Pelvis E-Book p. 8011]

- The ring of fire sign also known as ring of vascularity signifies a hypervascular lesion with peripheral vascularity on colour or pulsed doppler examination of the adnexa due to low impedance high diastolic flow.

**This sign can be seen in**

1. Corpusluteum cyst (more commonly)
2. Ectopic pregnancy

## 1499. In colour doppler the color depends upon:

a) Strength of returning echo

b) Relation of transducer to blood flow

c) Frequency of doppler used

d) Type of doppler machine used

Correct Answer - B
Ans. Relation of transducer to blood flow

## 1500. Vessels catheterized on carotid angiography are:

a) 2 external carotids and 2 vertebral

b) 2 internal carotids and 2 vertebral

c) 2 internal carotids and 1 vertebral

d) 2 external carotids and 1 vertebral

Correct Answer - C
Ans. 2 internal carotids and 1 vertebral

## 1501. X-rays are produced when:

a) Electron beam strike the nucleus of the atom

b) Electron beam strikes the anode

c) Electron beam reacts with the electromagnetic field.

d) Electron beam strikes the cathode

Correct Answer - B
B i.e. Electron beam strikes the anode

## 1502. The following sets of X-rays are suggestive of:

a) Ankylosing spondylitis

b) Paget's disease

c) Rheumatoid arthritis

d) Hyperparathyroidism

Correct Answer - A

**Ans: A. Ankylosing spondylitis**

(Ref: Harrison 19Ie p2170, 18Ie p2775; Apley's 9/e p68)

**Ankylosing Spondylitis**:

**Earliest cardinal sign:**

- Erosion and fuzziness of the sacroiliac joints.
- Peri-articular sclerosis, especially on the iliac side of the joint and finally bony ankylosis.

**Earliest vertebral change:**

- Flattening of the normal anterior concavity of the vertebral body (`squaring').
- Later, ossification of the ligaments around the intervertebral discs

produces delicate bridges (syndesmophytes) between adjacent vertebrae.

- Bridging at several levels gives the appearance of a 'bamboo spine'.

## 1503. T1 and T2 images are a feature of which diagnostic test-

a) Ultrasound

b) C.T. scan

c) Duplex scan

d) MRI scan

Correct Answer - D
Ans. is 'd' i.e., MRI scan

## 1504. Which radionuclide is best suited for measurement of GFR?

a) DTPA

b) DMSA

c) Orthoiodohippurate

d) EDTA

Correct Answer - A
Ans. DTPA

## 1505. A patient presents with a solitary pulmonary nodule (SPN) on x-ray. The best investigation to come to a diagnosis would be :

a) MRI

b) CT Scan

c) USG

d) Image guided biopsy

Correct Answer - D
**D** i.e. Image guided biopsy
Friends don't get surprised! I have checked it from various textbooks. These are the lines from David Sutton ?
- Some 40% of solitary pulmonary nodules are malignant with other common lesions being granulomas & benign tumors.
- CT scan is most sensitive imaging modality available for identification of pulmonary nodules of . 3mm diameter but relatively insensitive to smaller nodules. The specificity for small nodules is also poor.
- Spiral scanning has improved detection rate for pulmonary nodule but has not improved specificity.
- The presence of calcification indicates benign lesion but 14% of carcinomas (malignant) show calcification.
- The cavitation not necessarily indicates malignant lesion.
So summary is, **CT** scan is most sensitive for detecting large pulmonary nodules ( 3mm) but neither sensitive nor specific for smaller nodules the maximum CT scan can show is calcification & cavitation, which are not always diagnostic of benign & malignant

lesions respectively.
So the best investigation to come to a diagnosis (i.e. most specific) will be Image guided biopsy.

**1506.** **A 43 year old male during the preoperative evaluation of hernia repair is found to have a solitary pulmonary nodule. What is the important radiological feature to suggest its benign nature?**

a) Large lesion with calcification

b) Irregular shape

c) No calcification

d) 1 cm lesion with uniform calcification

Correct Answer - D

**The important radiological characteristics to suggest benign lesion in solitary pulmonary nodule:**

- No growth in follow up imaging in two years and calcification
- Younger age group
- Regular shape
- Normal edge

**Ref:** Lange radiology, Edition - 7, Page - 256.

## 1507. Cy Bromide green dye is used for:

a) HLPR

b) PCR

c) ELISA

d) Immunofluorescence

Correct Answer - B
Ans. (b) PCR *See below*
Cy *Bromide green dye is a dye that binds to minor groove of double stranded DNA and generates fluorescence.* Uses:

- To determine presence of amplified DNA product.
- For optimizing PCR reaction.

**1508.**

## ICD chapter 21 includes all except -

a) Alcohol

b) Tobacco

c) Injury

d) Drugs

Correct Answer - C
Ans. is 'c' i.e., Injury

**1509. Which personality disorder of DSM-IV is not classified as PD & is placed with schizophrenia in ICD**

a) Schizoid

b) Paranoid

c) Narcissistic

d) Schizotype

Correct Answer - D
D i.e. Schizotype

**1510.** **Which of the following modalities have shown best result for Pre Menstrual Syndrome?**

a) SSRI

b) Progesterone

c) Oestrogen

d) Anxiolytics

Correct Answer - A

Out of the given modalities of treatment, the Selective Serotonin Receptor Inhibitors (SSRI's) has shown good results in alleviating the symptoms of Pre Menstrual Syndrome (PMS).

**Ref:** Shaw's Textbook of Gynaecology; 13th edition, Pages 289-90; Assessment and Therapy by Howard S. Friedman, Pages 252-60

## 1511. Time interval between acute and persistent psychotic disease is ?

a) 1 week

b) 2 week

c) 3 week

d) 1 months

Correct Answer - D

Ans. is `d' i.e., 1 months

- If symtoms are for less than 1 months, it is transient psychotic disorder and if there are for more than 1 months, it is persistent psychotic disorder (persistent delusional disorder).

Note:- Diagnosic criteria for delusional disorder (Persistent delusion disorder) has different durations in DSM IV and ICD-10 :-

1. According to DSM IV, symptoms (Non bizzare delusion) should be for > 1 months.
2. According to ICD-10, Symptoms should be for > 3 months.

## 1512. Which of the following is not seen in mania

a) Hypersexuality

b) Hyperactivity

c) Decreased sleep

d) Clouding of consciousness

Correct Answer - D
D i.e. Clouding of consciousness
Disorientation & clouding of consciousness is seen in *organic brain syndromes (delirium)Q.*

## 1513. Drug of choice for prophylaxis of mania is *?*

a) Lithium

b) Haloperidol

c) Clozapine

d) Carbamazepine

Correct Answer - A
Ans. is 'a' i.e., Lithium

**1514. A 40 year old adult man on medication for psychiatric illness for the last 2 weeks, suddenly develops marked rigidity, immobility, fever, fluetuating BP and heart rate. Most likely diagnosis *?***

a) Akathisia

b) Parkinsonism

c) Malignant neuroleptic syndrome

d) Catatonic schizophrenia

Correct Answer - C
Ans. is 'c' i.e., Malignant neuroleptic syndrome

## 1515. Malignant neuroleptic syndrome is caused by:
***March 2009***

a) Antidepressants

b) Anxiolytics

c) Antipsychotics

d) Antiepileptics

Correct Answer - C
Ans. C: Antipsychotics
Neuroleptic malignant syndrome (NMS) refers to the combination of hyperthermia, rigidity, and autonomic dysregulation that can occur as a serious complication of the use of antipsychotic drugs.
The list of atypical antipsychotic drugs that may cause NMS include olanzapine, risperidone, paliperidone, aripiprazole, ziprasidone, amisulpride, and quetiapine.
Clozapine may also be associated with the development of NMS, but it appears to be less likely to manifest with extrapyramidal features, including rigidity and tremor.
The most widely accepted mechanism by which antipsychotics cause neuroleptic malignant syndrome is that of dopamine D2 receptor antagonism.
Central D2 receptor blockade in the hypothalamus, nigrostriatal pathways, and spinal cord leads to increased muscle rigidity and tremor via extrapyramidal pathways. Hypothalamic D2 receptor blockade results in an elevated temperature set point and impairment of heat-dissipating mechanisms.
Peripherally, antipsychotics lead to increased calcium release from the sarcoplasmic reticulum, resulting in increased contractility, which

the sarcoplasmic reticulum, resulting in increased contractility, which can contribute to hyperthermia, rigidity, and muscle cell breakdown.

## 1516. Grimacing and Mannerism is:

a) Simple Schizophrenia

b) Catatonic Schizophrenia

c) Hebephrenic Schizophrenia

d) Phobia

Correct Answer - B
B i.e. Catatonic schizophrenia

## 1517. Somatic passivity is a feature of :

a) Paranoid schizophrenia

b) Hypochondriasis

c) Depression

d) Body dismorphic disorder

Correct Answer - A
A i.e. Paranoid schizophrenia

## 1518. True about obsessive compulsive disorder is/are :

a) Irresistible desire to do a thing repeatedly

b) Patient is conscious about the disorder

c) Denial is the defense mechanism against O.C.D

d) All

Correct Answer - D
A i.e. Irresistible desire to do a thing repeatedly; C i.e. Denial is the defence mechanism against OCP; B i.e. Patient is conscious about the disorder
An idea intrudes into Conscious awareness repeatedly.
4'
- Recognized as one's own idea but is
Ego-alien (Foreign to one's personality) Q.
- Recognized as *irrational & absurd (insight is present)Q.*
- Patient tries to *resist against but unable to do soQ.*

Failure to resist leads to marked distress.

**1519. A 16 year old girl was brought to the psychiatric emergency after she slashed her wrist in an attempt to commit suicide. On enquiry her father revealed that she had made several such attempts of wrist slashing in the past, mostly in response to trivial fights in her house. Further she had marked fluctuations in her mood with a pervasive pattern of unable interpersonal relationship. The most probable diagnosis is:**

a) Borderline personality disorder

b) Major depression

c) Histrionic personality disorder

d) Adjustment disorder

Correct Answer - A
A i.e. Borderline Personality Disorder
Schizophrenia can easily be ruled out by *absence of disorganized speech, disorganized behaviour* (or *catatonia), delusions, hallucinations, & negative symptoms* (ex blunt affect) for more than 6 months & leading to social / occupational dysfunction.

## 1520. Phantom limb sensations are best described by:

a) Weber Fechner law

b) Power law

c) Bell-Magendie law

d) Law of projection

Correct Answer - D
D i.e. Law of projection

## 1521. All are features of catatonia except :

a) Automatic obedience

b) Cataplexy

c) Catalepsy

d) Negativism

Correct Answer - B
B. i.e. Cataplexy

**1522.** **Which of the following could be a component of conversion disorder?**

a) Pseudoseizures

b) Derealisation

c) Depersonalisation

d) Amnesia

Correct Answer - A

Pseudoseizure can occur in conversion disorder.
Paralysis, blindness and mutism are the most common conversion disorder symptoms.
Anaesthesia and paresthesia especially of the extremities are the most common sensory symptoms.
Other sensory symptoms includes deafness, blindness and tunnel vision.

Motor symptoms associated with it are: abnormal movements, gait disturbance, weakness and paralysis.
One gait disturbance seen in this is ataxia abasia, which is a wildly ataxic, staggering gait accompanied by gross, irregular, jerky truncal movements and thrashing and waving arm movements.

**Ref:** Kaplan and Sadock's Concise Textbook of Clinical Psychiatry, 3rd Edition By Benjamin J. Sadock, Page 279

**1523.** **A 41 - year old married female presented with headache for the last 6 months. She had several consultations. All her investigations were found to be within normal limits. She still insists that there is something wrong in her head and seeks another consultation. The most likely diagnosis is:**

a) Phobia

b) Depression

c) Hypochondriasis

d) Psychogenic headache

Correct Answer - C

The patient in question who is persistently preoccupied about her disease (headache) despite of all normal investigations and seeking another consultation is showing features of hypochondriasis.

**Essential feature of hypochondriasis,** is a belief of serious medical illness that persists despite reassurance and appropriate medical evaluation. These patients have a history of poor relationships with physicians because of the feeling that they have been evaluated and treated inappropriately or inadequately.

This disorder is disabling in intensity and is persistent, with waxing and waning symptomatology.

**Ref:** Harrison's Principles Of Internal Medicine, 18th Edition, Chapter 391.

## 1524. False regarding Anorexia Nervosa :

a) Evident psychosis

b) Vigor exceeding physical ill being

c) Weight loss

d) Decreased appetite

Correct Answer - D

D. i.e. Decreased appetite.

Although all features i.e. *self perception of being fat, under weight, amenorrhoea* and binge eating may be present in anorexia nervosa. It is binge eating that is least common (present only in 25-50% cases ; whereas other 3 features are present in 100% cases). However, it is important to mention that binge eating (i.e. *consuming large amount of food in short period of time & a feeling that the eating is out of control)* followed by inappropriate behaviour to compensate it (i.e. *self induced vomiting, purging, diuretic use, missing insulin* etc.) is a characteristic & essential feature required for diagnosis of bulimia nervosa.

| Features | Anorexia nervosa | Bulimia nervosa |
|---|---|---|
| Onset | Mid adolescence | Late adolescence / early adulthood |
| Female : Male | 10 : 1 | 10 :1 |
| Lifetime prevalence in women | 1% | 1 - 3 % |
| Mortality | — 5% per decade | Low |
| Weight | *Markedly decreasedQ* ( & height) | *Usually normalQ* |

| | | |
|---|---|---|
| Weight | | |
| Menstruation<br>Amenorrhea<br>(absence of *atleast 3 consecutive menstrual cycles)* | *Absent{2*<br>100%Q (required for diagnosis; this criteria is met if<br>menstrual period occurs only following hormone eg. estrogen administration, or OCP) | Usually normal<br>Present in 50% |
| Body image disturbance | - There is *self perception of being too fat, with an intrusive dread of fatnessQ,* which lit a self imposed *low weight threshold.* (included in both DSM - IV & ICD- 10 criteria)<br>- Despite objectively low weight, patient feels that their body as a whole, or some part of it is too fat; undue influence of body weight or shape on self evaluation; or denying or minimizing the seriousness of low weight (DSM - IV) | There is *self perception of being too fat, with an intrusive dread of fatnessQ.*<br>(included in ICD- 10 only)<br>Self evaluation is undualy influenced (over concerned) by body weight and shape (DSM-IV) |
| Method of weight control | - By *drastically reducing total food intakeQ,* with a disproportionate decrease in high - carbohydrate and fatty foods, (mostly)<br>- Ritualistic exercising, extensive cycling, walking, | - *By recurrent inappropriate compensatory self induced purging (vomiting & laxative abuse)Q* in 80%<br>- *Fasting, excessive exercise,* use of appetite |

| | | |
|---|---|---|
| | jogging, running are common<br>- Purging (with or without binging) is less common | suppressants and thyroxine and omission of insulin (in 20%) |
| Pecaliliar behaviour about food | *PresentQ* in form of<br>- Hiding food all over house<br>- Carrying large amount of candies with them<br>- Cutting meat into very small pieces & spending a great deal of time rearranging pieces on their plate.<br>Confronted with their peculiar behaviour , they often deny that it is unusual or flatly refuse to discuss it | *AbsentQ* |
| Hunger (Anorexia) | - Term anorexia is a *misnomer because loss of appetite is usually rareQ* until late (Kaplan).<br>However they rarely complain of hunger or fatigue.<br>- As weight loss progresses, thoughts of food dominate mental life & idiosyncratic rules develop around eating. Evidence that *patients are thinking constantly about food* is their passion for collecting recipes, and for preparing elaborate meal for others, and be drawn to food related occupations | Irresistable *craving for food* with episodes of binge eating often followed by *post binge anguish* (depression) |

| | | |
|---|---|---|
| | related occupations. | |
| Subtypes | 1. Food Restricting type (more common) : During current episode, the person is *not regulary engaged in binge- eating or purging* behaviour. These often have *obscessive compulsive traits.*<br>2. Binge- eating/purging type (less common) :<br>during current episode, the person is regularly<br>engaged in binge eating /purging. These are more likely to be associated with *substance abuse (alcohol, drug), impulse control disorders, (stealing) personality disorder, risk of suicide & sexual promiscuity* | 1. Purging type (more common): during current episode, the person is regularly engaged in self induced purging (vomiting, & misuse of laxative, diuretics, or enemas). These are more likely to be associated with *substance abuse (alcohol, drug), impulse control disorder (stealing, shopping), antisocial behaviour, personality disorder, suicide attempts & sexual promiscuity.*<br>2. Non purging type (less common): during current episode, the person has used other inappropriate compensatory behaviour eg. fasting or excessive exercise. |
| Binge Eating (i.e *eating definitely a large amount of food* in short period than | 25 - 50% | *100%, Required for diagnosisQ* |

| | | |
|---|---|---|
| most people would eat in same period under similar circumstance; and *a sense of lack of control over eating).* | | (At least *twice a week* over period of 3 *months).* |
| Recurrent inappropriate compensatory behaviour eg. *self induced vomiting, purging, diuretic useQ* (in 80%). | Uncommon (25- 50%) | 100%, *Required for diagnosisQ* |
| Omission of insulin, fasting or excessive exercise, use of appetite suppressants & thyroid preparations (in 20%) | | (At least *twice a week for 3 months)* |
| Features secondary to purging (vomiting & laxative abuse) | Uncommon; and persent | Common |
| - *Enamel erosion & dental decay (caries)Q* | only in binge eating | |
| - *Salivary gland & pancreatic inflammation & hypertrophyQ* with increase in serum | /purging subtype of anorexia nervosa. | |

amylase
- Esophageal & gastric erosion, bowel dysfunction with haustral dilation
- Electrolyte abnormalities esp. *hypokalemic, hypochloremic akalosis, (d/t vomiting)Q;* hypomagnesemia; metabolic acidosis (d/t laxative abuse)

| | | |
|---|---|---|
| - Seizures (d/t electrolyte imbalance), mild neuropathies, weakness, fatigue, cognitive disorder.<br>Features secondary to excessive weight loss<br>- Cachexia, cold intolerance, hypothermia<br>- Lanugo (fine baby like hair over body), edema, acrocyanosis<br>- Leucopenia, anemia (normocytic normochromic), thrombocytopenia, increased BUN & creatinine, and hypokalemia, hypoglycemia, hypophosphatemia, hyper chlosterolaemia, *hypercarotenemia* (yellow palm skin)<br>- Low estrogen / testosterone /LH/ FSH/ thyroid metabolism /T3; increased cortisol<br>- Osteopenia, osteoporosis<br>- Hypotension, bradycardia, prolonged HIS bundle transmission (prolonged QT interval), small heart, cardiac arrhythmias (atrial & ventricular premature contractions, | Present | Absent (mostly) |

| | | |
|---|---|---|
| ventricular tachycardia), & sudden death.<br>- Abnormal taste sensation (Zn def.) | | |
| Sexual Orientation & other disorders | - Have *poor sexual adjustment, delayed psychosocial sexual development* and a markedly *decreased interest in sex* and tend to become socially withdrawn.<br>- Are perfectionist & rigid. | - Most are *sexually active*<br>- More oftenly associated with anxiety disorders, bipolar I disorder, dissociate disorders & sexual abuse. |
| Prognosis | Poor | Better |

## 1525. Main difference between anorexia nervosa and bulimia nervosa lies in:

***March 2013***

a) Symptomatology

b) Weight

c) Gender

d) Age

Correct Answer - B

Ans. B i.e. Weight

**Anorexia nervosa and bulimia**

- Both anorexia nervosa and bulimia are characterized by an overvalued drive for thinness and a disturbance in eating behavior.
- The main difference between diagnoses is that anorexia nervosa is a syndrome of self-starvation involving significant weight loss of 15 percent or more of ideal body weight, whereas patients with bulimia nervosa are, by definition, at normal weight or above.
- Bulimia is characterized by a cycle of dieting, binge-eating and compensatory purging behavior to prevent weight gain.
- Purging behavior includes vomiting, diuretic or laxative abuse.
- Excessive exercise aimed at weight loss or at preventing weight gain is common in both anorexia nervosa and in bulimia.

**1526. Term 'schizophrenia' was coined by:**
***TN 06; Ranchi 10; NEET 13***

a) Eugene Bleuler

b) Kraepelin

c) Freud

d) Schneider

Correct Answer - A
Ans. Eugene Bleuler

**1527.** **Increased suicidal tendency is associated with:**

a) Noradrenaline

b) Serotonin

c) Dopamine

d) GABA

Correct Answer - B

Low serotonin levels are associated with other correlates of suicide risk, namely the mood disorders, impulsivity, and violence.

Low serotonin levels in the brain are linked to clinical depression, suicidal tendencies, anxiety disorders, obsessive compulsive behaviours (such as bulimia), schizophrenia sleep problems, migraine, headaches, autism, drug and alcohol addiction, Alzheimer's diseases and patterns of violent behaviour.

**Ref:** Comprehensive Textbook of Suicidology - Page 382.

## 1528. Schizophrenia with late onset and good prognosis

a) Simple SZP

b) Hebephrenic

c) Catatonic SZP

d) Paranoid SZP

Correct Answer - C
C i.e. Catatonic SZP

## 1529. Suspiciousness is a characteristic feature of ?

a) Paranoid personality disorder

b) Schizoid personality disorder

c) Schizotypal personality disorder

d) Anankastic personality disorder

Correct Answer - A
Ans. is 'a' i.e., Paranoid personality disorder
**Paranoid personality disorder**

- It is characterized by generalised mistrust and Suspiciousness about the motives and actions of others and a tendency to interpret them as malevolent. The patient believes that :-

1. Others are exploiting or deceiving the person.
2. Friends are untrustworthy and not loyal.
3. The spouse/partner is unfaithful.
4. There is hidden meaning in neutral or friendly remarks.
5. Many patients have feeling of self-importance and think they are unusually talented

## 1530. Psychodynamic theory of mental illness is based on:

a) Unconscious internal conflict

b) Maladjusted reinforcement

c) Organic neurological problem

d) Focus on teaching patient to restrain absurd thoughts

Correct Answer - A
A i.e. Unconscious internal conflict
Psychodynamic / Psychoanalytic theory of Psycopathology

- *Unconscious intrapsychic intersystem conflictQ* is an all pervasive aspect of human experience and responsible for manifestations of symptomatic neurosis, perversions, sexual inhibitions and some psychosomatic & psychotic illness.
- *Mind* is organized to *maximize sense of safety and avoid unpleasure arising out of conflict* by adopting defensive strategies to manipulate experiences & ideas.
- Psychological disturbance arises developmentally; an adaptation that was rational and responsible at an earlier developmental stage leaves residues that cause maladjustment in adulthood

**1531. A child finds difficulty to spell and read, otherwise his IQ is normal, interacts well with parents and friends. Vision is normal. Most probable diagnosis of this condition is?**

a) ADHD

b) Dyslexia

c) Autism

d) Asperger syndrome

Correct Answer - B
Dyslexia REF: Kaplan and sadock 10' ed p. 1162
Reading Disorder:
Reading disorder is characterized by an impaired ability to recognize words, slow and inaccurate reading, and poor comprehension. The term developmental alexia was accepted and defined as a developmental deficit in the recognition of printed symbols. This term was simplified by adopting the term dyslexia in the 1960s. *Dyslexia* was used extensively for many years to describe a reading disability syndrome that often included speech and language deficits and right-left confusion. Reading disorder is frequently accompanied by disabilities in other academic skills, and the term dyslexia has been replaced by broader terms, such as learning disorder.
Differential diagnosis:

- A recent study indicates that children with reading disorder consistently present difficulties with linguistic abilities, whereas children with ADHD do not.

- Reading disorder must be differentiated from mental retardation syndromes in which reading, along with other skills, is below the achievement expected for a child's chronological age. Intellectual testing helps to differentiate global deficits from more specific reading difficulties.

## 1532. The Non-REM (NREM) sleep is commonly associated with: *March 2013 (d)*

a) Frequent dreaming

b) Frequent penile erections

c) Increased blood pressure

d) Night terrors

Correct Answer - D
Ans. D i.e. Night terrors
**Sleep**

- Alpha waves: Eyes closed and mind wandering
- Night terrors are seen in: NREM sleep
- Sleep walking/ somnabulism is seen in: NREM sleep (stage 3/4)
- Sleep terror/pavor nocturnus:
  — Seen in NREM sleep (stage 3/4)
  — Treated by diazepam

## 1533. All of the following are side effects of ropinirole except -

a) Sedation

b) Nausea

c) Retroperitoneal fibrosis

d) Hallucination

Correct Answer - C
Ans. is 'c' i.e., Retroperitoneal fibrosis
o Ropinirole can cause *nausea, sedation, hallucinations,* constipation and orthostatic hypotension.

## 1534. La belle indifference is seen in

a) Conversion Reaction

b) Schizophrenia

c) Mania

d) Depression

Correct Answer - A
A i.e. Conversion reaction
*La belle indifferenceQ* is in-appropiate attitude of calm or lack of concern about one's disability. It is seen in *conversion (dissociative) disorderQ* (but not specific), physical illness etc.

## 1535. The features of OCD are A/E

a) Irrationale thought

b) Egosyntonic

c) Resisting the idea

d) Persistence of idea

Correct Answer - B
B i.e. Egosyntonic

## 1536. Which of the following statements differe-ntiates the obsessional idea from delusions

a) The idea is not a conventional belief

b) The idea is held inspite of contrary evidence

c) The idea is regarded as senseless by patient

d) The idea is held on inadequate ground

Correct Answer - C

C i.e., Idea is regarded as senseless by patient

| Delusion | Obsession |
| --- | --- |
| - *A false belief* that is *firmly maintained* even though it is *contraindicated by social reality.* | - An idea, emotion or impulse that *repetitively and insistently forces itself into consciousness even though it is unwelcomed.* |
| - While it is true that some superstitions & religious beliefs are held despite the lack of confirmatory evidence, such culturally engendered concepts are not considered delusion. | - The patient recognizes as one's own idea (i.e. *not being imposed from outside) but is ego alien (foreign to one's personality and do not make any sense)Q.* |
| - What is characteristic of delusion is that it is *not shared by others (not a conventional belief); rather it is an* | - Attempts to suppress it but is unable.<br>- The most common pattern is obsession of contamination (f/b compulsive |

| | |
|---|---|
| *idiosyncratic and individual misconception or misinterpretation that is held inspite of contrary evidence*<br><br>*and inadequate groundsQ.*<br><br>- It is a thinking disorder of enough import to interfere with the subjects functioning, since in the area of their delusion they no longer share a consensually validated reality with other people. | contamination (i/b compulsive washing or avoidance<br><br>of object).<br><br>- Patients may literally rub the skin off their hands by excessive washing or may be unable to leave their homes because of fear of germs. |

## 1537. Drug of choice for generalized anxiety ?

a) 3-blocker

b) Alprazolam

c) Buspirone

d) Phenytoin

Correct Answer - B
Ans. is 'b' i.e., Alprazolam
**Treatment of generalized anxiety**

- *Benzodiazepines are the drug of choice.* Drugs in this group are diazepam, Lorazepam, Alprazolam, Oxazepam, chlordiazepoxide.
- Other drugs used are buspirone; TCA (amptriptyline, imipramine, clomipramine, desipramine); SSRIs (Fluoxetine, Sertaline, Paroxetine, Citalopram); SNRIs (Venalafaxine), 13-blockers.
- Anticonvulsants with GABAergic properties may also be effective against anxiety, e.g., Gabapentin, Oxcarbazepine, Tiagabine, pregabalin, and Valproate (divalporex).

## 1538. Taking off ones clothes and running naked in a public race is called ?

a) Mooning

b) Exhibitionism

c) Voveyrism

d) Undinism

Correct Answer - B
Ans. is 'b' i.e., Exhibitionism
Incent means sexual intercourse by a man with a woman who is closely related to him by blood. eg a daughter, granddaughter.
*Sexual perversions* -These are persistently indulged sexual acts in which complete satisfaction is sought and obtained without sexual intercourse. These include :?
a) Sadism : Sexual gratification is obtained or increased from acts of physical cruelty or infliction of pain on one's partner. It is seen more commonly in men. To obtain sexual gratification, the sadist may bite, beat, whip, produce cuts on the victim, etc.
b) Lust murder : In extremes of sadism, murder serves as a stimulus for the sexual act and becomes the equivalent of coitus, the act being accompanied by erection, ejaculation, and orgasm.
c) Necrophagia : (Necros =corpse; phagia = to eat) : This is extreme degree of sadism in which the person after mutilating the body, sucks or licks the wounds, bites the skin, drinks blood, and eats the flesh of his victim to derive sexual pleasure.
d) Masochism : Sexual gratification is obtained or increased by the suffering of pain. Masochists get pleasure from being beaten, abused, tortured, humiliated, enslaved, degraded, or dominated by their sexual partner.

e) Necrophilia : In this condition, there is a desire for sexual intercourse with dead bodies. It is said to have sadomasochistic foundation and that decomposition, foul smell and coldness act as stimulants.
f) Fetishism : A fetish is an abnormal stimulus or object of sexual desire. Fetishism means the use of such objects of sexual gratification leading to orgasm. eg underclothing, brassiere, petticoat, stocking, shoes, etc.
g) Transvestism = Fonism: A transvestite (trans = opposite, vista = clothing) is a person whose whole personality is dominated by the desire of being identified with the opposite sex. His dress, manner, occupational interest, and associations are all designed to increase his feeling of being a woman. There is no hormonal disturbance or genital abnormality.
h) Masturbation = Onanism = Ipsation is the deliberate self-stimulation that effects sexual arousal. In males, it is done by moving the penis against a bed or other object. In females, finges are gently and rhythmically moved over clitoris or labia minora or steady pressure is applied **over** these parts with several fingers or whole hands (it is an offence when done in public).
i) Exhibitionism (Sec 294 **IPC):** It is a willful and intentional exposure of the genitalia in a public place while in the presence of others to obtain sexual pleasure. May or may not be associated with masturbation (punishment = 3 months + fine).
j) Voyeurism = Scoptophilia = Peeping tom : Sexual gratification is obtained by looking at the sexual organs of other persons, watching the act of sexual intercourse, or witnessing undressing by a woman.
k) Frotteurism : Sexual satisfaction is obtained by rubbing against persons in crowd. If they attempt intercourse, they have a premature ejaculation or they are impotent. It is an uncommon perversion and rarely occurs alone.
l) Undinism : In this, the sexual pleasure is often obtained by witnessing the act of urination by someone of the same or opposite sex.
m) Indecent assault (Sec 354 IPC) is any offence committed on a female with the intention or knowledge to outrage her modesty. Usually, the act involves the sexual part of either or is sexually

favored. In such assaults, a man may try to kiss a woman, press or fondle with her breasts, touch or expose the genitalia or thighs, try to put a finger in her vagina, play with vulva.

- A medical practitioner can be accused of indecent assault if he examines a female patient by stripping her clothes without her consent or even with her consent in the absence of a female attendant.
- Such assaults are punishable under Sec 354 IPC, upto 2 years imprisonment and/or fine.

n) Uranism : General term for perversion of the sexual instinct.
o) Satyriasis : Incessant sexual desire.
p) Priapism : Painful penile erection in absence of sexual desire.

**1539.** **Delirium is distinguished from dementia by the presence of:**

a) Impaired judgment

b) Impaired memory

c) Clouding of consciousness

d) Thought disorder

Correct Answer - C

***The hallmark of delirium is fluctuation in level of consciousness***.
Periods of lucency may be interspersed with periods of marked unresponsiveness. Another distinguishing feature is that the onset of delirium usually occurs within hours or days, whereas the onset of dementia may be insidious throughout a period of weeks to months.

**Ref:** Johnston B., Yaffe K. (2008). Chapter 27. Dementia & Delirium. In M.D. Feldman, J.F. Christensen (Eds), *Behavioral Medicine: A Guide for Clinical Practice*, 3e.

**1540. A middle aged person presented with the complaints of fear of leaving home, fear of travelling alone and fear of being in a crowd. He develops marked anxiety with palpitations and sweating, if he is in these situations. The most likely diagnosis is:**
***AIIMS 06; NIMHANS 11***

a) Generalized anxiety disorder

b) Schizophrenia

c) Personality disorder

d) Agoraphobia

Correct Answer - D
Ans. Agoraphobia

**1541.** **Slow wave sleep is known as:**

a) REM sleep

b) NREM sleep

c) Both of the above

d) None of the above

Correct Answer - B

This is a straight forward memory question. There are two kinds of sleep: **rapid eye movement (REM) sleep** and **non-REM (NREM),** or **slow-wave sleep.**

**Ref:** Ganong's Review of Medical Physiology 23rd edition, Chapter 15.

# 1542. Generalized 3-4 Hz spike and slow wave complexes on EEG are seen in?

a) Generalized tonic clonic seizure

b) Absent seizure

c) Temporal lobe epilepsy Simple partial seizures

d) Juvenile myoclonic epilepsy

Correct Answer - D
Juvenile myoclonic epilepsy REF: Clinical Electroencephalography by Misra Page 188
"In Juvenile myoclonic epilepsy the background activity of EEG is normal. Interictal EEG reveals generalised 4-6 Hz polyspikes and slow wave complexes"
In Generalized tonic clonic seizure EEG shows a normal background with generalized epileptiform discharges such as spike or polyspike wave complexes at 2.5 to 4 Hz.
On the EEG, typical absence seizures are associated with generalized, bilaterally synchronous, frontally predominant 3 Hz spike-and-wave discharges that begin suddenly from a normal background and end abruptly, without postictal slowing

## 1543. All are feature of Wernicke's encephalopathy, Except:

a) Cogwheel rigidity

b) Alteration in mental function

c) Ophthalmoplegia

d) Ataxia

Correct Answer - A

**Answer is A (Cogwheel rigidity):**

**Wernicke's disease** is seen in *Alcoholic*[Q] patients with *chronic thiamine deficiency*[Q].

**The characteristic clinical triad is that of :**

1. *Global confusion*
2. *Ophthalmoplegia*
3. Ataxia

**1544. One of the important defence mechanism is :**

a) Alienation

b) Confabulation

c) Repression

d) Suppression

Correct Answer - C
C i.e. Repression

## 1545. IQ (Intelligence quotient) of a child means?

a) The creative effciency of child

b) The capability of the child to perfrom intellectual tasks in relation to other children of same age

c) The efficiency of memory of child

d) Quantification of the learning ability of child

Correct Answer - B
Ans. is 'b' i.e., The capability of the child to perfrom intellectual tasks in relation to other children of same age.

## 1546. Ganser syndrome is a feature of ?

a) OCD

b) Conversion disorder

c) Dissociative disorder

d) Schizoid personality disorder

Correct Answer - C
Ans. is 'c' i.e., Dissociative disorder
**Dissociative disorder**

- The essential feature of the dissociative disorder is a disruption in the usually integrated functions of consciousness, memory, identity or perception of the environment. Dissociative disorder are :-

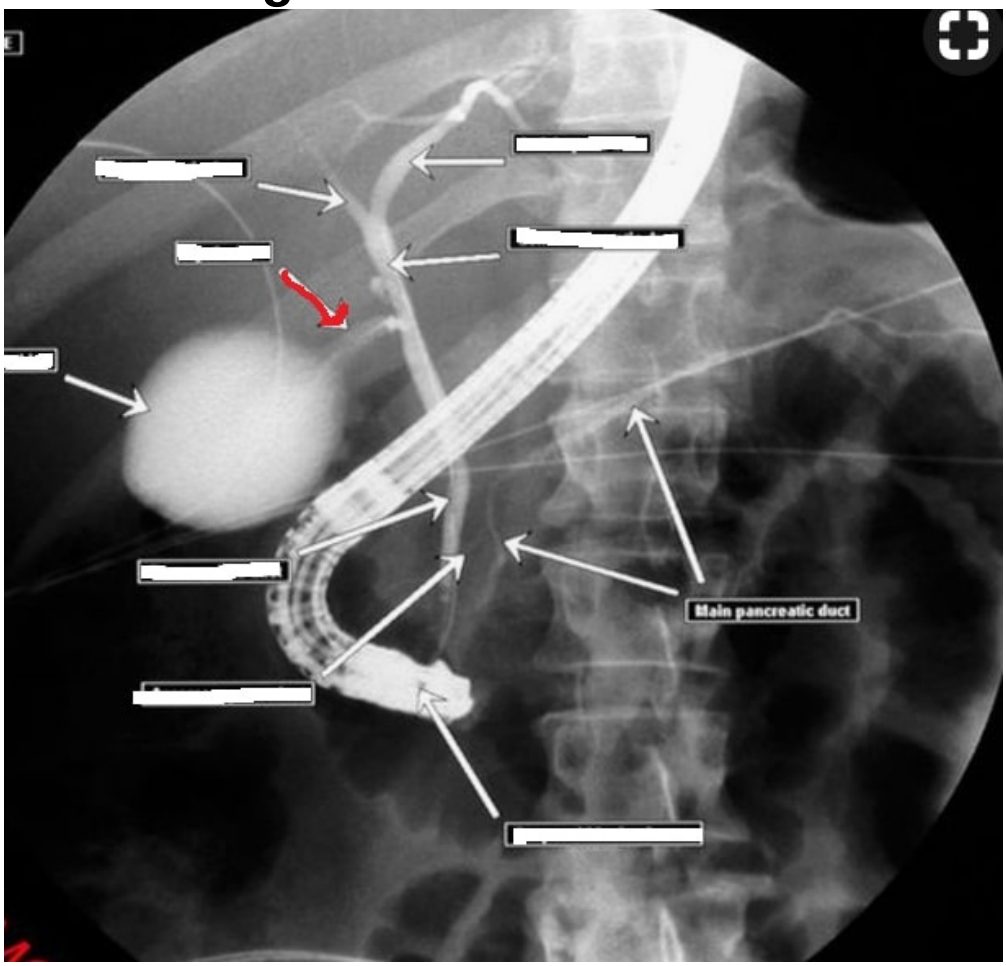
1. Dissociative (psychogenic) amnesia :- It is the most common type of dissociative disorder. Dissociative amnesia is characterized by retrograde amnesia (inability to retrieve stored memories and events leading up to onset of amnesia) and absence of antegrade amnesia (inability to form new long term memories).
2. Dissociative fugue :- A dissociative fugue may be present when a person impulsively wanders or travels away from home and upon arrival in the new location is unable to remember his/her past (i.e., amnesia for early life). There is loss of personal identity and the person assumes a new identity. There is absence of awareness of amnesia during fugue episode, i.e., Patient denies any memory loss during fugue state. On recovery there is amnesia for fugue episodes and recovery of memory of earlier life (i.e., before the episode of fugue).
3. Dissociative identity disorder (multiple personality disorder) :- More than one personality appears to possess the individuals, Showing their characteristic behavior. At any instance behavior and memories

of one personality is exhibited, patient then is unaware of the other's existance.

4. Depersonalization disorder : - Feeling of detachment from self is referred to as depersonalization. Individuals with this disorder will report feeling as if they are living in a dream or watching themselves on movie screen i.e., feeling detached from self and as if one is an outside observer of oneself. People with this disorder feel like they are "going crazy" and they frequently become anxious and depressed
5. Dissociative disorders not otherwise specified :- These are the disorders that are characterized by dissociative response that do not meet diagnostic criteria for one of the other dissociative disorder. Important ones are :-

- Dissociative Trance (Possession) disorders :- There is temporary exchange of person's personality by a new personality usually attributed to a spirit or divine power. Usually the person is aware of the existance of the other, i.e., possessor (unlike dissociative identity disorder).
- Ganser's syndrome : - Also known as syndrome of approximate answers. This is characterized by giving approximate answers together with a clouding of consciousness, and frequently accompanied by hallucinations and other dissociative, somatoform or conversion symptoms.

## 1547. What does the red arrow indicate in this ERCP image?




a) Main Pancreatic Duct

b) Cystic Duct

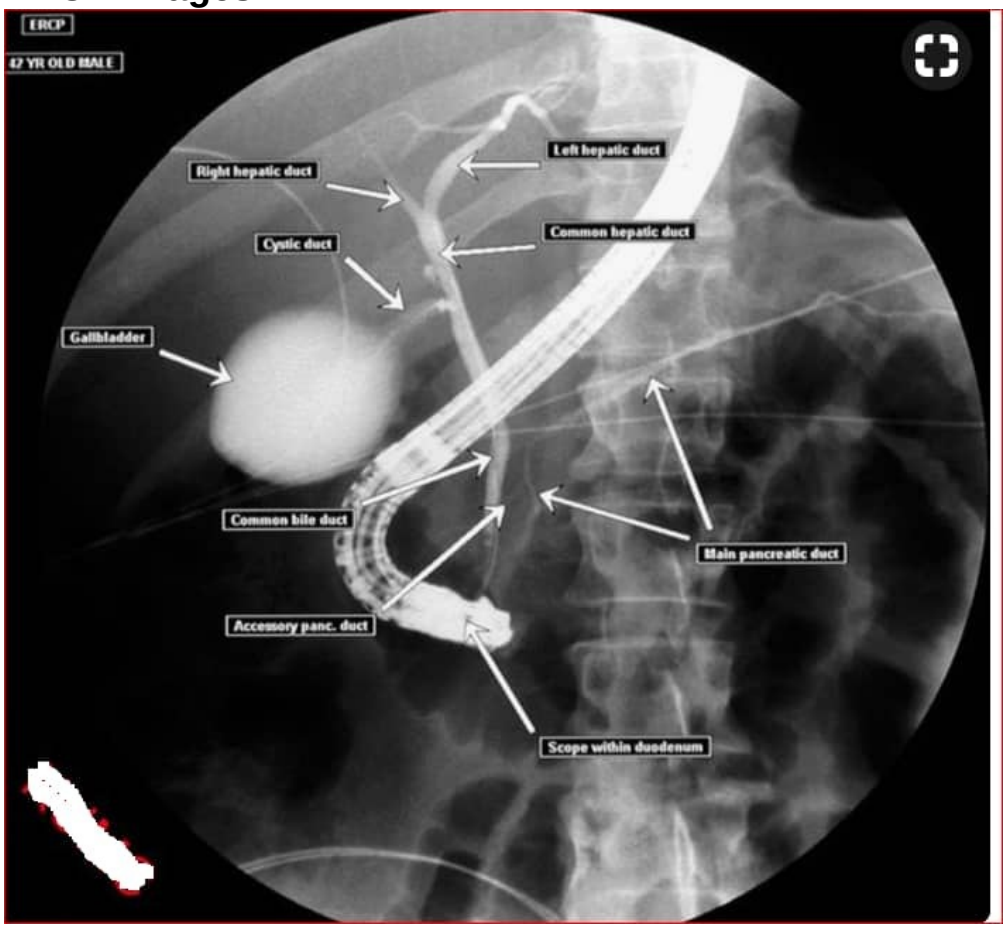
c) Common Hepatic Duct

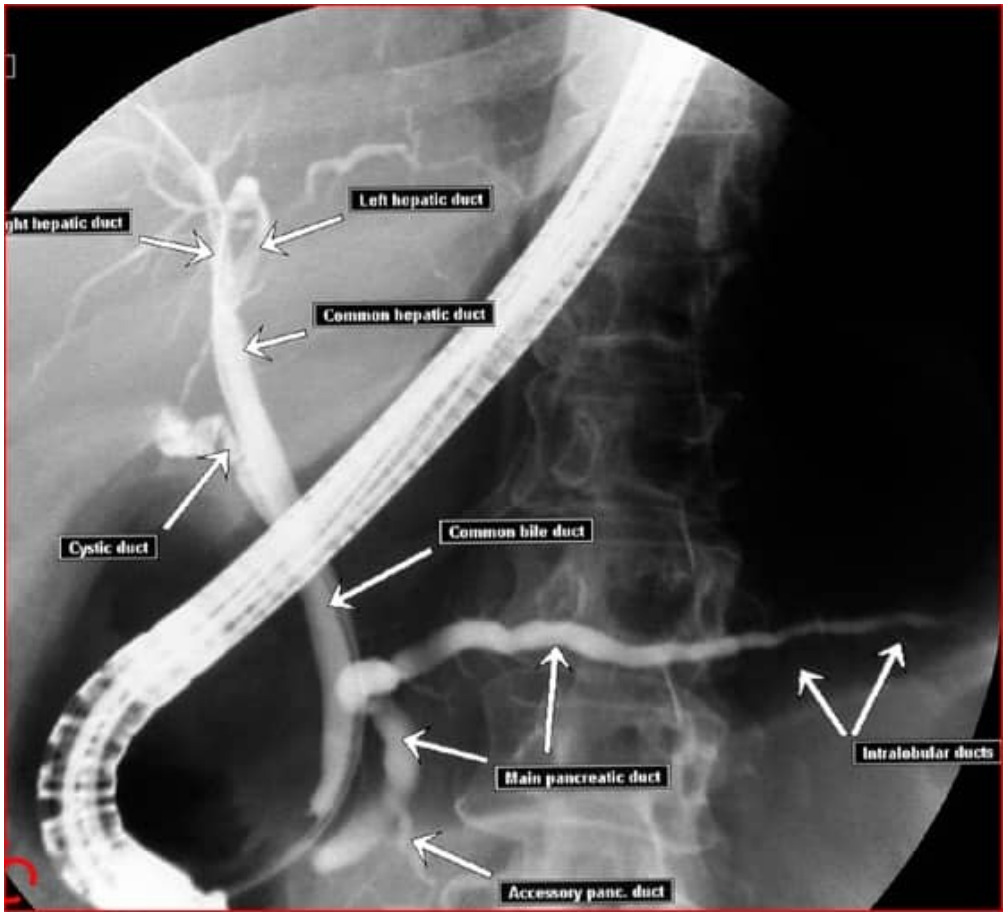
d) Bile Duct

Correct Answer - B
Ans:B )Cystic Duct

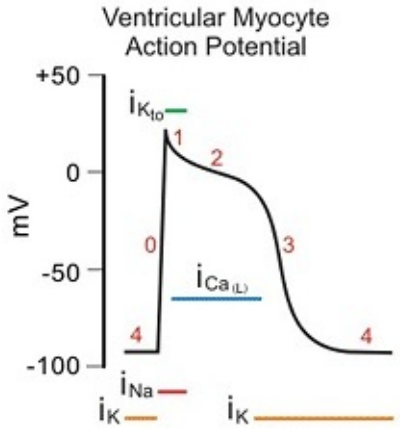
Ans:B.)Cystic Duct.

**ERCP images:**




ght hepatic duct
Left hepatic duct
Common hepatic duct
Cystic duct
Common bile duct
Main pancreatic duct
Intralobular ducts
Accessory panc. duct

**1548. The plateau phase of this graph is due to:**



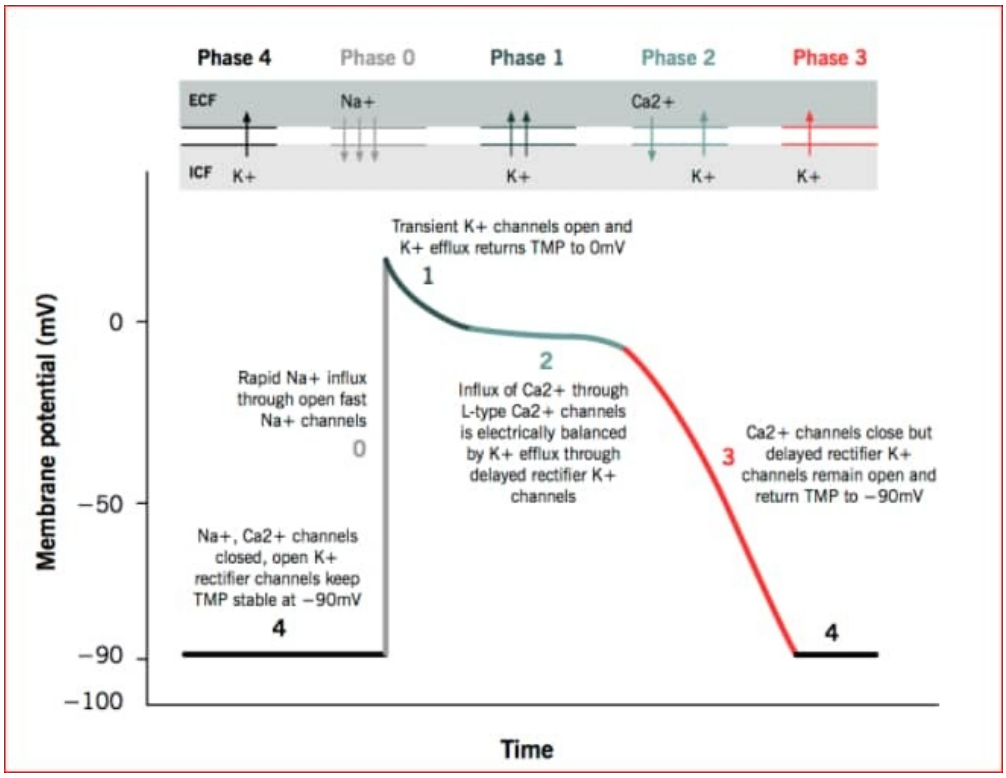

a) The movement of fewer sodium ions across the cell membrane

b) The calcium channels remaining open longer than the sodium channels

c) The increased membrane permeability to potassium ion

d) A decrease in the amount of calcium diffusing across the membrane

Correct Answer - B
Ans: B.)The calcium channels remaining open longer than the sodium channels.
**Action potential of cardiac muscles:**




**Phase 2 / "Plateau phase":**

- **Calcium channels open and fast potassium channels close.**
- A brief initial repolarization occurs.

**Why plateau-shaped?**

- Action potential then plateaus as a result of,
  - **Increased calcium ion permeability**
  - **Decreased potassium ion permeability**.

**Events during phase 2:**

The voltage-gated calcium ion channels open slowly during phases 1 and 0, and calcium enters the cell. Potassium channels then close, and the combination of d**ecreased potassium ion efflux and increased calcium ion influx causes the action potential to plateau**

**Note on other phases:**

**1. Phase 0 / Depolarization:**

- Fast sodium channels open.
- When the cardiac cell is stimulated and depolarizes, the membrane potential becomes more positive.

- Voltage-gated sodium channels (fast sodium channels) open and permit sodium to rapidly flow into the cell and depolarize it.
- The membrane potential reaches about +20 millivolts before the sodium channels close.

**2. Phase 1 / "Initial Repolarization":**

- Fast sodium channels close.
- Cellular repolarization starts, and potassium ions leave the cell through open potassium channels.

**3. Phase 3 / "Rapid Repolarization":**

- Calcium channels close and slow potassium channels open.
- The closure of calcium ion channels and increased potassium ion permeability.
- This permits potassium ions to rapidly exit the cell, ends the plateau and returns the cell membrane potential to its resting level.

**4. Phase 4 / "Resting membrane potential":**

- Averages about "−90 millivolts"

invalid question id