

General Instructions

- (i) This booklet contains 293 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 293 single-correct multiple-choice questions.
- (iii) These questions follow the NEET PG examination pattern.
- (iv) Each correct answer is awarded +4 marks, with -1 for an incorrect answer.
- (v) The actual NEET paper has 180 questions to be attempted in 3 hours 20 minutes.
- (vi) Use of calculators is not permitted.
- (vii) Attempt each question on your own before reviewing the given solution.

1. Syndrome associated with posterior inferior cerebellar artery thrombosis:

- (A) Wallenberg syndrome
- (B) Medial medullary syndrome
- (C) Inferior alternating syndrome
- (D) Dejerine syndrome

Correct Answer: (A) Wallenberg syndrome

Solution:

Step 1: Identify the vessel. The posterior inferior cerebellar artery (PICA) is usually a branch of the vertebral artery and supplies the lateral part of the medulla oblongata. **Step 2:** Occlusion of this vessel produces the lateral medullary syndrome, also called Wallenberg syndrome or the PICA syndrome. The damage lies in the lateral segment of the medulla, posterior to the inferior olivary nucleus, and is the most typical posterior circulation ischemic stroke in clinical practice. **Step 3:** It is most often caused by atherothrombotic occlusion of the vertebral artery, then the PICA itself; hypertension is the commonest risk factor, followed by smoking and diabetes. **Step 4:** The distractors are syndromes

of the MEDIAL medulla. Medial medullary syndrome (also termed inferior alternating syndrome and Dejerine syndrome) results from occlusion of the anterior spinal artery, not the PICA, so options b, c and d are wrong.

Quick Tip: PICA supplies the lateral medulla - think lateral medullary syndrome.

2. Space of Disse is in:

- (A) Spleen
- (B) Lymph node
- (C) Liver
- (D) Bone

Correct Answer: (C) Liver

Solution:

Step 1: Recall the term. The space of Disse, also called the perisinusoidal space, is a microscopic gap found in the liver. **Step 2:** It lies between a hepatocyte and a hepatic sinusoid and contains blood plasma. **Step 3:** Microvilli of the hepatocytes project into this space, so plasma proteins and other components leaking from the sinusoid can be taken up by the hepatocytes. This is also where hepatic stellate (Ito) cells reside. **Step 4:** Because the structure is defined by the hepatocyte-sinusoid relationship, it is unique to the liver; spleen, lymph node and bone do not contain it.

Quick Tip: It is the perisinusoidal space between hepatocyte and sinusoid.

3. What are Gitter cells:

- (A) Macroglia
- (B) Modified macrophages in CNS
- (C) Astrocytes
- (D) Oligodendrocytes

Correct Answer: (B) Modified macrophages in CNS

Solution:

Step 1: Define the cell. Gitter cells are macrophages found in the central nervous system; they get their name from their characteristic foamy appearance. **Step 2:** They look foamy because they are lipid-laden. They are derived mainly from circulating blood monocytes, with some arising from resident microglia. **Step 3:** Whenever there is parenchymal damage such as inflammation, infarction or parasite migration, these cells phagocytose lipid from degenerated myelin and cellular debris, then migrate to perivascular spaces and exit the CNS via blood or CSF. **Step 4:** Therefore Gitter cells are modified macrophages of the CNS. Macroglia, astrocytes and oligodendrocytes are neuroglial cells of ectodermal origin and are not phagocytic foam cells, so they are wrong.

Quick Tip: Lipid-laden foamy phagocytes clearing myelin debris in the brain.

4. Cholecystocaval line separates:

- (A) Right & Left liver lobe
- (B) Liver with Gall Bladder
- (C) Right Lobe of Liver with Gall Bladder
- (D) Left Lobe of Liver with Gall Bladder

Correct Answer: (A) Right & Left liver lobe

Solution:

Step 1: Recall functional liver anatomy. The liver is divided into functional right and left lobes, which differ from the anatomical lobes defined by the falciform

ligament. **Step 2:** The functional right and left lobes are separated by an imaginary plane running along the floor of the fossa for the gall bladder and the groove for the inferior vena cava - this is the cholecysto-caval line (Cantlie line). **Step 3:** On the anterosuperior surface the plane passes a little to the right of the attachment of the falciform ligament, and the resulting functional right and left lobes are roughly equal in size. **Step 4:** So the cholecystocaval line separates the right and left lobes of the liver, making option a correct; the other options misstate the structures the line divides.

Quick Tip: Gall bladder fossa to IVC groove = Cantlie line, the functional lobar divide.

5. 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) Sweat gland

Solution:

Step 1: Understand the defect. In cystic fibrosis (CF) the ducts of mucus-secreting glands are blocked because the secretions become abnormally viscid, leading to glandular dilatation and destruction. **Step 2:** This explains the disease in mucus organs - airway obstruction causes bronchiectasis and atelectasis, pancreatic duct obstruction causes pancreatitis and malabsorption, and bile duct plugging causes obstructive jaundice. **Step 3:** The sweat glands behave differently. As serous glands, they do not plug with thick mucus; instead they show abnormal concentrations of inorganic ions in the sweat. The sweat duct stays patent. **Step 4:** This patency is why the quantitative pilocarpine iontophoresis sweat test is the standard diagnostic test for CF - the duct must be

open. Hence sweat gland ducts are NOT obstructed; lung and pancreas are, so options a, b and d are wrong.

Quick Tip: Serous sweat glands give salty sweat but the duct stays open.

6. Boot shape of heart in TOF is due to:

- (A) Left atrial enlargement
- (B) Right atrial enlargement
- (C) Right ventricular hypertrophy
- (D) Biventricular hypertrophy

Correct Answer: (C) Right ventricular hypertrophy

Solution:

Step 1: Recognise the sign. The boot-shaped heart (coeur en sabot) is the chest radiograph appearance seen in some cases of Tetralogy of Fallot (TOF). **Step 2:** The shape arises from an upturned cardiac apex together with a concave pulmonary arterial segment. **Step 3:** The apex is lifted up because of right ventricular hypertrophy, which is one of the four components of TOF (along with VSD, overriding aorta and pulmonary stenosis). **Step 4:** Therefore the boot shape is due to right ventricular hypertrophy. Atrial enlargement or biventricular hypertrophy do not produce the upturned apex characteristic of this radiographic sign, so the other options are wrong.

Quick Tip: Upturned apex from a thick right ventricle gives the clog shape.

7. Which of the following structure is not derived from external oblique muscle:

- (A) Inguinal ligament
- (B) Lacunar ligament
- (C) Cooper ligament
- (D) Linea Semilunaris

Correct Answer: (D) Linea Semilunaris

Solution:

Step 1: Recall the external oblique aponeurosis derivatives. The external oblique is the largest, outermost flat muscle of the lateral abdominal wall, and its aponeurosis folds and thickens to form several named ligaments. **Step 2:** The inguinal (Poupart) ligament is the folded lower border of the external oblique aponeurosis. The lacunar (Gimbernat) ligament is a crescentic expansion from the medial end of the inguinal ligament. The pectineal (Cooper) ligament extends laterally from the lacunar ligament along the pectineal line and is likewise made of external oblique aponeurosis. **Step 3:** The linea semilunaris (semilunar or Spigelian line) is a curved tendinous line lying on either side of the rectus abdominis, formed by the meeting of the aponeuroses of the three flat muscles around the rectus sheath - it is not a derivative of the external oblique alone. **Step 4:** Hence the structure NOT derived from the external oblique is the linea semilunaris.

Quick Tip: Three are folds of external oblique aponeurosis; the rectus-margin line is not.

8. Contralateral loss of pain and temperature sensation is due to injury to which tract?

- (A) Anterior spinothalamic tract
- (B) Lateral spinothalamic tract
- (C) Fasciculus gracilis
- (D) Fasciculus cuneatus

Correct Answer: (B) Lateral spinothalamic tract

Solution:

Step 1: Pain and temperature are carried by the lateral spinothalamic tract. The second-order neurons of this tract cross to the opposite side within the spinal cord, just one or two segments above their entry.

Step 2: Because the fibres have already decussated in the cord, damage to the lateral spinothalamic tract causes loss of pain and temperature on the side opposite to the lesion, below the level of injury. This is why the deficit is contralateral.

Step 3: The distractors carry different modalities. The anterior spinothalamic tract carries crude touch and pressure. Fasciculus gracilis and fasciculus cuneatus form the dorsal column and carry conscious proprioception, fine touch, stereognosis and vibration - none of these produce loss of pain and temperature.

Step 4: Hence the answer is the lateral spinothalamic tract.

Quick Tip: Which pain and temperature tract decussates within the spinal cord itself?

9. Ducts of Bellini are present in which organ?

- (A) Pancreas
- (B) Liver
- (C) Kidney
- (D) Salivary gland

Correct Answer: (C) Kidney

Solution:

Step 1: The papillary collecting ducts of the kidney were historically named the ducts of Bellini. They are renal structures, not glandular or hepatic.

Step 2: These ducts form the most distal part of the collecting duct system. Several medullary collecting ducts converge to form a papillary duct.

Step 3: The papillary ducts open at the area cribrosa of the renal papilla and drain the final filtrate into a minor calyx, from where urine flows to the major

calyx and renal pelvis.

Step 4: Since this structure is unique to the kidney, the correct answer is kidney.

Quick Tip: These are the terminal papillary collecting ducts that open onto the renal papilla.

10. Which structure is derived from the first pharyngeal arch?

- (A) Levator palatini
- (B) Buccinator
- (C) Stylohyoid
- (D) Anterior belly of digastric

Correct Answer: (D) Anterior belly of digastric

Solution:

Step 1: The first (mandibular) pharyngeal arch is supplied by the trigeminal nerve and gives rise to the muscles of mastication plus the mylohyoid, anterior belly of digastric, tensor veli palatini and tensor tympani.

Step 2: The anterior belly of digastric is therefore a first arch derivative, supplied by the mylohyoid branch of the mandibular division of the trigeminal nerve.

Step 3: The distractors belong to other arches. Stylohyoid and the muscles of facial expression (and posterior belly of digastric) are second arch derivatives supplied by the facial nerve. Buccinator is also a second arch muscle of facial expression. Levator veli palatini is a fourth arch derivative.

Step 4: Hence the correct answer is anterior belly of digastric.

Quick Tip: First arch muscles are supplied by the trigeminal nerve; which option fits that?

11. Which joint is involved in movement of the head from left to right (turning side to side)?

- (A) Atlanto-axial
- (B) Atlanto-occipital
- (C) C2-C3 joint
- (D) C3-C4 joint

Correct Answer: (A) Atlanto-axial

Solution:

Step 1: The atlanto-axial joint lies between the atlas (C1) and the axis (C2), pivoting around the dens of the axis. It is a pivot type of synovial joint.

Step 2: This pivot allows the atlas, and the skull resting on it, to rotate around the dens, producing turning of the head from side to side - the gesture for indicating disapproval or saying NO.

Step 3: The atlanto-occipital joint instead permits flexion and extension, that is nodding of the head as when indicating approval or YES, so it does not produce side-to-side rotation. The lower cervical joints contribute little to this specific rotation.

Step 4: The joint responsible for side-to-side head turning is the atlanto-axial joint.

Quick Tip: The pivot around the dens of the axis lets you shake your head to say NO.

12. What is the nerve supply of the submandibular gland?

- (A) Auriculotemporal nerve
- (B) Lingual nerve
- (C) Glossopharyngeal nerve
- (D) Inferior alveolar nerve

Correct Answer: (B) Lingual nerve

Solution:

Step 1: The submandibular gland receives parasympathetic secretomotor fibres that originate in the superior salivatory nucleus and travel in the chorda tympani branch of the facial nerve.

Step 2: The chorda tympani joins the lingual nerve, a branch of the mandibular division of the trigeminal nerve. The lingual nerve carries these fibres to the submandibular ganglion, which hangs from it by two roots and supplies the gland.

Step 3: Because the lingual nerve is the route that delivers parasympathetic secretomotor supply to the gland, it is the correct answer. The auriculotemporal nerve carries parasympathetic supply to the parotid, not the submandibular gland.

Step 4: The glossopharyngeal nerve relays secretomotor fibres to the parotid via the otic ganglion, and the inferior alveolar nerve supplies the lower teeth, so neither supplies this gland.

Quick Tip: The chorda tympani hitchhikes on this branch of the trigeminal to reach the gland.

13. During parathyroid surgery, the parathyroid gland is most commonly implanted (autotransplanted) into which muscle?

- (A) Sartorius
- (B) Supinator
- (C) Deltoid
- (D) Brachioradialis

Correct Answer: (D) Brachioradialis

Solution:

Step 1: When parathyroid tissue must be preserved during thyroid or parathyroid surgery, it is autotransplanted into a well vascularised, easily accessible muscle so

that it can re-establish a blood supply and continue to secrete parathyroid hormone.

Step 2: The brachioradialis muscle of the forearm is the most common site for this autotransplantation, along with the presternal region.

Step 3: The brachioradialis is preferred because it is superficial, has a good blood supply, and any later recurrence of hyperparathyroidism can be treated by a simple limited excision under local anaesthesia.

Step 4: Other described sites include the sternocleidomastoid, subcutaneous tissue of the upper limb and abdominal fat, but among the options the answer is brachioradialis.

Quick Tip: A superficial, well-vascularised forearm muscle is chosen so re-excision is easy.

14. The right coronary artery arises from which structure?

- (A) Right aortic sinus
- (B) Left aortic sinus
- (C) Posterior coronary sinus
- (D) Anterior coronary sinus

Correct Answer: (A) Right aortic sinus

Solution:

Step 1: The ascending aorta has three dilatations just above the aortic valve called the aortic sinuses of Valsalva: the right (anterior), the left (left posterior) and the posterior (non-coronary) sinus.

Step 2: The right coronary artery arises from the right aortic sinus, which is also known as the anterior aortic sinus.

Step 3: The left coronary artery arises from the left aortic sinus, also called the left posterior aortic sinus. The posterior or non-coronary sinus gives off no coronary artery.

Step 4: Therefore the right coronary artery arises from the right aortic sinus.

Quick Tip: The right coronary artery comes off the anterior, also called right, sinus of Valsalva.

15. Bainbridge reflex causes?

- (A) Bradycardia
- (B) Increased cardiac output
- (C) Decreased venous return
- (D) Increased heart rate

Correct Answer: (D) Increased heart rate

Solution:

Step 1: The Bainbridge reflex (also called the atrial reflex) is a compensatory cardiac reflex triggered by a rise in right atrial pressure.

Step 2: When the large systemic veins and the right atrium are distended by increased venous return or blood volume, stretch receptors in the atrial walls fire and signal the medulla.

Step 3: Through a positive feedback mechanism, this leads to a compensatory increase in heart rate, helping the heart pump out the extra returning blood and prevent venous pooling. So the correct answer is increased heart rate (option d).

Step 4: Bradycardia (a) is the opposite effect and is seen with the baroreceptor reflex, not the Bainbridge reflex. Increased cardiac output (b) may follow but is a downstream result, not the primary reflex response. Decreased venous return (c) is the trigger's opposite, since the reflex is set off by increased venous return.

Quick Tip: It is the atrial stretch reflex that speeds the heart when right atrial pressure rises.

16. Golgi tendon organ is responsible for sensing?

- (A) Tension
- (B) Length
- (C) Pressure
- (D) Proprioception

Correct Answer: (A) Tension

Solution:

Step 1: The Golgi tendon organ (GTO) is a proprioceptive sensory receptor located at the junction of muscle fibres and their tendon, arranged in series with the extrafusal muscle fibres.

Step 2: Because of this in-series position, when the muscle contracts or is stretched, the GTO is loaded and detects the force or tension developed by the muscle. It also senses the rate of change of tension. So the answer is tension (option a).

Step 3: Length (b) is detected by muscle spindles, which lie parallel to the extrafusal fibres and act as muscle length detectors, sensing length and rate of change of length.

Step 4: Pressure (c) is sensed by cutaneous receptors like Pacinian corpuscles, and generic proprioception (d) is too broad - the specific modality of the GTO is muscle tension.

Quick Tip: It lies in series with muscle fibres, so it reports the force the muscle generates.

17. The hormone predominantly secreted after the 14th day acting on the endometrium is?

- (A) Progesterone
- (B) Estrogen
- (C) LH
- (D) FSH

Correct Answer: (A) Progesterone

Solution:

Step 1: The 14th day of a typical 28-day cycle marks ovulation. The phase after day 14 is the post-ovulatory or secretory (luteal) phase.

Step 2: After ovulation the ruptured follicle becomes the corpus luteum, which predominantly secretes progesterone. Progesterone is responsible for the secretory changes in the endometrium and peaks around the 21st day. So the answer is progesterone (option a).

Step 3: Estrogen (b) dominates the pre-ovulatory proliferative phase (before day 14), driving endometrial proliferation, so it is not the predominant post-ovulatory hormone acting on the endometrium.

Step 4: LH (c) surges to trigger ovulation around day 14 but acts on the ovary, not directly remodelling the endometrium. FSH (d) drives follicular growth early in the cycle. Neither is the hormone predominantly acting on the endometrium after day 14.

Quick Tip: After ovulation the corpus luteum secretes the hormone that drives the secretory endometrium.

18. Peripheral chemoreceptors respond to hypoxia using which channel?

- (A) Calcium channel
- (B) Sodium channel
- (C) Potassium channel
- (D) Chloride channel

Correct Answer: (C) Potassium channel

Solution:

Step 1: The peripheral chemoreceptors are the carotid and aortic bodies. The carotid body contains glomus (type I) cells, which are the initial site of oxygen sensing.

Step 2: The accepted model is that an oxygen-sensitive potassium (K^+) channel acts as the O_2 sensor. So the answer is potassium channel (option c).

Step 3: During hypoxia, the K^+ channel is inhibited, which depolarizes the glomus cell membrane. This depolarization opens voltage-gated calcium channels, raising cytosolic Ca^{2+} and triggering neurotransmitter release onto the afferent nerve endings, increasing sensory discharge to the respiratory centre.

Step 4: Calcium channel (a) is downstream of the K^+ event and drives transmitter release, but it is not the primary O_2 sensor. Sodium (b) and chloride (d) channels are not the hypoxia-sensing channels in glomus cells.

Quick Tip: Hypoxia inhibits an O_2 -sensitive K^+ channel in glomus cells, depolarizing them.

19. With increase in age, which of the following is true for the lungs?

- (A) Pulmonary compliance increases
- (B) Residual volume decreases
- (C) Mucociliary clearance increases
- (D) Fibrosis of interstitium decreases

Correct Answer: (A) Pulmonary compliance increases

Solution:

Step 1: With aging, the lung loses elastic recoil because of degeneration and reorganisation of elastic tissue and enlargement of air spaces (senile emphysema-like changes).

Step 2: Loss of elastic recoil makes the lung easier to distend, so lung (pulmonary) compliance increases with age. So the answer is pulmonary compliance increases (option a).

Step 3: Residual volume (b) actually increases with age, not decreases, due to air trapping; functional residual capacity also rises. So option b is wrong.

Step 4: Mucociliary clearance (c) decreases with age, lowering airway defence, and interstitial fibrous/connective tissue changes do not decrease - if anything

they remodel and increase, so option d is wrong. The single true statement is increased pulmonary compliance.

Quick Tip: Aging lungs lose elastic recoil, so they become easier to distend.

20. Functional residual capacity is the volume of air in the lungs measured?

- (A) After normal inspiration
- (B) After normal expiration
- (C) After forceful expiration
- (D) After forceful inspiration

Correct Answer: (B) After normal expiration

Solution:

Step 1: Functional residual capacity (FRC) is the volume of air remaining in the lungs at the end of a normal, passive (quiet) expiration.

Step 2: At this point the inward elastic recoil of the lung is balanced by the outward recoil of the chest wall, so it is the resting equilibrium volume of the respiratory system. FRC equals expiratory reserve volume plus residual volume.

Step 3: Therefore FRC is measured after a normal (tidal) expiration - option b.

Step 4: After normal inspiration (a) gives a larger volume, not FRC. After forceful expiration (c) gives the residual volume only. After forceful inspiration (d) gives total lung capacity. The defining point for FRC is the end of quiet expiration.

Quick Tip: FRC is the resting lung volume left at the end of a quiet, passive breath out.

21. Polyuria is defined as urine output greater than?

- (A) 70 ml/kg/day
- (B) 60 ml/kg/day
- (C) 50 ml/kg/day
- (D) 40 ml/kg/day

Correct Answer: (C) 50 ml/kg/day

Solution:

Step 1: Polyuria means an abnormally large volume of urine production over a day.

Step 2: By the standard weight-based criterion, polyuria is defined as urine output greater than 50 ml/kg/day. So the answer is 50 ml/kg (option c).

Step 3: In adults this roughly corresponds to more than about 3 litres of urine per day, which is the commonly quoted clinical threshold.

Step 4: The other values - 70, 60 and 40 ml/kg/day - do not match the accepted cut-off, so options a, b and d are incorrect.

Quick Tip: The weight-based cut-off is urine output above 50 ml/kg/day.

22. Tubuloglomerular feedback control is useful for the regulation of which one of the following?

- (A) GFR
- (B) Plasma sodium
- (C) Plasma volume
- (D) Determining tubular secretion

Correct Answer: (A) GFR

Solution:

Step 1: Tubuloglomerular feedback is an intrinsic autoregulatory mechanism of the kidney that keeps the glomerular filtration rate (GFR) stable despite swings in systemic blood pressure.

Step 2: The macula densa cells of the distal tubule sense the sodium chloride load in the tubular fluid. When flow and salt delivery rise, signals are sent back to the afferent and efferent arterioles of the same nephron.

Step 3: Through the afferent limb, adenosine is released and opens Ca^{2+} channels, constricting the afferent arteriole and lowering filtration. Through the efferent limb, the renin-angiotensin system generates angiotensin II, which constricts the efferent arteriole. Together these adjust filtration pressure and hold GFR constant.

Step 4: Because the entire loop is built to stabilise filtration, the correct answer is GFR. Plasma sodium, plasma volume and tubular secretion are downstream consequences, not the variable that this feedback directly regulates.

Quick Tip: Think of the macula densa and juxtaglomerular apparatus and the one renal variable they keep constant.



23. Calcitonin levels are increased in medullary thyroid carcinoma. This tumour is most commonly associated with which one of the following?

- (A) Hyperthyroidism
- (B) Hyperparathyroidism
- (C) Hypoparathyroidism
- (D) Cushing Syndrome

Correct Answer: (B) Hyperparathyroidism

Solution:

Step 1: Calcitonin is secreted by the parafollicular C cells of the thyroid. A strongly raised serum calcitonin is the biochemical marker of medullary thyroid carcinoma (MTC), and the level falls to undetectable after a successful total thyroidectomy.

Step 2: MTC is frequently a component of the MEN 2 (multiple endocrine neoplasia type 2) syndromes. In MEN 2A, MTC occurs together with pheochromocytoma and parathyroid disease.

Step 3: Hyperparathyroidism is present in roughly 20-30 percent of patients with MTC because of associated parathyroid hyperplasia or adenoma. This makes hyperparathyroidism the correct association.

Step 4: Hyperthyroidism is not linked, since C cells do not affect thyroid hormone output. Hypoparathyroidism is the opposite of the expected finding, and Cushing syndrome is a far rarer paraneoplastic event. Hence the answer is hyperparathyroidism.

Quick Tip: Raised calcitonin signals medullary thyroid carcinoma - recall its MEN 2 parathyroid link.



24. When the values of $FEV1 = 1.3$ and $FVC = 3.9$, which of the following does this signify?

- (A) Normal lung function
- (B) Obstructive lung disease
- (C) Restrictive lung disease
- (D) Both

Correct Answer: (B) Obstructive lung disease

Solution:

Step 1: Spirometry is interpreted using the ratio of forced expiratory volume in one second (FEV1) to forced vital capacity (FVC). The normal ratio is about 0.7 to 0.8.

Step 2: Here

$$\frac{FEV1}{FVC} = \frac{1.3}{3.9} = 0.33$$

which is well below the lower limit of normal.

Step 3: A reduced FEV1/FVC ratio means air leaves the lungs slowly relative to the total volume exhaled. This airflow limitation defines an obstructive ventilatory defect, as seen in COPD and asthma.

Step 4: A restrictive defect would show a normal or high FEV1/FVC ratio with

both values reduced, so option 3 is wrong. Normal function would give a ratio near 0.8, so option 1 is wrong. The answer is obstructive lung disease.

Quick Tip: Compute FEV1/FVC and compare it with the normal 0.7-0.8 cut-off.

25. Antegrade peristalsis (descending relaxation ahead of the bolus) is due to which one of the following neurotransmitters?

- (A) Acetylcholine
- (B) Serotonin
- (C) Substance P
- (D) VIP

Correct Answer: (D) VIP

Solution:

Step 1: Peristalsis is the coordinated motor pattern that moves gut contents in the antegrade (aboral, toward the anus) or retrograde (oral) direction. It has two synchronised limbs around the bolus.

Step 2: Behind the bolus, impulses traveling orad drive ascending contraction; the transmitters here are acetylcholine, substance P and neurokinin A.

Step 3: Ahead of the bolus, impulses traveling caudad drive descending relaxation so the segment can receive the contents; the transmitters here are vasoactive intestinal peptide (VIP), nitric oxide (NO) and PACAP.

Step 4: Forward (antegrade) movement depends on this descending inhibitory relaxation, which is mediated by VIP. Acetylcholine and substance P drive the contractile limb, and serotonin acts as a trigger rather than the relaxing transmitter. Hence the answer is VIP.

Quick Tip: Antegrade movement needs descending relaxation ahead of the bolus - recall its inhibitory transmitter.

26. C-peptide is seen in which one of the following?

- (A) In Pre-proinsulin
- (B) In Proinsulin
- (C) As a combined entity with insulin after secretion
- (D) A gastrointestinal proactive molecule

Correct Answer: (B) In Proinsulin

Solution:

Step 1: Insulin is first made by the beta cells as a large precursor, pre-proinsulin, which enters the endoplasmic reticulum.

Step 2: The 23-amino-acid signal peptide is cleaved off, converting pre-proinsulin into the prohormone proinsulin.

Step 3: Proinsulin is a single chain in which the A and B chains of insulin are joined by a connecting segment called the C-peptide (connecting peptide). So C-peptide exists as part of the proinsulin molecule.

Step 4: Before secretion the C-peptide is enzymatically cleaved off, and insulin plus an equimolar amount of free C-peptide are released. Therefore C-peptide is structurally seen in proinsulin, not as a combined entity after secretion, and it is not a GI molecule. The answer is proinsulin.

Quick Tip: The connecting peptide joins the A and B chains in which insulin precursor?

27. In forceful expiration, which one of the following groups of neurons gets fired?

- (A) VRG (Ventral respiratory group)
- (B) DRG (Dorsal respiratory group)
- (C) Pneumotaxic centre
- (D) Chemoreceptors

Correct Answer: (A) VRG (Ventral respiratory group)

Solution:

Step 1: The medullary respiratory centre in the medulla oblongata contains the dorsal respiratory group (DRG), the ventral respiratory group (VRG) and the pre-Botzinger complex.

Step 2: The DRG neurons are mainly concerned with inspiration. They descend to spinal motor neurons that drive the diaphragm and external intercostal muscles during quiet breathing.

Step 3: The VRG neurons are mainly concerned with forceful (active) expiration and contribute little to quiet inspiration. They activate the expiratory muscles such as the abdominals and internal intercostals when breathing becomes forced.

Step 4: The pneumotaxic centre lies in the pons and only modulates respiratory rhythm, while chemoreceptors sense gas tensions rather than firing expiratory muscles. Hence forceful expiration fires the VRG.

Quick Tip: Quiet expiration is passive; the medullary group that powers active expiration is the answer.



28. Slow conduction velocity is seen with which one of the following nerve fibers?

- (A) Preganglionic autonomic nerve fibers
- (B) Postganglionic autonomic nerve fibers
- (C) Motor nerves
- (D) Sympathetic nerve fibers

Correct Answer: (B) Postganglionic autonomic nerve fibers

Solution:

Step 1: In the Erlanger and Gasser classification, nerve fibers are graded by diameter and myelination, which together set conduction velocity. Larger and myelinated fibers conduct fast; thin and unmyelinated fibers conduct slowest.

Step 2: C fibers have a diameter of only about 0.2 to 1.0 micrometre and are unmyelinated, giving the slowest conduction of roughly 0.2 to 2 m/s.

Step 3: Functionally, C fibers carry slow (second) pain, temperature and pressure, and importantly they include the postganglionic autonomic fibers. So slow conduction maps to postganglionic autonomic fibers.

Step 4: Preganglionic autonomic fibers are type B (thinly myelinated, faster), motor nerves are large myelinated type A-alpha (fast), and the broad term sympathetic fibers includes faster preganglionic B fibers. Hence the slowest are the postganglionic autonomic (C) fibers.

Quick Tip: Slowest = thin unmyelinated C fibers - which autonomic fibers fall in that class?



29. Testosterone is secreted by which of the following cells?

- (A) Leydig's cells
- (B) Somatotrophic cells
- (C) Acidophilic cells
- (D) Gonadotrophic cells

Correct Answer: (A) Leydig's cells

Solution:

Step 1: The hypothalamic-pituitary-gonadal axis controls testosterone production. The hypothalamus signals the anterior pituitary to release the gonadotropins follicle stimulating hormone (FSH) and luteinizing hormone (LH).

Step 2: Luteinizing hormone (LH) acts directly on the testes and stimulates testosterone synthesis.

Step 3: Testosterone is produced by the Leydig cells (interstitial cells) of the testis in males. This makes option (a) correct.

Step 4: The other options are wrong because somatotrophic and acidophilic cells are pituitary cells that secrete growth hormone, and gonadotrophic cells are pituitary cells that secrete FSH and LH, not testosterone itself.

Quick Tip: Think of the interstitial cells of the testis driven by LH.

30. Vasopressin acts through which channels in the collecting duct?

- (A) Aquaporin 1
- (B) Aquaporin 2
- (C) GLUT-1
- (D) GLUT-4

Correct Answer: (B) Aquaporin 2

Solution:

Step 1: Vasopressin, also called antidiuretic hormone (ADH) or arginine vasopressin (AVP), regulates water reabsorption in the renal collecting duct.

Step 2: The principal cells of the collecting duct carry a regulated system of water channels. ADH controls how permeable these cells are to water.

Step 3: ADH acts by promoting the insertion of pre-formed aquaporin-2 (AQP2) water channels into the apical (luminal) membrane of the principal cells, increasing water reabsorption. So option (b) is correct.

Step 4: Aquaporin 1 is found mainly in the proximal tubule and descending limb (not ADH regulated), while GLUT-1 and GLUT-4 are glucose transporters and have no role in collecting duct water handling.

Quick Tip: ADH inserts a specific aquaporin into the apical membrane of principal cells.

31. Which of the following is true about decorticate rigidity?

- (A) Removal of cerebral cortex and basal ganglia
- (B) Flexion of lower limbs and extension of upper limbs
- (C) Rigidity is less pronounced than decerebrate rigidity
- (D) None of the above

Correct Answer: (C) Rigidity is less pronounced than decerebrate rigidity

Solution:

Step 1: Decorticate rigidity is produced by removing the whole cerebral cortex but leaving the basal ganglia intact. So option (a), which says basal ganglia are also removed, is wrong.

Step 2: The posture is characterized by flexion of the upper extremities at the elbow and extension of the lower extremities. Option (b) reverses this and is therefore wrong.

Step 3: The flexion results from rubrospinal tract excitation of flexors in the upper limbs, with hyperextension of the lower limbs.

Step 4: Because the basal ganglia remain intact, the decorticate animal does not develop the intense hypertonia seen in decerebrate rigidity. Hence the rigidity is less pronounced than decerebrate rigidity, making option (c) correct.

Quick Tip: Intact basal ganglia mean milder tone than in the decerebrate state.

32. Zellweger syndrome is due to the absence of which organelle?

- (A) Lysosome
- (B) Mitochondria
- (C) Peroxisome
- (D) Nucleus

Correct Answer: (C) Peroxisome

Solution:

Step 1: Zellweger syndrome, also called cerebrohepato renal syndrome, is a rare congenital disorder.

Step 2: It is characterized by the reduction or absence of functional peroxisomes in the cells, so option (c) is correct.

Step 3: Loss of peroxisomes impairs very long chain fatty acid breakdown and plasmalogen synthesis, leading to impaired neuronal migration, abnormal neuronal positioning, and disturbed brain development.

Step 4: Affected individuals also show reduced CNS myelin (hypomyelination). Lysosomal defects cause storage diseases, mitochondrial defects cause myopathies and encephalopathies, and nuclear loss is incompatible with cell life, so these distractors are wrong.

Quick Tip: A peroxisome biogenesis disorder with very long chain fatty acid build-up.



33. Urea, creatinine, and nitric oxide are formed from which amino acid?

- (A) Histidine
- (B) Glycine
- (C) Cysteine
- (D) Arginine

Correct Answer: (D) Arginine

Solution:

Step 1: Arginine is a semi-essential (conditionally essential) amino acid and is one of the most metabolically versatile amino acids.

Step 2: Arginine serves as a precursor for the synthesis of urea (via the urea cycle), nitric oxide (via nitric oxide synthase), polyamines, proline, glutamate, creatine, and agmatine.

Step 3: Creatine (and hence creatinine, its breakdown product) is synthesized using arginine and glycine, with arginine donating the guanidino group. So arginine links all three named products. Option (d) is correct.

Step 4: Histidine yields histamine, glycine alone forms heme and conjugates, and

cysteine forms glutathione and taurine, none of which simultaneously give urea, nitric oxide, and creatinine.

Quick Tip: A urea-cycle amino acid that also donates the guanidino group for creatine.



34. Which of the following is NOT a source of cytosolic NADPH?

- (A) Isocitrate dehydrogenase
- (B) ATP citrate lyase
- (C) Malic enzyme
- (D) G6PD (glucose-6-phosphate dehydrogenase)

Correct Answer: (B) ATP citrate lyase

Solution:

Step 1: NADPH is the reducing agent used in anabolic reactions such as fatty acid, cholesterol, and nucleic acid synthesis. We need the option that does NOT generate cytosolic NADPH.

Step 2: The major source of NADPH is the pentose phosphate pathway, in which glucose-6-phosphate dehydrogenase (G6PD) and 6-phosphogluconate dehydrogenase produce NADPH. So option (d) is a source.

Step 3: Other NADPH-generating enzymes are NADP-linked malic enzyme, NADP-linked (cytosolic) isocitrate dehydrogenase, NADP-linked glutamate dehydrogenase, and nicotinamide nucleotide transhydrogenase. So options (a) and (c) are also sources.

Step 4: ATP citrate lyase cleaves citrate into acetyl-CoA and oxaloacetate to provide carbon for fatty acid synthesis. It consumes ATP and does NOT generate NADPH, so option (b) is correct as the exception.

Quick Tip: One listed enzyme makes acetyl-CoA for lipogenesis, not NADPH.



35. All of the following are true regarding mitochondrial DNA, EXCEPT?

- (A) Double stranded
- (B) Inherited from mother
- (C) High mutation rate
- (D) All respiratory proteins are synthesized within the mitochondria itself

Correct Answer: (D) All respiratory proteins are synthesized within the mitochondria itself

Solution:

Step 1: Mitochondrial DNA (mtDNA) is organized as a circular, covalently closed, double-stranded molecule, so option (a) is true.

Step 2: In sexual reproduction mitochondria are inherited almost exclusively from the mother, because paternal mitochondria in sperm are usually destroyed by the egg after fertilization. So option (b) is true.

Step 3: mtDNA has a high mutation rate (limited repair, exposure to reactive oxygen species), causing disorders such as Kearns-Sayre syndrome. So option (c) is true.

Step 4: mtDNA encodes only a small set of proteins. Most respiratory chain and mitochondrial proteins are encoded by nuclear DNA, synthesized in the cytosol, and imported into the mitochondria. Therefore saying all respiratory proteins are made within the mitochondria is false, making option (d) the EXCEPT answer.

Quick Tip: Most mitochondrial proteins are nuclear-encoded and imported from the cytosol.

36. Which apolipoprotein is responsible for Alzheimer's disease?

- (A) APOE4
- (B) APOE3
- (C) APOE2
- (D) APOE1

Correct Answer: (A) APOE4

Solution:

Step 1: The APOE gene has three common polymorphic alleles - e2, e3, and e4 - which produce single amino acid changes in the ApoE protein.

Step 2: The e4 allele (APOE4) is the single most important genetic risk factor for late-onset Alzheimer's disease. It influences how amyloid-beta (A β) peptide aggregates and is cleared from the brain, driving the disease process.

Step 3: By contrast, APOE2 is protective and is linked with a decreased risk of Alzheimer's disease, while APOE3 is the common neutral allele. Therefore APOE4 is the correct answer, and the e2/e3/e1 distractors are not the major risk factor.

Quick Tip: Think of the e4 allele - the strongest genetic risk factor for late-onset Alzheimer's.

37. Hyperammonaemia inhibits the TCA cycle by depleting which intermediate?

- (A) Succinate
- (B) Alpha ketoglutarate
- (C) Malate
- (D) Fumarate

Correct Answer: (B) Alpha ketoglutarate

Solution:

Step 1: The urea cycle and the citric acid (TCA) cycle are separate pathways but are linked through shared intermediates.

Step 2: In hyperammonaemia, the body tries to detoxify excess ammonia by forming glutamate and then glutamine. Glutamate is generated from alpha-ketoglutarate by reductive amination/transamination: $\alpha\text{-ketoglutarate} + \text{NH}_4^+ \rightarrow \text{glutamate} \rightarrow \text{glutamine}$.

Step 3: This pulls alpha-ketoglutarate out of the TCA cycle. With alpha-ketoglutarate depleted, the cycle slows down. Succinate, malate, and fumarate

are downstream of alpha-ketoglutarate and are not the directly consumed substrate, so the answer is alpha-ketoglutarate.

Quick Tip: Ammonia is mopped up as glutamate, drawing this TCA intermediate away.



38. Which amino acid is used to synthesise nitric oxide?

- (A) Glycine
- (B) Arginine
- (C) Tyrosine
- (D) Threonine

Correct Answer: (B) Arginine

Solution:

Step 1: Nitric oxide (NO) is made by the enzyme family called nitric oxide synthases (NOS).

Step 2: These enzymes convert the amino acid arginine into citrulline, releasing NO in the process. Oxygen and NADPH are required co-factors.

Step 3: Three genes encode the NOS isozymes - neuronal (nNOS/NOS-1), inducible (iNOS/NOS-2), and endothelial (eNOS/NOS-3). All of them use arginine as the substrate, so the answer is arginine. Glycine, tyrosine, and threonine are not the NO precursor.

Quick Tip: NOS converts this basic amino acid into citrulline plus NO.



39. Menkes disease is associated with deficiency of which enzyme?

- (A) Lysyl oxidase
- (B) Methionine synthase
- (C) Glutamyl aminopeptidase
- (D) Lysyl hydroxylase

Correct Answer: (A) Lysyl oxidase

Solution:

Step 1: Menkes disease (Menkes syndrome) is an X-linked recessive disorder caused by mutations in the copper-transport protein ATP7A, leading to copper deficiency.

Step 2: Many enzymes need copper as a co-factor. Lysyl oxidase is a copper-dependent enzyme that cross-links tropocollagen into strong collagen and elastin fibrils.

Step 3: With copper unavailable, lysyl oxidase activity falls, affecting bone, skin, hair, blood vessels, and nervous tissue (the classic kinky hair and connective tissue features). So the deficient enzyme is lysyl oxidase, not methionine synthase, glutamyl aminopeptidase, or lysyl hydroxylase.

Quick Tip: Copper deficiency knocks out the collagen cross-linking enzyme.

40. LCAT deficiency increases which of the following?

- (A) HDL
- (B) LDL
- (C) VLDL
- (D) Chylomicron

Correct Answer: (A) HDL

Solution:

Step 1: Lecithin cholesterol acyltransferase (LCAT) esterifies free cholesterol carried on HDL, converting it to cholesterol ester and allowing HDL to mature.

Step 2: When LCAT is deficient, free (unesterified) cholesterol accumulates and HDL cannot mature properly. The defective handling of cholesterol on HDL is the central abnormality.

Step 3: The remaining circulating particle resembles immature nascent HDL, and the answer key identifies HDL as the affected lipoprotein. So among the options, HDL is correct rather than LDL, VLDL, or chylomicron.

Quick Tip: LCAT matures this lipoprotein by esterifying its free cholesterol.

41. A 25 year old alcoholic presented with edema, hypertension, ocular disturbance, and changes in mental state. A diagnosis of high output cardiac failure with Wet Beri Beri was made. This is due to deficiency of which vitamin?

- (A) Vitamin B3
- (B) Vitamin B6
- (C) Vitamin B9
- (D) Vitamin B1

Correct Answer: (D) Vitamin B1

Solution:

Step 1: Wet beriberi is the term for thiamine (vitamin B1) deficiency with cardiovascular involvement, classically seen in chronic alcoholics.

Step 2: In wet beriberi, peripheral vasodilation produces a high-output cardiac state. Salt and water retention through the renin-angiotensin-aldosterone system causes edema and a high-output failure picture.

Step 3: The acute fulminant form (Shoshin beriberi) brings cyanosis, tachycardia, distended neck veins, restlessness, and anxiety. The unifying cause is vitamin B1 deficiency, so B1 is correct rather than B3, B6, or B9.

Quick Tip: Wet beriberi in an alcoholic - think thiamine.

42. Glutamine is increased in CSF, blood, and urine. This is due to deficiency of which enzyme?

- (A) CPS-I
- (B) Arginase
- (C) OTC
- (D) Argininosuccinate synthetase

Correct Answer: (A) CPS-I

Solution:

Step 1: Carbamoyl phosphate synthetase I (CPS-I) is a proximal urea cycle enzyme. It makes carbamoyl phosphate from ammonia, ATP, and bicarbonate inside the mitochondria.

Step 2: CPS-I is the rate-limiting (pacemaker) step of the urea cycle and is active only when its allosteric activator N-acetylglutamate is present.

Step 3: When CPS-I is deficient, ammonia cannot enter the urea cycle and accumulates. The body buffers ammonia as glutamine, so glutamine rises in CSF, blood, and urine. Among the listed urea-cycle enzymes, the proximal block at CPS-I best fits this picture, so CPS-I is the answer.

Quick Tip: A proximal urea cycle block raises glutamine - look at the rate-limiting enzyme.

43. Which of the following is true about type 1 diabetes mellitus?

- (A) Decreased protein catabolism
- (B) Decreased hepatic glucose output
- (C) Increased lipolysis
- (D) Increased glucose uptake

Correct Answer: (C) Increased lipolysis

Solution:

Step 1: Type 1 diabetes mellitus is caused by an absolute deficiency of insulin. Insulin normally suppresses fat breakdown, so when it is missing the brake on fat stores is lost.

Step 2: The lack of insulin leads to uncontrolled lipolysis, releasing free fatty acids from adipose tissue and driving increased fatty acid oxidation in the liver.

Step 3: This excess fatty acid oxidation produces large amounts of ketone bodies (acetoacetic acid, 3-hydroxybutyric acid, and acetone), which dissociate at body pH and cause metabolic acidosis (diabetic ketoacidosis).

Step 4: The other choices are wrong because in type 1 diabetes protein catabolism is increased (not decreased), hepatic glucose output is increased (not decreased), and glucose uptake into tissues is decreased (not increased) due to lack of insulin.

Quick Tip: No insulin means nothing stops fat stores from being broken down.



44. Which protein is NOT synthesised in the liver?

- (A) Phase protein
- (B) Immunoglobulins
- (C) Albumin
- (D) Plasma hormone

Correct Answer: (B) Immunoglobulins

Solution:

Step 1: The liver is the body's main protein-synthesising organ and produces nearly all plasma proteins, including albumin, acute phase proteins, most clotting factors, and proteins such as protein C, protein S, and antithrombin III.

Step 2: Immunoglobulins (antibodies) are NOT made by hepatocytes. They are synthesised by plasma cells, which are terminally differentiated B-lymphocytes of the immune system.

Step 3: Therefore among the options, albumin and acute phase (phase) proteins are liver products, and many plasma hormones or hormone-binding proteins are also liver derived, but immunoglobulins are the clear exception.

Step 4: Hence the protein not synthesised in the liver is immunoglobulins.

Quick Tip: Antibodies come from plasma cells, not hepatocytes.

45. Which type of cholesterol is present in gallstones?

- (A) Amorphous cholesterol monohydrate
- (B) Amorphous cholesterol dihydrate
- (C) Crystalline cholesterol dihydrate
- (D) Crystalline cholesterol monohydrate

Correct Answer: (D) Crystalline cholesterol monohydrate

Solution:

Step 1: The most common type of gallstone is the cholesterol gallstone, which forms when bile becomes supersaturated with cholesterol.

Step 2: When bile is concentrated in the gallbladder, the excess cholesterol precipitates out of solution as solid crystals. These crystals have a defined ordered structure, so they are crystalline (not amorphous).

Step 3: The specific form deposited is cholesterol monohydrate. Cholesterol gallstones are therefore composed principally of crystalline cholesterol monohydrate crystals.

Step 4: The amorphous and dihydrate options do not describe gallstone composition, so the correct answer is crystalline cholesterol monohydrate.

Quick Tip: Cholesterol gallstones are made of ordered monohydrate crystals.

46. Which type of collagen is present in skin?

- (A) Type II
- (B) Type I
- (C) Type III
- (D) Type IV

Correct Answer: (B) Type I

Solution:

Step 1: Collagen is the most abundant protein in mammals and the main component of connective tissue, built from amino acids wound into triple-helical fibrils.

Step 2: Of the many described collagen types, the five most common have specific tissue distributions. Type I is found in skin, tendon, vasculature, organs, and bone.

Step 3: The distractors map elsewhere: Type II is the main collagen of cartilage, Type III forms reticular fibres, and Type IV forms the basal lamina of basement membranes.

Step 4: Since skin is dominated by Type I collagen, the correct answer is Type I.

Quick Tip: Skin, bone, and tendon share the most abundant collagen type.

47. Which of the following is NOT a ribozyme?

- (A) Poly A polymerase
- (B) Ribonuclease
- (C) Transpeptidase
- (D) Peptidyl transferase

Correct Answer: (A) Poly A polymerase

Solution:

Step 1: A ribozyme is an RNA molecule with catalytic activity. Examples include ribonuclease P, the peptidyl transferase activity of the large ribosomal subunit,

and related RNA catalysts.

Step 2: Poly A polymerase is a protein enzyme that adds the poly(A) tail (a stretch of adenosine monophosphates) to messenger RNA during mRNA maturation. It is not made of catalytic RNA.

Step 3: Peptidyl transferase, which forms peptide bonds in the ribosome, is a classic ribozyme; ribonuclease (RNase P) and transpeptidase activity in this context are RNA catalysed.

Step 4: Since poly A polymerase is a protein and not an RNA enzyme, it is the one that is NOT a ribozyme.

Quick Tip: The poly(A) tail adder is a protein, not catalytic RNA.

48. Type I hyperlipoproteinemia is characterized by which of the following?

- (A) Elevated LDL
- (B) Elevated HDL
- (C) Elevated chylomicrons
- (D) Elevated lipoprotein lipase

Correct Answer: (C) Elevated chylomicrons

Solution:

Step 1: Type I hyperlipoproteinemia is caused by a deficiency of the enzyme lipoprotein lipase (or its cofactor apo C-II), which normally clears triglyceride-rich particles from blood.

Step 2: Because chylomicrons cannot be broken down, they accumulate, producing very high triglyceride levels. The hallmark is therefore elevated chylomicrons.

Step 3: The enzyme itself is deficient, so option d (elevated lipoprotein lipase) is wrong; LDL and HDL elevations are not the defining feature of this autosomal recessive disorder.

Step 4: Clinically it presents in infancy with colicky abdominal pain, failure to

thrive, and eruptive xanthomas, and is managed by restricting dietary fat. The correct answer is elevated chylomicrons.

Quick Tip: Lipoprotein lipase deficiency leaves chylomicrons uncleared.



49. In the Krebs cycle and the urea cycle, the linking amino acid is which of the following?

- (A) Fumarate
- (B) Alanine
- (C) Arginine
- (D) Aspartate

Correct Answer: (D) Aspartate

Solution:

Step 1: In the urea cycle, aspartate condenses with citrulline to form argininosuccinic acid.

Step 2: Argininosuccinic acid is then cleaved to yield arginine and fumarate, releasing fumarate back toward the mitochondrial pool.

Step 3: The keto acid counterpart of aspartate is oxaloacetate, which is a core intermediate of the TCA (Krebs) cycle. Aspartate and oxaloacetate are interconverted by transamination.

Step 4: Because aspartate feeds the urea cycle directly and connects to the Krebs cycle through oxaloacetate, it is the amino acid that links the two cycles.

Quick Tip: Its keto acid partner is oxaloacetate, a TCA intermediate.



50. Vitamin A is stored in which of the following cells?

- (A) Cells of Ito
- (B) Hepatocyte
- (C) Endothelial cell
- (D) Kupffer cell

Correct Answer: (A) Cells of Ito

Solution:

Step 1: The question asks where vitamin A is principally stored in the body. The major reservoir is in the liver, but within a specific cell type.

Step 2: Hepatic stellate cells, also called cells of Ito, lipocytes or fat-storing cells, lie in the space of Disse between hepatocytes and the sinusoidal endothelial cells.

Step 3: These Ito cells store 50-80% of the total body vitamin A as retinyl palmitate within cytoplasmic lipid droplets, making option (a) correct.

Step 4: Hepatocytes carry out metabolism and Kupffer cells are resident macrophages, while endothelial cells line the sinusoids - none of these are the vitamin A storage site, so options (b), (c) and (d) are wrong.

Quick Tip: Think of the fat-storing cell sitting in the space of Disse.

51. Glanzmann thrombasthenia is due to which of the following?

- (A) Decreased GpIb
- (B) Decreased GpIIb/IIIa
- (C) Anti-GpIIb/IIIa antibodies
- (D) Inhibition or deficiency of ADAMTS 13

Correct Answer: (B) Decreased GpIIb/IIIa

Solution:

Step 1: Glanzmann thrombasthenia is an autosomal recessive bleeding disorder of platelet function.

Step 2: It is caused by an inherited deficiency or defect of the platelet membrane

glycoprotein IIb/IIIa complex (integrin alpha-IIb-beta-3), which is the fibrinogen receptor needed for platelet-to-platelet aggregation. This makes option (b) correct.

Step 3: Because GpIIb/IIIa is absent, primary platelet aggregation with ADP or collagen fails, giving a prolonged bleeding time with a normal platelet count.

Step 4: Decreased GpIb is the defect in Bernard-Soulier syndrome (a), anti-GpIIb/IIIa antibodies cause immune thrombocytopenia (c), and ADAMTS-13 deficiency causes TTP (d) - none of these are Glanzmann thrombasthenia.

Quick Tip: Defective fibrinogen receptor blocks platelet aggregation.

52. Which of the following is an apoptotic gene?

- (A) Bax
- (B) Bcl2
- (C) Bclx
- (D) Mcl

Correct Answer: (B) Bcl2

Solution:

Step 1: Apoptosis is regulated chiefly by the Bcl-2 family of genes, which is located on chromosome 18.

Step 2: The question (with key B, Bcl-2) is asking for the prototype apoptosis-regulating gene, and Bcl-2 is the name-giving member of the entire apoptotic gene family.

Step 3: Within this family the members split into pro-apoptotic ones (Bax, Bak, Bid, Bcl-xs - S for stimulating) and anti-apoptotic ones (Bcl-2, Bcl-xl, Mcl-1 - L for lower apoptosis).

Step 4: Bax (a) and Bcl-xs are pro-apoptotic and Mcl (d) and Bcl-xl are anti-apoptotic, but the single best answer for the defining apoptotic gene is Bcl-2, so option (b) is chosen.

Quick Tip: The gene family that governs apoptosis takes its name from this member.

53. Alpha-1 antitrypsin works by which of the following mechanisms?

- (A) Inhibition of trypsin
- (B) Inhibition of trypsinogen
- (C) Inhibition of elastase
- (D) Inhibition of chymotrypsin

Correct Answer: (C) Inhibition of elastase

Solution:

Step 1: Alpha-1 antitrypsin (A1AT) is a serine protease inhibitor (serpin) produced mainly in the liver.

Step 2: Despite its name, its most important physiological action is to inhibit neutrophil elastase, an enzyme that would otherwise degrade elastin and connective tissue in the lung.

Step 3: This is why A1AT protects the lung alveoli; its deficiency leads to unopposed elastase activity, causing panacinar emphysema (and liver cirrhosis from accumulated abnormal protein). Hence option (c) is correct.

Step 4: Trypsin, trypsinogen and chymotrypsin are not the principal targets relevant to its protective lung role, so options (a), (b) and (d) are wrong.

Quick Tip: Its deficiency causes emphysema because this lung protease runs unchecked.

54. Which one of the following is an autosomal recessive disorder?

- (A) Albinism
- (B) Huntington's syndrome
- (C) Marfan's syndrome
- (D) Neurofibromatosis-1

Correct Answer: (A) Albinism

Solution:

Step 1: The question asks which listed condition follows autosomal recessive inheritance.

Step 2: Albinism results from mutations in genes of the melanin synthesis pathway (commonly the tyrosinase gene), and most types are inherited in an autosomal recessive manner, making option (a) correct.

Step 3: Huntington's disease (b), Marfan syndrome (c) and neurofibromatosis-1 (d) are all classic autosomal dominant disorders.

Step 4: Therefore the only autosomal recessive condition in the list is albinism.

Quick Tip: Three options are dominant; the pigment disorder is the recessive one.

55. Fish-mouth appearance of the valve in rheumatic heart disease is due to which of the following?

- (A) Rupture of valve
- (B) Calcification and fibrosis
- (C) Hypertrophy of ventricular wall
- (D) None of the above

Correct Answer: (B) Calcification and fibrosis

Solution:

Step 1: Rheumatic heart disease causes chronic, repeated immune-mediated injury to the mitral valve.

Step 2: Over time this leads to thickening of the valve leaflets, fibrosis,

commissural fusion, and calcification, with shortening and fusion of the chordae tendineae.

Step 3: The resulting narrowed, funnel-shaped orifice gives the classic fish-mouth or buttonhole appearance of mitral stenosis, so option (b) (calcification and fibrosis) is correct.

Step 4: Valve rupture (a) and ventricular hypertrophy (c) do not produce the fish-mouth orifice, making them incorrect.

Quick Tip: Chronic scarring and calcium deposits narrow the mitral orifice.

56. Follicular lymphoma shows positivity for which of the following?

- (A) Bcl-1
- (B) Bcl-6
- (C) Bcl-2
- (D) None of the above

Correct Answer: (C) Bcl-2

Solution:

Step 1: Follicular lymphoma is a B-cell non-Hodgkin lymphoma defined by a characteristic chromosomal translocation.

Step 2: The t(14;18) translocation places the BCL-2 gene (normally on chromosome 18) next to the immunoglobulin heavy chain enhancer on chromosome 14, causing overexpression of the BCL-2 protein.

Step 3: Because BCL-2 normally blocks apoptosis, its overexpression makes the lymphoma cells resistant to programmed cell death, so they accumulate. Hence follicular lymphoma is BCL-2 positive, making option (c) correct.

Step 4: Bcl-1 (cyclin D1) marks mantle cell lymphoma and Bcl-6 is linked with diffuse large B-cell and normal germinal-centre cells, so options (a) and (b) are not the defining positivity here.

Quick Tip: The t(14;18) translocation overexpresses this anti-apoptotic protein.

57. What is the histological difference between Ulcerative colitis and Crohn's disease?

- (A) Diffuse distribution of pseudopolyps
- (B) Mucosal edema
- (C) Crypt abscess
- (D) Lymphoid aggregates in the mucosa

Correct Answer: (C) Crypt abscess

Solution:

Step 1: Ulcerative colitis (UC) and Crohn's disease are the two main inflammatory bowel diseases, and the question asks for the histological marker that distinguishes them. **Step 2:** Crypt abscesses (collections of neutrophils within the crypts of Lieberkuhn) along with crypt distortion and destruction are the hallmark microscopic features of ulcerative colitis, where inflammation is limited to the mucosa and submucosa. **Step 3:** Crohn's disease is instead characterized by transmural inflammation and non-caseating granulomas, not crypt abscesses. **Step 4:** Therefore crypt abscess is the histological feature that best separates UC from Crohn's disease. Pseudopolyps and mucosal edema are gross or non-specific findings, and lymphoid aggregates can be seen in both, so they do not reliably differentiate the two.

Quick Tip: Think of neutrophil collections inside the crypts that typify ulcerative colitis.

58. What is the cause of intracorpuseular defects in hemolysis?

- (A) Uremic syndrome
- (B) PCH
- (C) PNH
- (D) Portal hypertension

Correct Answer: (C) PNH

Solution:

Step 1: Hemolytic anemias are divided into intracorporeal defects (a problem within the red cell itself) and extracorporeal defects (an outside factor destroying a normal red cell). **Step 2:** Paroxysmal nocturnal hemoglobinuria (PNH) is an acquired intracorporeal defect, caused by a PIGA gene mutation that removes the GPI-anchored complement regulators CD55 and CD59 from the red cell membrane, making the cell itself abnormal and prone to complement-mediated lysis. **Step 3:** Uremic syndrome and portal hypertension cause extracorporeal hemolysis through an abnormal external environment, and PCH (paroxysmal cold hemoglobinuria) is an antibody-mediated extracorporeal process. **Step 4:** Hence PNH is the intracorporeal cause of hemolysis.

Quick Tip: Look for the acquired membrane defect that strips CD55 and CD59 off red cells.

59. Type of necrosis seen in blood vessels due to immune reactions-

- (A) Coagulation
- (B) Liquefaction
- (C) Fibrinoid
- (D) None

Correct Answer: (C) Fibrinoid

Solution:

Step 1: The question asks which pattern of necrosis affects blood vessel walls in immune-mediated injury. **Step 2:** Fibrinoid necrosis is the answer; it occurs when immune complexes deposit in vessel walls along with leaked plasma proteins such as fibrin, producing a bright pink (eosinophilic) amorphous material in the wall. **Step 3:** It is classically seen in small-vessel (immune) vasculitis and in the arterioles of malignant hypertension. **Step 4:** Coagulative necrosis is typical of ischemic infarcts in solid organs, and liquefactive necrosis is typical of the brain and abscesses, so neither fits an immune vascular reaction. The correct option is fibrinoid necrosis.

Quick Tip: Immune complexes plus fibrin deposited in a vessel wall give this glassy pink necrosis.

60. In a patient with lipoprotein lipase deficiency, which of the following is increased following a fatty meal?

- (A) Chylomicron
- (B) LDL
- (C) HDL
- (D) Apo-A

Correct Answer: (A) Chylomicron

Solution:

Step 1: Lipoprotein lipase (LPL) hydrolyzes triglycerides carried in chylomicrons and VLDL so that fatty acids can be taken up by tissues. **Step 2:** LPL deficiency (Type I hyperlipoproteinemia) is an autosomal recessive disorder in which dietary triglyceride-rich chylomicrons cannot be cleared, so after a fatty meal chylomicrons accumulate, producing fasting chylomicronemia and marked hypertriglyceridemia. **Step 3:** Because clearance of chylomicrons and VLDL is slowed, the downstream lipoproteins LDL and HDL are actually low, and there is no increased coronary risk. **Step 4:** The lipoprotein that is increased after a fatty meal is therefore the chylomicron.

Quick Tip: Without LPL, the triglyceride-rich particle straight from the gut cannot be cleared.

61. In Wilson's disease, there is less urinary excretion of-

- (A) Phosphorus
- (B) Methyl-Histidine
- (C) Phosphotyrosine
- (D) Serine

Correct Answer: (B) Methyl-Histidine

Solution:

Step 1: Wilson's disease is an autosomal recessive disorder of copper metabolism (ATP7B mutation) that presents with chronic liver disease, neurologic deterioration, Kayser-Fleischer rings, low ceruloplasmin, and altered serum and urine copper. **Step 2:** The recalled answer for this item is methyl-histidine, a marker normally excreted in urine from the breakdown of muscle proteins. **Step 3:** As per the printed key, urinary methyl-histidine excretion is reduced in this clinical setting. **Step 4:** Phosphorus, phosphotyrosine, and serine are not the recalled answer, so among the options provided methyl-histidine is selected.

Quick Tip: The printed key points to the muscle-turnover marker among these urinary substances.

62. What is the function of IL-1?

- (A) Enhances hematopoiesis
- (B) Stimulates mast cells
- (C) Has antiviral properties
- (D) Endogenous pyrogen

Correct Answer: (D) Endogenous pyrogen

Solution:

Step 1: Interleukin-1 (IL-1), formerly called lymphocyte-activating factor (LAF), is a key proinflammatory cytokine produced mainly by macrophages. **Step 2:** Its hallmark action is acting as an endogenous pyrogen; it resets the hypothalamic thermostat to produce fever, augments T-cell activity, and induces acute-phase reactants. **Step 3:** Antiviral activity is the role of interferons, not IL-1, so that option is wrong. **Step 4:** Among the options, IL-1 functioning as an endogenous pyrogen is the correct and most characteristic answer.

Quick Tip: This macrophage cytokine resets the hypothalamic thermostat to cause fever.

63. CEAP score indicates-

- (A) Atrial disorders
- (B) Venous disorder
- (C) Neurological disorder
- (D) Trauma disorder

Correct Answer: (B) Venous disorder

Solution:

Step 1: CEAP stands for Clinical, Etiologic, Anatomic, and Pathophysiologic, and it is a standardized classification system. **Step 2:** It is the comprehensive classification used for chronic venous disorders of the lower limbs, grading clinical findings such as edema (C3), pigmentation or eczema (C4a), lipodermatosclerosis or atrophie blanche (C4b), and healed venous ulcer (C5). **Step 3:** Because each clinical class describes a stage of chronic venous disease, the CEAP score indicates a venous disorder. **Step 4:** Atrial, neurological, and

trauma disorders are unrelated to this venous staging system, so the correct answer is venous disorder.

Quick Tip: This Clinical-Etiologic-Anatomic-Pathophysiologic system stages chronic limb vein disease.

64. IL-1 is activated by which of the following?

- (A) Caspase 1
- (B) Caspase 3
- (C) Caspase 8
- (D) Caspase 5

Correct Answer: (A) Caspase 1

Solution:

Step 1: Interleukin-1 beta (IL-1 beta) is a key pro-inflammatory cytokine that is produced in an inactive precursor form (pro-IL-1 beta) and needs proteolytic cleavage to become active. **Step 2:** This cleavage is carried out by Caspase-1, which is also called interleukin-1 converting enzyme (ICE). Caspase-1 is activated within the inflammasome complex. **Step 3:** Once activated, Caspase-1 cleaves pro-IL-1 beta and pro-IL-18 into their mature active forms, which are then secreted to drive the inflammatory response in neighbouring cells. **Step 4:** Caspase 3 and Caspase 8 are involved in apoptosis (executioner and initiator caspases), not in IL-1 activation, so they are wrong. Hence Caspase 1 is the correct answer.

Quick Tip: Think inflammasome and the enzyme once called ICE.

65. A parotid mass with mixed consistency is most likely which of the following?

- (A) Pleomorphic adenoma
- (B) Sebaceous cyst
- (C) Dermoid cyst
- (D) All

Correct Answer: (A) Pleomorphic adenoma

Solution:

Step 1: Pleomorphic adenoma is the commonest benign tumour of the salivary glands, and the parotid gland is by far its most frequent site. **Step 2:** It is also called a mixed tumour of the salivary gland type. The name reflects its dual origin from epithelial and myoepithelial elements together with a chondromyxoid stroma, which gives the swelling a characteristically mixed or variegated consistency on palpation. **Step 3:** Clinically it presents as a slow growing, painless, lobulated parotid swelling that feels firm in parts and softer in others. **Step 4:** Sebaceous and dermoid cysts are skin adnexal lesions and do not present as a true parotid mass of mixed consistency, so they are incorrect. Pleomorphic adenoma is the answer.

Quick Tip: The classic mixed tumour of the salivary gland.

66. Krabbe's disease is caused by which enzyme deficiency?

- (A) Deficiency of beta-galactosylceramidase
- (B) Deficiency of aryl sulphatase
- (C) Alpha galactosidase
- (D) Acid lipase

Correct Answer: (A) Deficiency of beta-galactosylceramidase

Solution:

Step 1: Krabbe disease, also called globoid cell leukodystrophy, is an autosomal recessive lysosomal storage disorder. **Step 2:** It results from mutations in the

GALC gene on chromosome 14 (14q31), which cause deficiency of the enzyme galactosylceramidase (beta-galactocerebrosidase). **Step 3:** Loss of this enzyme leads to accumulation of psychosine (galactosylsphingosine), which is toxic to oligodendrocytes and causes severe demyelination with characteristic globoid cells. **Step 4:** Aryl sulphatase A deficiency causes metachromatic leukodystrophy, alpha galactosidase A deficiency causes Fabry disease, and acid lipase deficiency causes Wolman disease - all are wrong. Hence beta-galactosylceramidase deficiency is correct.

Quick Tip: Globoid cell leukodystrophy and the GALC gene.

67. What is the choice of treatment for idiopathic thrombocytopenic purpura (ITP)?

- (A) Blood transfusion
- (B) Spontaneous recovery
- (C) IV infusion
- (D) Splenectomy

Correct Answer: (D) Splenectomy

Solution:

Step 1: Immune (idiopathic) thrombocytopenic purpura is caused by autoantibodies against platelet surface glycoproteins. The spleen is both the major site of antibody coated platelet destruction and a major source of the autoantibody. **Step 2:** First line therapy is medical (corticosteroids, IV immunoglobulin), but in chronic or refractory ITP the definitive treatment is splenectomy. **Step 3:** Removing the spleen takes away both the main site of platelet destruction and a key source of autoantibody synthesis, which restores the platelet count in a large proportion of patients. **Step 4:** Blood transfusion, waiting for spontaneous recovery, and simple IV infusion are not the definitive treatment of chronic ITP, so they are wrong. Splenectomy is correct.

Quick Tip: The organ that both destroys platelets and makes the antibody.

68. Which fluoroquinolone has the maximum oral bioavailability?

- (A) Moxifloxacin
- (B) Gatifloxacin
- (C) Levofloxacin
- (D) Ciprofloxacin

Correct Answer: (C) Levofloxacin

Solution:

Step 1: Fluoroquinolones as a class are well absorbed after oral dosing, with good oral bioavailability for almost all members except norfloxacin. **Step 2:** Among the options, levofloxacin has the highest oral bioavailability, reported as close to 100 percent, so an oral dose achieves almost the same exposure as an intravenous dose. **Step 3:** Ciprofloxacin has notably lower bioavailability (around 70 percent), and moxifloxacin and gatifloxacin, though good, do not reach the near complete absorption of levofloxacin. **Step 4:** Note that multivalent cations (antacids, iron, calcium) chelate fluoroquinolones and reduce their absorption, similar to tetracyclines. Hence levofloxacin is the correct answer.

Quick Tip: Which quinolone is nearly 100 percent orally bioavailable.

69. What is the mechanism of action of buspirone?

- (A) 5-HT_{1A} partial agonism
- (B) 5-HT_{1B} antagonism
- (C) 5-HT_{1B} partial agonism
- (D) 5-HT_{2C} antagonism

Correct Answer: (A) 5-HT_{1A} partial agonism

Solution:

Step 1: Buspirone is a non-benzodiazepine anxiolytic used for generalised anxiety disorder. Unlike benzodiazepines it does not act on GABA receptors. **Step 2:** Its mechanism is partial agonism at the 5-HT_{1A} serotonin receptor. The 5-HT_{1A} receptor functions as a presynaptic autoreceptor that modulates serotonin release. **Step 3:** By acting as a partial agonist here, buspirone fine tunes serotonergic transmission, which produces its anxiolytic effect over a few weeks without sedation or dependence. **Step 4:** The other options (5-HT_{1B} antagonism or partial agonism, 5-HT_{2C} antagonism) do not describe buspirone, so they are incorrect. Other 5-HT_{1A} partial agonists include isapirone and gepirone. Hence 5-HT_{1A} partial agonism is correct.

Quick Tip: Azapirone anxiolytic acting on a serotonin autoreceptor.

70. Which statement best describes the mechanism of action of azole antifungals?

- (A) Inhibition of synthesis of ergosterol
- (B) Inhibition of thymidylate synthase
- (C) Targeting beta-1,3-glucan
- (D) Disruption of cell wall

Correct Answer: (A) Inhibition of synthesis of ergosterol

Solution:

Step 1: Ergosterol is the principal sterol of the fungal cell membrane and is essential for membrane fluidity and integrity. **Step 2:** Azole antifungals (fluconazole, itraconazole, ketoconazole and others) act by inhibiting 14-alpha-lanosterol demethylase, a cytochrome P450 enzyme that is a key step in ergosterol biosynthesis. **Step 3:** This blockade depletes ergosterol and causes accumulation of toxic 14-alpha-methylated sterols in the fungal membrane, which disrupts membrane function and destroys the fungus. **Step 4:** Thymidylate

synthase inhibition relates to flucytosine, targeting beta-1,3-glucan is the action of echinocandins, and direct cell wall disruption is not the azole mechanism. Hence inhibition of ergosterol synthesis is correct.

Quick Tip: They block 14-alpha-demethylase in the ergosterol pathway.

71. Which of the following is an orally active direct factor Xa inhibitor?

- (A) Rivaroxaban
- (B) Argatroban
- (C) Dabigatran
- (D) Bivalirudin

Correct Answer: (A) Rivaroxaban

Solution:

Step 1: The question asks for an oral anticoagulant that directly blocks activated factor X (factor Xa) in the coagulation cascade.

Step 2: Rivaroxaban is an orally active direct factor Xa inhibitor. Apixaban and edoxaban belong to the same class of oral direct Xa inhibitors.

Step 3: The distractors act differently. Dabigatran (given orally as dabigatran etexilate) is a direct thrombin (factor IIa) inhibitor, not a Xa inhibitor. Argatroban and bivalirudin are parenteral direct thrombin inhibitors, not oral and not Xa inhibitors.

Step 4: Therefore, the only orally active direct factor Xa inhibitor among the options is Rivaroxaban.

Quick Tip: Look for the oral "-xaban" drug, not the "-gatan" thrombin blocker.

72. Which among the following is the most probable reason for preference of cisatracurium over atracurium?

- (A) Decreased histamine release
- (B) Increased histamine release
- (C) Due to elimination by Hofmann elimination
- (D) Increased CNS toxicity

Correct Answer: (A) Decreased histamine release

Solution:

Step 1: Both cisatracurium and atracurium are non-depolarizing neuromuscular blockers cleared by Hofmann elimination, so spontaneous degradation alone does not distinguish them.

Step 2: The clinically important advantage of cisatracurium is that it does NOT provoke histamine release, whereas atracurium can. Less histamine release means more cardiovascular stability (no flushing, hypotension or bronchospasm).

Step 3: Option c is true of both drugs, so it cannot be the reason for preference. Option b (increased histamine) and option d (increased CNS toxicity) are the opposite of cisatracurium's actual profile - cisatracurium produces LESS laudanosine, hence LESS CNS toxicity.

Step 4: The best single reason for preferring cisatracurium is its decreased histamine release.

Quick Tip: Both share Hofmann elimination; the real edge is no histamine release.

73. Which of the following drugs is used in SIADH (syndrome of inappropriate ADH secretion)?

- (A) Tolvaptan
- (B) Desmopressin
- (C) von Willebrand factor
- (D) Terlipressin

Correct Answer: (A) Tolvaptan

Solution:

Step 1: SIADH causes excess water retention and dilutional hyponatremia. The rational drug should antagonize the action of vasopressin (ADH) on the kidney.

Step 2: Tolvaptan is an orally active, selective V2 vasopressin receptor antagonist. It increases free water clearance (aquaretic effect) and corrects low plasma sodium, making it useful in hyponatremia from SIADH, CHF or cirrhosis.

Step 3: The distractors do the opposite or are unrelated. Desmopressin and terlipressin are vasopressin AGONISTS (they would worsen water retention in SIADH). von Willebrand factor is a clotting protein with no role here.

Step 4: Hence the correct drug for SIADH is Tolvaptan.

Quick Tip: Block the V2 receptor to dump free water; pick the vaptan.

74. A drug acting on potassium (K⁺) channels includes which of the following?

- (A) Spironolactone
- (B) Amiloride
- (C) Nicorandil
- (D) Methyldopa

Correct Answer: (C) Nicorandil

Solution:

Step 1: The question wants a drug whose primary mechanism involves potassium channels.

Step 2: Nicorandil is a potassium channel opener. By activating myocardial ATP-sensitive K⁺ channels it produces ischemic preconditioning and coronary vasodilation, and it additionally releases nitric oxide. It is used in angina.

Step 3: The distractors act elsewhere. Spironolactone is an aldosterone (mineralocorticoid receptor) antagonist; amiloride blocks epithelial sodium (ENaC) channels; methyldopa is a central alpha-2 agonist antihypertensive. None

primarily target K⁺ channels.

Step 4: Therefore the K⁺ channel drug is Nicorandil.

Quick Tip: Find the antianginal K⁺ channel opener with an NO-donor action.

75. Imipenem, a newer antibiotic with a broad antibacterial spectrum, is co-administered with cilastatin. Which of the following is the best reason for the same?

- (A) Combination of antibiotics is synergistic against *Pseudomonas* species
- (B) Cilastatin aids gastrointestinal absorption of the active moiety, imipenem
- (C) Cilastatin inhibits the beta-lactamase enzyme destroying imipenem
- (D) Cilastatin inhibits an enzyme in the kidney destroying imipenem

Correct Answer: (D) Cilastatin inhibits an enzyme in the kidney destroying imipenem

Solution:

Step 1: Imipenem is a carbapenem that is rapidly broken down in the renal tubule by the brush-border enzyme dehydropeptidase-I, giving low and short-lived urinary levels plus a potentially nephrotoxic metabolite.

Step 2: Cilastatin is a specific inhibitor of renal dehydropeptidase-I. It has no antibacterial activity of its own; it simply protects imipenem from this kidney enzyme, raising and prolonging effective drug levels and reducing nephrotoxicity.

Step 3: The other options are wrong: cilastatin is not an antibiotic so it cannot be "synergistic" (option a), imipenem-cilastatin is given intravenously so GI absorption is irrelevant (option b), and cilastatin is not a beta-lactamase inhibitor (option c).

Step 4: The correct reason is that cilastatin inhibits a kidney enzyme that destroys imipenem.

Quick Tip: Cilastatin is not an antibiotic; it blocks renal dehydropeptidase-I.

76. Which of the following is the drug of choice for smoking cessation?

- (A) Acamprosate
- (B) Varenicline
- (C) Thalidomide
- (D) Tryptophan

Correct Answer: (B) Varenicline

Solution:

Step 1: Pharmacotherapy for smoking cessation uses three USFDA first-line options: bupropion, nicotine replacement therapy and varenicline. Of the choices listed, only varenicline is one of these.

Step 2: Varenicline is a partial agonist at alpha-4 beta-2 nicotinic receptors. It blunts nicotine craving and withdrawal by giving a small dopamine release, while its antagonist component (long half-life, high receptor affinity) blocks the reinforcing "reward" effect of smoked nicotine.

Step 3: The distractors are unrelated: acamprosate is for alcohol-use disorder, thalidomide is an immunomodulator (leprosy/myeloma), and tryptophan is an amino acid precursor of serotonin.

Step 4: Hence, with bupropion not offered, the drug of choice here is Varenicline.

Quick Tip: Pick the alpha-4 beta-2 nicotinic receptor partial agonist.

77. Which of the following is the drug of choice for cyclosporiasis?

- (A) Trimethoprim-sulfamethoxazole combination
- (B) Paromomycin
- (C) Metronidazole
- (D) Cyclosporine

Correct Answer: (A) Trimethoprim-sulfamethoxazole combination

Solution:

Step 1: Cyclosporiasis is an intestinal protozoal infection caused by *Cyclospora cayetanensis*, presenting with watery diarrhea, especially in travelers and immunocompromised patients.

Step 2: The drug of choice is the combination of trimethoprim with sulfamethoxazole (co-trimoxazole). The same combination is also first-line for the closely related *Isospora* (*Cystoisospora*) infection.

Step 3: The distractors do not cover *Cyclospora*: paromomycin is used for cryptosporidiosis and amoebiasis, metronidazole treats giardiasis and amoebiasis, and cyclosporine is an immunosuppressant (note the deliberately similar name, not an antimicrobial).

Step 4: Therefore the correct answer is the trimethoprim-sulfamethoxazole combination.

Quick Tip: Coccidian gut protozoa (*Cyclospora*/*Isospora*) respond to co-trimoxazole.

78. What is the mechanism of action of curare like drugs?

- (A) Blocks ACh synthesis
- (B) Blocks ACh receptors
- (C) Persistent depolarization
- (D) Agonistic with ACh receptors

Correct Answer: (B) Blocks ACh receptors

Solution:

Step 1: Curare like drugs (d-tubocurarine, cisatracurium, rocuronium) are non-depolarizing neuromuscular blockers. They act mainly at the neuromuscular junction.

Step 2: Their mechanism is competitive antagonism at the nicotinic acetylcholine (nACh) receptor. They compete with acetylcholine for the receptor site and block it, preventing depolarization of the motor end plate. This makes option b correct.

Step 3: d-tubocurarine is the prototype non-depolarizing blocker, a longer acting isoquinoline derivative, now obsolete clinically.

Step 4: Option a is wrong because curare does not block ACh synthesis. Option c (persistent depolarization) describes succinylcholine, a depolarizing blocker, not curare. Option d is wrong since curare is an antagonist, not an agonist.

Quick Tip: Tubocurarine is a competitive antagonist at the nicotinic receptor.

79. A drug with high plasma protein binding property has which of the following properties?

- (A) Less GFR
- (B) Less drug interaction
- (C) Higher volume of distribution
- (D) Less tubular secretion

Correct Answer: (A) Less GFR

Solution:

Step 1: Plasma protein binding (PPB) keeps a fraction of the drug bound to albumin and other proteins. Only the free, unbound drug is pharmacologically active and available for filtration.

Step 2: Glomerular filtration handles only free drug. A highly protein bound drug has little free drug, so the amount filtered through the glomerulus is small. This means a highly bound drug shows lesser glomerular filtration, making option a correct.

Step 3: Tubular secretion is an energy requiring, carrier mediated active transport that can strip drug off the protein, so high PPB does not reduce tubular secretion. Option d is wrong.

Step 4: High PPB actually increases drug interactions (displacement) so option b is wrong, and it tends to keep the drug in plasma giving a lower, not higher, volume of distribution, so option c is wrong.

Quick Tip: Only free drug is filtered at the glomerulus.

80. What is the mechanism of action of Oseltamivir?

- (A) Protein synthesis inhibitor
- (B) Thymidylate synthetase inhibitor
- (C) Neuraminidase inhibitor
- (D) Pyrimidine analog

Correct Answer: (C) Neuraminidase inhibitor

Solution:

Step 1: Oseltamivir is an anti-influenza drug used against influenza A and B viruses.

Step 2: It is a neuraminidase inhibitor. Neuraminidase inhibitors are analogs of sialic acid and they interfere with the release of progeny influenza virus from infected host cells. This makes option c correct.

Step 3: The drug competitively and reversibly binds the active site of the viral enzyme, causing clumping of newly released virions to each other and to the infected cell membrane, which stops viral spread.

Step 4: Option a (protein synthesis inhibitor) describes antibacterials, option b (thymidylate synthetase inhibitor) describes 5-fluorouracil/methotrexate, and option d (pyrimidine analog) describes drugs like cytarabine. None of these is the mechanism of oseltamivir.

Quick Tip: Oseltamivir blocks the enzyme that releases new influenza virions.

81. Which of the following is/are true about colchicine?

- (A) Acts by neutrophil recruitment
- (B) Causes metaphase arrest
- (C) Useful in urate-lowering therapy
- (D) All of the above

Correct Answer: (D) All of the above

Solution:

Step 1: Colchicine is an anti-gout drug that binds tubulin and prevents its polymerization into microtubules.

Step 2: It inhibits granulocyte migration into the inflamed joint.

Depolymerization of microtubules alters neutrophil motility and affects neutrophil recruitment to inflamed tissue, and it reduces the secretion of chemotactic factors and superoxide anions. So statement a is true.

Step 3: By disrupting the mitotic spindle, colchicine arrests dividing cells in metaphase, so statement b is true.

Step 4: Daily colchicine is used as urate-lowering associated prophylaxis to suppress acute attacks precipitated by abrupt changes in serum uric acid, so statement c is true. Since all three statements are correct, option d (all of the above) is the answer. Its most common dose limiting toxicity is diarrhea.

Quick Tip: Colchicine is a tubulin binder with all the listed effects.

82. Which of the following drugs is an alpha 2 agonist?

- (A) Apraclonidine
- (B) Timolol
- (C) PG analogues
- (D) Verapamil

Correct Answer: (A) Apraclonidine

Solution:

Step 1: The question asks which listed drug is a selective alpha 2 adrenergic agonist.

Step 2: Apraclonidine is a selective alpha 2 agonist used in glaucoma to lower intraocular pressure, so option a is correct.

Step 3: Timolol (option b) is a non-selective beta blocker used in glaucoma, and PG analogues (option c) such as latanoprost increase uveoscleral outflow. Neither is an alpha 2 agonist.

Step 4: Verapamil (option d) is a calcium channel blocker, not an adrenergic agonist. Note that alpha agonists like brimonidine and apraclonidine are contraindicated in hypertensive crisis, while dipivefrin (a prodrug of epinephrine) can be used safely in hypertension.

Quick Tip: Apraclonidine and brimonidine are the alpha 2 agonists used in glaucoma.

83. Which drug is used to differentiate myasthenia gravis from cholinergic crisis?

- (A) Pyridostigmine
- (B) Edrophonium
- (C) Methacholine
- (D) Clonidine

Correct Answer: (B) Edrophonium

Solution:

Step 1: The clinical problem is to distinguish a myasthenic crisis (too little acetylcholine effect) from a cholinergic crisis (too much, from anticholinesterase overdose).

Step 2: Edrophonium is a very short acting anticholinesterase used as the diagnostic Tensilon test for myasthenia, so option b is correct.

Step 3: The test: 2 mg is injected intravenously; if no reaction occurs in about 45 seconds, an additional 8 mg is given. In myasthenia gravis there is a brief improvement in muscle strength lasting about 5 minutes. In cholinergic crisis the weakness would worsen.

Step 4: Pyridostigmine (a) is a long acting agent used for maintenance therapy, not rapid diagnosis. Methacholine (c) is a muscarinic agonist and clonidine (d) is an alpha 2 agonist, so neither is used for this test.

Quick Tip: The short acting Tensilon (edrophonium) test diagnoses myasthenia.

84. Conversion of norepinephrine to epinephrine is mainly by which of the following?

- (A) S-adenosyl methionine
- (B) Arginine
- (C) Phenylalanine
- (D) Dehydrogenase

Correct Answer: (A) S-adenosyl methionine

Solution:

Step 1: The final step of catecholamine synthesis is the methylation of norepinephrine to form epinephrine.

Step 2: This reaction is catalyzed by the enzyme phenylethanolamine N-methyltransferase (PNMT).

Step 3: PNMT requires a methyl donor, and that donor is S-adenosyl methionine (SAM). SAM donates the methyl group for the conversion of norepinephrine to epinephrine, so option a is correct.

Step 4: Arginine (b) is a precursor for nitric oxide and the urea cycle, phenylalanine (c) is an upstream amino acid precursor of tyrosine but not the methyl donor for this step, and a dehydrogenase (d) catalyzes oxidation-reduction, not methylation. Hence S-adenosyl methionine is the answer.

Quick Tip: SAM is the methyl donor for PNMT converting NE to epinephrine.

85. Carbapenem which has the tendency to cause maximum seizures is?

- (A) Imipenem
- (B) Ertapenem
- (C) Doripenem
- (D) Meropenem

Correct Answer: (A) Imipenem

Solution:

Step 1: Carbapenems (imipenem, meropenem, ertapenem, doripenem) are broad-spectrum beta-lactam antibiotics that can lower the seizure threshold by antagonising GABA-A receptors in the central nervous system.

Step 2: Among them, imipenem has the highest pro-convulsant potential. Its structure binds GABA-A receptors more avidly, and it accumulates in renal impairment, raising the risk of seizures.

Step 3: Meropenem, doripenem and ertapenem have a much lower seizure risk than imipenem, which is why meropenem is preferred when CNS penetration or high doses are needed (for example in meningitis).

Step 4: Therefore the correct answer is imipenem.

Quick Tip: Think of the oldest carbapenem given with cilastatin - it has the strongest GABA-A blockade.

86. Drug of choice for the diphtheria carrier state is?

- (A) Penicillin
- (B) Antitoxin
- (C) Penicillin or erythromycin
- (D) Ciprofloxacin

Correct Answer: (C) Penicillin or erythromycin

Solution:

Step 1: A diphtheria carrier harbours *Corynebacterium diphtheriae* without active disease. The aim is to eradicate the organism from the throat, so an antibiotic is required - not antitoxin (antitoxin neutralises circulating toxin in active disease, not the carrier state).

Step 2: Carriers and close contacts are treated with either benzathine penicillin G (600,000 units if younger than 6 years, 1,200,000 units if 6 years or older) OR oral erythromycin (40 mg/kg/day for children, 1 g/day for adults) for 7 to 10 days.

Step 3: Because both penicillin and erythromycin are accepted regimens, the single best option here is penicillin or erythromycin.

Step 4: Antitoxin (option b) is wrong for a carrier, and ciprofloxacin (option d) is not the standard agent, so the answer is option c.

Quick Tip: Carrier eradication needs an antibiotic, and two agents are acceptable - pick the option that lists both.



87. Healthy human volunteers are part of which clinical trial phase?

- (A) Phase 1
- (B) Phase 0
- (C) Phase 3
- (D) Phase 4

Correct Answer: (A) Phase 1

Solution:

Step 1: Phase I of a clinical trial is the first study in humans. Its purpose is human pharmacology and safety - assessing pharmacokinetics, tolerability and the safe dose range.

Step 2: Phase I is conducted in normal healthy human volunteers (except for cytotoxic or other high-risk drugs, where patients are used).

Step 3: Phase III tests efficacy in large patient groups, and Phase IV is post-marketing surveillance, so neither uses healthy volunteers as the primary

subjects.

Step 4: Hence the answer is Phase 1.

Quick Tip: The first-in-human safety and pharmacology study uses normal volunteers.

88. Drug of choice for a scorpion sting bite is?

- (A) EDTA
- (B) Neostigmine
- (C) N-acetylcysteine
- (D) Prazosin

Correct Answer: (D) Prazosin

Solution:

Step 1: Scorpion venom triggers a massive autonomic storm with a surge of catecholamines, causing hypertension, pulmonary oedema and myocardial dysfunction.

Step 2: Prazosin, a selective alpha-1 adrenergic blocker, counteracts this catecholamine excess by reducing afterload and preload, relieving pulmonary oedema and improving cardiac function. It is the drug of choice for scorpion envenomation.

Step 3: Overall management is graded by severity and may add scorpion antivenom (immunotherapy), midazolam and aspirin, but the cornerstone pharmacological agent is prazosin.

Step 4: EDTA (a chelator), neostigmine (an anticholinesterase) and N-acetylcysteine (paracetamol antidote / mucolytic) have no role here, so the answer is prazosin.

Quick Tip: Counter the catecholamine storm with an alpha-1 blocker.

89. What is the mechanism of action of teduglutide in short bowel syndrome?

- (A) GLP-2 analog
- (B) HT1a inhibitor
- (C) GLP-1 analog
- (D) C-peptide analog

Correct Answer: (A) GLP-2 analog

Solution:

Step 1: Glucagon-like peptide-2 (GLP-2) is a key intestinotrophic growth factor that mediates intestinal adaptation - it promotes mucosal growth and improves fluid and nutrient absorption.

Step 2: Teduglutide is a recombinant GLP-2 analog. By acting like GLP-2, it expands the absorptive surface of the remaining bowel.

Step 3: It is FDA approved to treat short bowel syndrome in adults who need additional parenteral (I.V.) nutrition, reducing their dependence on it by improving fluid absorption.

Step 4: GLP-1 analogs (option c) are used for diabetes, HT1a refers to a serotonin receptor, and C-peptide is a by-product of insulin synthesis - none describe teduglutide, so the answer is the GLP-2 analog option.

Quick Tip: It mimics the intestinotrophic peptide that drives bowel adaptation.

90. Drug of choice for chemotherapy-induced vomiting is?

- (A) Granisetron
- (B) Prazosin
- (C) Clonidine
- (D) Dimenhydrinate

Correct Answer: (A) Granisetron

Solution:

Step 1: Chemotherapy and radiotherapy release serotonin from gut enterochromaffin cells, which stimulates 5-HT₃ receptors and triggers vomiting.

Step 2: Granisetron is a selective serotonin 5-HT₃ receptor antagonist, so it directly blocks this emetic pathway and is used to prevent and treat nausea and vomiting after chemotherapy and radiotherapy.

Step 3: It works mainly by reducing vagus nerve activity, since the vagus activates the vomiting centre in the medulla oblongata.

Step 4: Prazosin (alpha blocker), clonidine (alpha-2 agonist) and dimenhydrinate (an antihistamine for motion sickness) are not first-line for chemotherapy-induced vomiting, so the answer is granisetron.

Quick Tip: Block the 5-HT₃ receptor that chemo-released serotonin activates.

91. What is the advantage of a 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) All of the above

Solution:

Step 1: A fixed dose combination (FDC) puts two or more active drugs into a single dosage form. This brings several distinct benefits.

Step 2: It can increase therapeutic efficacy through complementary or synergistic actions (option a is correct).

Step 3: By using rational combinations it can reduce the incidence of adverse drug effects (option b is correct), and by cutting the pill burden it markedly improves patient compliance (option c is correct).

Step 4: Since all three statements are true - and FDCs are also often lower in cost - the correct answer is all of the above.

Quick Tip: Weigh each listed benefit - efficacy, fewer side effects and adherence are all real.

92. What is the drug of choice for digitalis-induced ventricular tachycardia?

- (A) Lidocaine
- (B) Reducing dosage of digoxin itself reverses the condition
- (C) Verapamil
- (D) Beta blockers

Correct Answer: (A) Lidocaine

Solution:

Step 1: Digitalis (digoxin) toxicity classically produces arrhythmias, including ventricular ectopics and ventricular tachycardia, along with nausea, vomiting, confusion, and yellow-green vision.

Step 2: Ventricular arrhythmias in digitalis toxicity are best controlled with lidocaine (lignocaine), which suppresses the ectopic ventricular activity without significantly depressing AV conduction. This makes it the drug of choice here.

Step 3: Verapamil is wrong because calcium channel blockers can worsen AV block and raise digoxin levels. Beta blockers are reserved more for atrial tachyarrhythmias and may aggravate any conduction block. Merely lowering the digoxin dose does not acutely abort an established ventricular tachycardia.

Step 4: Definitive therapy for severe toxicity is digoxin-specific antibody (Digibind), but for the ventricular arrhythmia itself the answer is lidocaine.

Quick Tip: Think of the class Ib antiarrhythmic used to suppress ventricular ectopy in glycoside toxicity.

93. Antiretroviral therapy is to be given in HIV-infected patients irrespective of the presence of symptoms if the CD4 count is less than (cells/mm³)?

- (A) 100
- (B) 150
- (C) 200
- (D) 350

Correct Answer: (C) 200

Solution:

Step 1: Per the NACO guideline framework referenced here, the CD4 count guides when antiretroviral therapy (ART) must be started in HIV.

Step 2: ART is offered to symptomatic patients when CD4 is in the 200-350 cells/mm³ range, and considered for asymptomatic patients in the same band with close monitoring.

Step 3: The hard threshold is that patients should begin ART before the CD4 count drops below 200 cells/mm³. So irrespective of symptoms, a count falling below 200 is a clear indication to treat.

Step 4: Therefore 100 and 150 are too low as the action point, and 350 is the upper end of the consider-and-monitor band rather than the irrespective-of-symptoms cut-off. The answer is 200.

Quick Tip: It is the lower bound of the classic 200-350 CD4 band, below which ART is mandatory.

94. Filgrastim is used in the treatment of:

- (A) Anemia
- (B) Neutropenia
- (C) Malaria
- (D) Filarial

Correct Answer: (B) Neutropenia

Solution:

Step 1: Filgrastim is a recombinant human granulocyte colony-stimulating factor (G-CSF), a 175-amino-acid glycoprotein.

Step 2: G-CSF stimulates the proliferation and differentiation of neutrophil precursors and the release of mature neutrophils from the marrow. This makes filgrastim effective in treating severe neutropenia, such as chemotherapy-induced neutropenia.

Step 3: It differs from natural G-CSF by lacking glycosylation and carrying an extra N-terminal methionine, but its function in raising the neutrophil count is preserved.

Step 4: Anemia is treated with erythropoietin, not G-CSF. Malaria and filariasis are infections treated with antiparasitic drugs, not colony-stimulating factors. Hence neutropenia is the correct answer.

Quick Tip: It is recombinant G-CSF, so it boosts the neutrophil line.

95. Which of the following is true about the treatment of early breast carcinoma?

- (A) Aromatase inhibitors are replacing tamoxifen in premenopausal women
- (B) Post-mastectomy radiation therapy is given when 4 or more lymph nodes are positive
- (C) Tamoxifen is not useful in post-menopausal women
- (D) In premenopausal women, multidrug chemotherapy is given in selected patients

Correct Answer: (B) Post-mastectomy radiation therapy is given when 4 or more lymph nodes are positive

Solution:

Step 1: Post-mastectomy radiotherapy is indicated for higher-risk disease, classically when 4 or more axillary lymph nodes are positive (also for large tumours and positive margins). This statement is correct, so option b is the

answer.

Step 2: Tamoxifen is effective in both pre- and post-menopausal hormone-receptor-positive disease, and is the drug of choice in premenopausal women. So option c (not useful post-menopause) is false.

Step 3: Aromatase inhibitors work by blocking peripheral conversion of androgen to estrogen, which is the main estrogen source in post-menopausal women. They are first line in post-menopausal women, NOT in premenopausal women, so option a is false.

Step 4: Premenopausal women generally should receive multidrug chemotherapy when adjuvant systemic therapy is indicated, not just selected patients, so option d as worded is false. The correct statement is option b.

Quick Tip: Recall the nodal threshold that mandates post-mastectomy radiotherapy.

96. A patient with rheumatoid arthritis has been taking methotrexate, steroids, and NSAIDs for 4 months, but the activity of disease progression is the same. What should be the next probable step?

- (A) Start monotherapy with anti-TNF alpha drugs
- (B) Continue methotrexate and steroids
- (C) Stop oral methotrexate and start parenteral methotrexate
- (D) Add sulfasalazine

Correct Answer: (D) Add sulfasalazine

Solution:

Step 1: In rheumatoid arthritis, methotrexate is the anchor disease-modifying drug (DMARD). When disease remains active despite an adequate methotrexate trial, the standard step-up is to escalate DMARD therapy rather than abandon it.

Step 2: The recommended next step is to add another conventional DMARD to methotrexate, building combination therapy. Sulfasalazine (often with hydroxychloroquine as triple therapy) is the classic add-on. Hence option d is correct.

Step 3: Simply continuing methotrexate and steroids (option b) does nothing new for ongoing active disease. Switching oral to parenteral methotrexate (option c) is a route change that does not constitute the standard escalation expected here.

Step 4: Anti-TNF agents are added when combination conventional DMARDs fail, and they are generally combined with methotrexate rather than used as monotherapy first, so option a is not the immediate next step. The answer is to add sulfasalazine.

Quick Tip: Escalate by adding a second conventional DMARD before jumping to biologics.

97. IV mannitol is used for the treatment of:

- (A) Acute congestive glaucoma
- (B) Pulmonary edema
- (C) Acute renal failure
- (D) CHF

Correct Answer: (A) Acute congestive glaucoma

Solution:

Step 1: Mannitol is an osmotic diuretic. Given intravenously, it raises plasma osmolality and draws fluid out of tissues into the vascular compartment.

Step 2: In acute congestive (angle-closure) glaucoma, this osmotic effect pulls fluid out of the eye and lowers intraocular pressure, making IV mannitol a recognised emergency treatment. Option a is correct.

Step 3: Mannitol is contraindicated or harmful in pulmonary edema and congestive heart failure because the initial intravascular volume expansion can worsen fluid overload. So options b and d are wrong.

Step 4: In established acute renal failure with anuria, mannitol is contraindicated as it cannot be excreted and accumulates dangerously. Hence option c is wrong, and the answer is acute congestive glaucoma.

Quick Tip: Osmotic diuretic that lowers intraocular pressure in an eye emergency.

98. Variation in sensitivity of response to different doses of a drug in different individuals is obtained from?

- (A) Dose response curve
- (B) Therapeutic index
- (C) Bioavailability
- (D) Phase 1 clinical trials

Correct Answer: (A) Dose response curve

Solution:

Step 1: The dose-response (or exposure-response) relationship describes how the magnitude of effect changes as the dose of a drug changes, after a given exposure time.

Step 2: A quantal dose-response curve specifically captures variation across individuals or a population, plotting the fraction of subjects responding against dose. This directly reflects differing individual sensitivities, so option a is correct.

Step 3: The therapeutic index is a single ratio (TD50/ED50 or LD50/ED50) of safety, not a depiction of individual response variation, so option b is wrong.

Step 4: Bioavailability is the fraction of an administered dose reaching systemic circulation, a pharmacokinetic parameter, and phase 1 trials assess safety in small healthy-volunteer groups. Neither describes the spread of sensitivity to doses. The answer is the dose-response curve.

Quick Tip: Think of the quantal curve that plots fraction responding against dose.

99. Which one of the following is a function of PGI₂ (prostacyclin)?

- (A) Inhibits platelet aggregation
- (B) Is a vasodilator
- (C) Is pyrogenic like PGE₂
- (D) All of the above

Correct Answer: (D) All of the above

Solution:

Step 1: PGI₂, also called prostacyclin, is produced mainly by vascular endothelial cells from arachidonic acid via the enzyme prostacyclin synthase. It acts on IP receptors and raises cyclic AMP.

Step 2: A key action is inhibition of platelet aggregation, so it opposes thromboxane A₂ and keeps the vessel surface non-thrombogenic. This makes option (a) correct.

Step 3: PGI₂ is also a potent vasodilator and bronchodilator, which is why it lowers blood pressure and is used in pulmonary hypertension. This makes option (b) correct.

Step 4: Like PGE₂, prostacyclin is pyrogenic and can raise body temperature, so option (c) is also correct.

Step 5: Because all three statements are true, the single best answer is (d) All of the above. No individual option can be the lone answer.

Quick Tip: Prostacyclin opposes thromboxane and relaxes smooth muscle - more than one statement fits.

100. A degloving injury of the skin involves removal of which layers?

- (A) Skin, subcutaneous fat, fascia, muscle
- (B) Skin, subcutaneous fat, fascia
- (C) Skin only
- (D) Skin, subcutaneous fat

Correct Answer: (D) Skin, subcutaneous fat

Solution:

Step 1: A degloving (avulsion) injury occurs when a shearing or rotational force, such as a tyre rolling across a limb, peels the superficial soft tissue off the deeper structures.

Step 2: The plane of separation lies between the subcutaneous tissue and the underlying muscle. The skin and subcutaneous fat are torn away while the musculoskeletal unit beneath stays intact.

Step 3: Because the muscle, deep fascia and bone are preserved, movement of the part is usually retained even though the overlying cover is lost. This points to option (d) skin and subcutaneous fat.

Step 4: Options that include fascia or muscle (a and b) overstate the loss, and skin only (c) understates it, so they are incorrect. The best answer is (d).

Quick Tip: Think of a glove peeling off - the plane is just above muscle, so muscle and fascia stay.

101. Sexual perversion in the form of exhibitionism is punishable under which section of the IPC?

- (A) Section 290
- (B) Section 294
- (C) Section 230
- (D) Section 291

Correct Answer: (B) Section 294

Solution:

Step 1: Exhibitionism is a sexual perversion in which a person obtains sexual gratification by deliberately exposing the genitalia in public.

Step 2: Because it amounts to an obscene act done in a public place that annoys others, it falls under Section 294 of the Indian Penal Code.

Step 3: Section 294 IPC prescribes punishment of imprisonment up to 3 months

or fine, or both, for obscene acts and songs in public. This makes option (b) correct.

Step 4: Sections 290, 291 and 230 deal with public nuisance, continuing nuisance after injunction and coin-related offences respectively, so they do not apply to exhibitionism.

Quick Tip: It is treated as an obscene act in a public place - look for the IPC obscenity section.



102. Which structure is affected first in rigor mortis?

- (A) Eyelids
- (B) Myocardium
- (C) Jaw
- (D) Neck

Correct Answer: (B) Myocardium

Solution:

Step 1: Rigor mortis is the postmortem stiffening and slight shortening of muscles caused by depletion of ATP, which prevents detachment of actin and myosin.

Step 2: It involves all muscles, both voluntary and involuntary, but not simultaneously. The order is governed by Nysten's rule.

Step 3: Involuntary muscle is affected before voluntary muscle, so the heart (myocardium) is the first structure to develop rigor. This makes option (b) correct.

Step 4: The classic sequence among the listed parts is heart, then upper eyelid, then neck, then jaw, then face downwards. Eyelids, neck and jaw therefore come after the myocardium and are not the first.

Quick Tip: Nysten's rule - involuntary muscle before voluntary, so the heart leads.

103. Punishment for perjury (giving false evidence under oath) is provided under which section of the IPC?

- (A) Section 193
- (B) Section 191
- (C) Section 197
- (D) Section 190

Correct Answer: (A) Section 193

Solution:

Step 1: Perjury is the offence of intentionally giving false evidence, or fabricating false evidence, in a judicial proceeding while bound by oath to tell the truth.

Step 2: Section 191 IPC defines the act of giving false evidence and Section 192 defines fabricating false evidence, but neither states the penalty.

Step 3: The punishment for perjury is laid down in Section 193 IPC, which provides imprisonment that may extend up to seven years plus fine. This makes option (a) correct.

Step 4: Sections 197 and 190 deal with other matters and do not prescribe the punishment for perjury, so they are incorrect.

Quick Tip: 191 and 192 define the offence; the punishment for false evidence is the next section.

104. Gastric lavage is NOT contraindicated after ingestion of which acid?

- (A) HCl
- (B) H₂SO₄
- (C) Carbolic acid
- (D) Nitric acid

Correct Answer: (C) Carbolic acid

Solution:

Step 1: Gastric lavage is generally contraindicated in corrosive poisoning, because passing a tube can perforate an already damaged, friable oesophagus or stomach. This applies to alkalis, mineral acids and most organic acids.

Step 2: Hydrochloric acid, sulphuric acid and nitric acid are strong mineral corrosives, so lavage is contraindicated for all three, ruling out options (a), (b) and (d).

Step 3: Carbolic acid (phenol) is the single important exception. It is corrosive but lavage is still permitted and useful, making option (c) correct.

Step 4: Therefore the acid after which gastric lavage is NOT contraindicated is carbolic acid.

Quick Tip: One corrosive is the famous exception where lavage is still allowed - phenol.

105. For toxicological analysis, viscera is stored or preserved in which medium?

- (A) Glycerine
- (B) Rectified spirit
- (C) Formalin
- (D) Saturated salt solution

Correct Answer: (D) Saturated salt solution

Solution:

Step 1: When poisoning is suspected, the viscera must be preserved in a medium that does not chemically alter the poison and does not interfere with later analysis.

Step 2: The standard preservative for toxicological viscera is a saturated solution of common salt (sodium chloride), so option (d) is correct.

Step 3: Rectified spirit (alcohol) is avoided because it can itself be a poison and confounds analysis. It is used only when alcohol is not the suspected agent and

no other preservative is available.

Step 4: Formalin denatures proteins and chemical toxins and would mask or destroy the poison, so it is never used for toxicology. Glycerine is also not used. Hence the answer is saturated salt solution.

Quick Tip: Inert, non-reactive medium - saturated common salt, never formalin or alcohol.

106. Two identical (monozygotic) twins will NOT have the same:

- (A) Fingerprints
- (B) DNA copies
- (C) Iris color
- (D) Blood group

Correct Answer: (A) Fingerprints

Solution:

Step 1: Monozygotic (identical) twins arise from a single fertilized egg, so they share the same genome. This means their DNA, blood group, and inherited eye-color genes are identical, and DNA fingerprinting cannot tell them apart.

Step 2: Fingerprints (dermatoglyphics/dactylography) are formed during fetal life by a mix of genetic and random intrauterine factors such as pressure, position, and amniotic fluid flow. These factors differ even between twins sharing a womb.

Step 3: Because of this, the friction-ridge patterns of identical twins are always different and remain unchanged for life, making fingerprints the reliable way to distinguish them.

Step 4: DNA copies and blood group are genetically determined and identical in monozygotic twins, so they are wrong. Iris color is also under genetic control and is essentially the same. Hence the correct answer is fingerprints.

Quick Tip: Same genome shares everything except a trait shaped by random fetal events.

107. In an alleged history of gunshot injury there is burning, blackening, and tattooing around the wound with a dirt collar. The injury is a:

- (A) Close shot entry wound
- (B) Close shot exit wound
- (C) Distant shot entry wound
- (D) Distant shot exit wound

Correct Answer: (A) Close shot entry wound

Solution:

Step 1: The findings described - burning (singeing/scorching), blackening (smoke soot), and tattooing (unburnt and partly burnt powder grains driven into skin) - are the classic features of a close-range (close shot) firearm entry wound.

Step 2: These flame, soot, and powder effects can reach the skin only when the muzzle is near the body. As the range increases beyond about a foot or more, soot and powder no longer reach the skin, so a distant shot shows none of these, ruling out options c and d.

Step 3: A grease/dirt collar (a black ring of dirt and lubricant wiped off the bullet) is a feature of the ENTRY wound, not the exit wound. Exit wounds are typically everted and lack burning, blackening, tattooing, and a dirt collar, ruling out option b.

Step 4: Combining close-range powder effects with an entry-type dirt collar, the injury is a close shot entry wound.

Quick Tip: Soot and powder mean close range; a dirt collar means entry, not exit.

108. A child has Battered baby syndrome. How will you identify it?

- (A) Stab wound
- (B) Gunshot wound
- (C) Bruise of different ages
- (D) None of these

Correct Answer: (C) Bruise of different ages

Solution:

Step 1: Battered baby (battered child) syndrome refers to repetitive non-accidental physical injuries inflicted on a child by a parent or guardian. It is also called Caffey-Kempe syndrome or maltreatment syndrome.

Step 2: Because the abuse is repeated over time, the hallmark finding is multiple injuries of DIFFERENT ages - bruises in different stages of color/healing, plus old and new fractures, and oral mucosal lacerations.

Step 3: The parents typically give a vague or changing history that does not fit the injuries. Accidental injuries, by contrast, fall on bony prominences (forehead, occiput, shins, elbows, knees), are of one age, and match the stated history.

Step 4: Stab and gunshot wounds are not characteristic of this syndrome, so the identifying feature is bruises of different ages.

Quick Tip: Repeated abuse leaves injuries at many different healing stages.

109. A patient has gastrointestinal problems including abdominal pain and distension, bloody or mucus-filled diarrhea, and tenesmus with rectal prolapse. A stool ova and parasite exam reveals typical barrel-shaped eggs. The possible causative agent is:

- (A) Campylobacter
- (B) Clostridium difficile
- (C) Giardia lamblia
- (D) Trichuris

Correct Answer: (D) Trichuris

Solution:

Step 1: The decisive clue is the stool finding of barrel-shaped eggs with bipolar mucous plugs. This is the classic egg morphology of *Trichuris trichiura* (whipworm).

Step 2: Heavy whipworm infection causes abdominal pain, distension, mucoid or bloody diarrhea, and tenesmus. The hallmark in children is rectal prolapse, on which the worms may be seen.

Step 3: Rectal prolapse occurs because the thin anterior ends of the worms burrow into the rectal mucosa, loosen the epithelium, and weaken the supporting wall during repeated straining.

Step 4: *Campylobacter* and *C. difficile* are bacteria and do not produce parasite eggs, and *Giardia* produces cysts/trophozoites, not barrel-shaped ova. Hence the agent is *Trichuris*.

Quick Tip: Barrel-shaped bipolar-plugged eggs plus rectal prolapse equal whipworm.

110. Contact isolation is done for:

- (A) MRSA
- (B) Mumps
- (C) Diphtheria
- (D) Asthma

Correct Answer: (C) Diphtheria

Solution:

Step 1: Isolation precautions are chosen by the route of spread. Contact precautions are used for organisms that spread by direct or indirect contact with the patient or contaminated objects.

Step 2: Diphtheria (*Corynebacterium diphtheriae*) spreads person-to-person and through contaminated articles such as cups and used tissues, so contact precautions apply to cutaneous diphtheria and as part of its isolation.

Step 3: The organism colonizes the nose and throat and releases a toxin that produces the thick gray pseudomembrane; carriers can transmit it for weeks, so barrier/contact isolation limits spread.

Step 4: Mumps spreads by droplets (droplet precautions) and asthma is non-infectious. MRSA also uses contact precautions, but among the listed infectious options the intended classic answer here is diphtheria.

Quick Tip: Pick the infection that spreads by touching the patient or soiled objects.

111. A child suffering from recurrent chronic infections with encapsulated bacteria has a deficiency of which IgG subclass?

- (A) IgG1
- (B) IgG2
- (C) IgG3
- (D) IgG4

Correct Answer: (B) IgG2

Solution:

Step 1: Encapsulated bacteria (*Streptococcus pneumoniae*, *Haemophilus influenzae*) are protected by a polysaccharide capsule. Defence against them requires antibodies directed at this polysaccharide.

Step 2: Anti-polysaccharide antibody responses are mediated predominantly by the IgG2 subclass. So a deficiency of IgG2 impairs opsonization of capsular organisms.

Step 3: This is why selective IgG2 deficiency presents as recurrent, chronic infections with encapsulated bacteria, especially of the respiratory tract.

Step 4: IgG1 and IgG3 mainly target protein antigens and IgG4 is associated with chronic antigen exposure and allergy, so they do not explain susceptibility to capsulated bacteria. The answer is IgG2.

Quick Tip: Which IgG subclass answers polysaccharide capsule antigens?

112. The drug of choice (DOC) for Isospora (Cystoisospora) infection is:

- (A) Penicillin G
- (B) Benzathine penicillin
- (C) Co-trimoxazole
- (D) Albendazole

Correct Answer: (C) Co-trimoxazole

Solution:

Step 1: Isospora (Cystoisospora belli) is a coccidian protozoan that causes watery diarrhea, especially in immunocompromised and HIV patients.

Step 2: The drug of choice is co-trimoxazole (trimethoprim-sulfamethoxazole), which targets the parasite's folate pathway.

Step 3: A typical immunocompetent regimen is trimethoprim-sulfamethoxazole 160/800 mg orally twice daily for 7 to 10 days, with longer courses and secondary prophylaxis in HIV.

Step 4: Penicillin G and benzathine penicillin act on bacteria, not coccidia, and albendazole treats helminths, so none of them is effective. The answer is co-trimoxazole.

Quick Tip: An antifolate antibiotic, not a penicillin, clears this coccidian.

113. Coxsackievirus A16 causes

- (A) Yellow fever
- (B) Hand-foot-mouth disease
- (C) Rocky mountain spotted fever
- (D) Encephalomyocarditis

Correct Answer: (B) Hand-foot-mouth disease

Solution:

Step 1: Hand, foot and mouth disease (HFMD) is a common viral illness of children caused mainly by enteroviruses of the Coxsackievirus group. **Step 2:** Coxsackievirus A16 is the single most common cause of HFMD, while enterovirus 71 is the second most common; other Coxsackie and enterovirus strains can also produce it. **Step 3:** The illness spreads by close personal contact, respiratory droplets from coughing, and the faeces of an infected person. It starts with fever and malaise, followed in a day or two by flat discoloured spots or bumps that may blister on the hands, feet and mouth, and sometimes the buttocks and groin. **Step 4:** Yellow fever is caused by a flavivirus, Rocky Mountain spotted fever by *Rickettsia rickettsii*, and encephalomyocarditis by a different cardiovirus, so none of these fit Coxsackievirus A16.

Quick Tip: Classic vesicles on palms, soles and mouth in a child point to a Coxsackie A enterovirus.

114. *Pneumocystis jiroveci* is:

- (A) Associated with CMV
- (B) Diagnosis is by sputum microscopy
- (C) Seen only in immunocompromised patients
- (D) Always associated with pneumatocele

Correct Answer: (B) Diagnosis is by sputum microscopy

Solution:

Step 1: *Pneumocystis jiroveci* is the human isolate of *Pneumocystis*, an extracellular pathogen that causes severe pneumonia in the immunocompromised, particularly in AIDS. Its growth in the lung is confined to the surfactant layer above the alveolar epithelium. **Step 2:** Diagnosis rests on detecting the organism in a proper specimen. Sputum microscopy is quick and

non-invasive, bronchoalveolar lavage (BAL) fluid is the mainstay, and transbronchial biopsy is used if BAL fails, so option b is correct. **Step 3:** Serologic evidence shows most people are infected in early childhood, so the organism is not restricted to immunocompromised hosts; only the pneumonia is, which makes option c wrong. **Step 4:** It is not inherently linked to CMV, and pneumatoceles are not an invariable feature, ruling out options a and d.

Quick Tip: Think of the quick non-invasive first specimen used to demonstrate this alveolar pathogen.

115. All are true about congenital Toxoplasmosis EXCEPT

- (A) Chorioretinitis
- (B) Conjunctivitis
- (C) Hydrocephalus
- (D) Cerebral calcification

Correct Answer: (B) Conjunctivitis

Solution:

Step 1: Congenital toxoplasmosis occurs when the mother acquires a primary Toxoplasma infection (clinical or asymptomatic) during pregnancy or within 6 months before conception. **Step 2:** As gestational age rises, the risk of transmission to the fetus increases (maximum in the third trimester), but the severity of fetal damage falls, so late-transmitted infants are often asymptomatic. **Step 3:** The recognised features include hydrocephalus, diffuse cerebral calcification, hepatosplenomegaly, mental retardation, myocarditis, lymphadenitis, microcephaly, chorioretinitis, pneumonitis and multiorgan failure. **Step 4:** Chorioretinitis, hydrocephalus and cerebral calcification (the classic triad) are all genuine features, so they are true. Conjunctivitis is not a feature of congenital toxoplasmosis, making it the EXCEPTION and the correct answer.

Quick Tip: The eye lesion of congenital toxoplasmosis is at the retina, not the conjunctiva.

116. True about the TRIAD of congenital rubella syndrome

- (A) PDA, cataract and deafness is seen
- (B) Hepatosplenomegaly, mental retardation, deafness
- (C) Chorioretinitis, multiorgan failure, pneumonitis
- (D) None of these

Correct Answer: (A) PDA, cataract and deafness is seen

Solution:

Step 1: Congenital rubella syndrome (CRS) develops in the fetus of a pregnant woman who contracts rubella, usually in the first trimester; infection 0-28 days before conception still carries about a 43% risk to the infant. **Step 2:** The classic triad of CRS is patent ductus arteriosus (PDA, a cardiac defect), cataract (an ocular defect), and sensorineural deafness, which matches option a. **Step 3:** Second-trimester infection may cause deafness alone, and infection after 6 weeks of gestation typically produces no major abnormalities, underlining that timing drives severity. **Step 4:** Option c describes the toxoplasmosis spectrum, and hepatosplenomegaly with mental retardation are non-specific, so neither captures the defining rubella triad; option a is correct.

Quick Tip: Heart defect plus cataract plus deafness is the signature of congenital rubella.

117. Disc diffusion method is also known as

- (A) Kirby Bauer
- (B) VDRL
- (C) Dark field microscopy
- (D) None of these

Correct Answer: (A) Kirby Bauer

Solution:

Step 1: The disc diffusion test, also called the agar diffusion test or Kirby-Bauer test, is a standard method to measure the antibiotic sensitivity of bacteria. **Step 2:** Antibiotic-impregnated discs are placed on an agar plate that has been seeded with the test bacteria, and the plate is incubated. **Step 3:** Where an antibiotic inhibits or kills the bacteria, a clear area called the zone of inhibition forms around the disc; its diameter reflects susceptibility. **Step 4:** VDRL is a serological test for syphilis and dark field microscopy visualises spirochaetes, so neither names this susceptibility method; the correct answer is Kirby Bauer.

Quick Tip: Antibiotic discs on seeded agar producing zones of inhibition carry an eponym.

118. Rubella virus belongs to which family?

- (A) Reovirus
- (B) Togavirus
- (C) Picornavirus
- (D) Orthomyxo

Correct Answer: (B) Togavirus

Solution:

Step 1: Rubella virus (RuV) is the agent of rubella and the cause of congenital rubella syndrome when infection occurs in the first weeks of pregnancy. **Step 2:** It is the sole member of the genus Rubivirus, which belongs to the family

Togaviridae. **Step 3:** Togaviruses carry a single-stranded positive-sense RNA genome enclosed within an icosahedral capsid and an outer envelope. **Step 4:** Reoviridae are double-stranded RNA viruses, Picornaviridae are small non-enveloped positive-sense RNA viruses, and Orthomyxoviridae are segmented negative-sense RNA viruses, so none of them houses rubella; the answer is Togavirus.

Quick Tip: Rubella is the single Rubivirus, housed in an enveloped positive-sense RNA family.

119. Which of the following infections resembles erythroblastosis?

- (A) EBV
- (B) CMV
- (C) HSV
- (D) Staphylococcus

Correct Answer: (B) CMV

Solution:

Step 1: Cytomegalovirus (CMV) is a common herpesvirus infection with a wide range of presentations, from no symptoms to fever and fatigue resembling infectious mononucleosis. **Step 2:** Congenital CMV can cause hepatosplenomegaly, jaundice and a blood picture that mimics erythroblastosis (haemolytic disease of the newborn), which is why CMV is the best fit here. **Step 3:** Like EBV, CMV can produce an infectious mononucleosis-type illness in adolescents and young adults with fever and fatigue, but EBV additionally causes a severe sore throat whereas CMV does not. **Step 4:** HSV and Staphylococcus produce quite different clinical pictures (vesicular mucocutaneous disease and pyogenic infection respectively), so the answer is CMV.

Quick Tip: A congenital herpesvirus causing neonatal haemolytic-type illness fits this

picture.



120. Which of the following is the diagnostic test for neurosyphilis?

- (A) VDRL
- (B) RPR
- (C) TPI
- (D) FTA-ABS

Correct Answer: (A) VDRL

Solution:

Step 1: Neurosyphilis is diagnosed by examining the cerebrospinal fluid (CSF). The CSF shows pleocytosis, raised protein concentration and reactivity on the VDRL test.

Step 2: A positive CSF VDRL confirms the diagnosis of neurosyphilis, so VDRL is the standard diagnostic test on CSF.

Step 3: The CSF VDRL has high specificity but low sensitivity, so a negative result does not rule out neurosyphilis. In that situation the FTA-ABS test on CSF is used to supplement VDRL.

Step 4: RPR and TPI are serum-based tests not used as the primary CSF diagnostic test for neurosyphilis, and FTA-ABS is used as a supplement rather than the first-line CSF test, so the best answer is VDRL.

Quick Tip: Think of the test that becomes reactive in CSF and confirms central nervous system syphilis.



121. Flask-shaped ulcers in the intestine are caused by which of the following?

- (A) *Giardia lamblia*
- (B) *Entamoeba histolytica*
- (C) *Helicobacter pylori* (*H. pylori*)
- (D) *E. vermicularis*

Correct Answer: (B) *Entamoeba histolytica*

Solution:

Step 1: Flask-shaped ulcers are the classic intestinal lesion of amoebiasis caused by *Entamoeba histolytica*.

Step 2: Disease begins when the amoeba contacts the cells lining the intestine and secretes the same enzymes it uses to digest bacteria, including substances that destroy cell membranes and proteins.

Step 3: This causes penetration and digestion of the host tissue, producing ulcers that are narrow at the mucosal surface and broad at the base - the typical flask shape.

Step 4: The trophozoite ingests dead cells and is often seen with red blood cells inside it (erythrophagocytosis) in stool. *Giardia* and *E. vermicularis* (pinworm) do not cause flask ulcers, and *H. pylori* causes gastric, not flask-shaped colonic, ulcers, so the answer is *Entamoeba histolytica*.

Quick Tip: The parasite seen with ingested red blood cells in stool causes this classic ulcer.

122. What type of culture media is used for *Legionella*?

- (A) (BCYE) agar media
- (B) MacConkey agar
- (C) Baird-Parker agar
- (D) Sabouraud's agar

Correct Answer: (A) (BCYE) agar media

Solution:

Step 1: *Legionella pneumophila* is a nutritionally fastidious, non-spore-forming, aerobic, slender gram-negative rod that does not grow on routine media.

Step 2: It needs special supplements, namely cysteine, iron, alpha-ketoglutarate and yeast extract, which are provided by buffered charcoal yeast extract (BCYE) agar.

Step 3: BCYE is therefore the selective medium used to isolate *Legionella*; a selective BCYE with added antibiotics is preferred for specimens likely to be contaminated with other bacteria.

Step 4: MacConkey is for enteric gram-negative bacilli, Baird-Parker is for *Staphylococcus aureus* and Sabouraud's is for fungi, so the correct medium is BCYE agar.

Quick Tip: This fastidious organism needs cysteine and iron - which charcoal-based agar supplies them?

123. Which is the special stain used for *Cryptococcus*?

- (A) ZN stain
- (B) Gram stain
- (C) Mucicarmine stain
- (D) Malachite green

Correct Answer: (C) Mucicarmine stain

Solution:

Step 1: *Cryptococcus neoformans* has a thick polysaccharide capsule and cell wall, and a special stain is needed to highlight this polysaccharide component.

Step 2: Mucicarmine stain specifically stains the polysaccharide cell wall of *C. neoformans* red, so it is the special stain for *cryptococcus* in tissue sections.

Step 3: Mucicarmine works only on microorganisms whose cell wall is composed at least in part of a polysaccharide, which is why it is selective for *cryptococcus*.

Step 4: ZN stain is for acid-fast bacilli, Gram stain is a general bacterial stain, and malachite green is used for spores, so the correct special stain is mucicarmine.

Quick Tip: The stain that colours the polysaccharide capsule wall red identifies this yeast.



124. A 36-year-old male presents with cough, cold, fever and rusty sputum. Sputum is negative for tuberculosis. He has a history of travel to China and eating crab. Name the infection.

- (A) *Paragonimus westermani*
- (B) *Fasciola hepatica*
- (C) *Fasciolopsis buski*
- (D) *Entamoeba histolytica*

Correct Answer: (A) *Paragonimus westermani*

Solution:

Step 1: History of travel to China with eating crab points to a food-borne trematode acquired from crustaceans, which is *Paragonimus westermani*, the lung fluke.

Step 2: The lungs are damaged most, producing chronic cough, fever and rusty (blood-tinged) sputum; during invasion and migration there may also be diarrhea, abdominal pain, urticaria, hepatosplenomegaly and eosinophilia.

Step 3: The clinical picture closely resembles and is often confused with tuberculosis, but the sputum here is TB-negative. Unembryonated eggs are passed in the sputum.

Step 4: *Fasciola hepatica* and *Fasciolopsis buski* are intestinal or hepatobiliary flukes without this pulmonary picture, and *E. histolytica* causes amoebiasis, so the lung fluke *Paragonimus westermani* is the answer. Treatment of choice is praziquantel.

Quick Tip: Crab ingestion plus rusty sputum mimicking TB points to a lung fluke.

125. Which is the microbiological test for diagnosing *Leptospira* infection?

- (A) Cold agglutination
- (B) Standard agglutination
- (C) Microscopic agglutination test (MAT)
- (D) None of these

Correct Answer: (C) Microscopic agglutination test (MAT)

Solution:

Step 1: *Leptospira* can be demonstrated directly by dark-field microscopy, by immunofluorescence, or by light microscopy after appropriate staining.

Step 2: For serological diagnosis, the microscopic agglutination test (MAT) is the gold-standard test for leptospirosis.

Step 3: A macroscopic agglutination test also exists but MAT is the reference standard, making MAT the correct microbiological test among the options.

Step 4: Cold agglutination is used for *Mycoplasma pneumoniae* and standard (Widal) agglutination for enteric fever, not *Leptospira*, so the answer is the Microscopic agglutination test.

Quick Tip: The gold-standard serological test for leptospirosis uses agglutination viewed under the microscope.

126. Green colour of triage is for which type of patient?

- (A) Low priority
- (B) Morbidity
- (C) Ambulatory
- (D) High priority

Correct Answer: (C) Ambulatory

Solution:

Step 1: Triage is the rapid classification of injured people in a mass emergency according to the severity of injury and likelihood of survival with prompt care, so the usual first come first treated rule is not followed.

Step 2: The most common international system is a four-colour code: Red for high-priority treatment or transfer, Yellow for medium priority, Green for ambulatory patients, and Black for the dead or moribund.

Step 3: Green therefore denotes ambulatory (walking) patients with minor injuries who can wait, making ambulatory the correct answer.

Step 4: High priority corresponds to Red and the lowest priority (moribund) to Black, so options other than ambulatory do not match the green tag.

Quick Tip: Green tags the walking wounded who can wait for care.

127. The Concurrent List of the Indian Constitution includes which of the following?

- (A) International immigration rule for quarantine
- (B) Prevention of extension of communicable disease from one unit to another
- (C) Mines and oilfield workers rules
- (D) Establishment and maintenance of drug standards

Correct Answer: (B) Prevention of extension of communicable disease from one unit to another

Solution:

Step 1: The legislative powers in India are distributed across three lists in the Seventh Schedule of Article 246 of the Constitution: the Union List, the State List, and the Concurrent List. Both the Union and the States can make laws on subjects in the Concurrent List.

Step 2: Among the 52 items on the Concurrent List, Entry 29 reads: prevention of the extension from one State to another of infectious or contagious diseases or

pests affecting men, animals or plants. This matches option (b).

Step 3: The other options belong to the Union List. International quarantine, drug standards (establishment and maintenance), and mines and oilfields are Union List subjects, so options (a), (c), and (d) are incorrect.

Quick Tip: Think of cross-State spread of infectious disease - a subject shared by Centre and States.



128. The last point up to which the Reproductive and Child Health (RCH) programme is included is:

- (A) Sub-centre
- (B) Anganwadi
- (C) District
- (D) Taluka

Correct Answer: (C) District

Solution:

Step 1: The Reproductive and Child Health (RCH) programme is planned and managed using the district as its operational unit. Its various activities are targeted at the district level.

Step 2: The programme follows a differential approach. Inputs are not uniform across all districts - while the core care components are the same everywhere, weaker districts receive more support and the relatively advanced districts get more sophisticated facilities.

Step 3: Districts are divided into categories A, B, and C on the basis of crude birth rate and female literacy rate, and are covered in a phased manner. Because the unit of planning and grouping is the district, the correct answer is (c). Sub-centre, Anganwadi, and Taluka are smaller delivery points, not the planning unit.

Quick Tip: RCH inputs are graded A/B/C using crude birth rate and female literacy at

one administrative unit.



129. The health centre in the remotest area, used as the first contact point for planning and management of schemes, is the:

- (A) Anganwadi
- (B) Block centre
- (C) Sub-centre
- (D) PHC

Correct Answer: (C) Sub-centre

Solution:

Step 1: The Sub-Centre is the most peripheral health institution and the first point of contact between the primary health care system and the community.

Step 2: Sub-Centres handle interpersonal communication to bring about behavioural change and deliver services in maternal and child health, family welfare, nutrition, immunization, diarrhoea control, and control of communicable diseases.

Step 3: They are also stocked with basic drugs for minor ailments to meet the essential health needs of men, women, and children. Since the Sub-Centre is the most remote/peripheral contact point, (c) is correct. The PHC and Block centre sit at higher levels, and the Anganwadi is part of the ICDS scheme rather than the health-centre hierarchy.

Quick Tip: It is the most peripheral first-contact unit between the health system and the community.



130. The diagnostic power of a test to correctly diagnose a disease (the proportion of positive test results that truly have the disease) is:

- (A) Negative predictive value
- (B) Positive predictive value
- (C) Sensitivity
- (D) Specificity

Correct Answer: (B) Positive predictive value

Solution:

Step 1: Positive predictive value (PPV) is the proportion of persons with a positive screening test result who actually have the disease in question. It reflects the diagnostic power of a positive test to correctly identify true disease.

Step 2: Contrast this with negative predictive value (NPV), which is the proportion of persons with a negative test result who truly do not have the disease.

Step 3: Sensitivity is the ability of the test to correctly identify all those who have the disease (true positive rate), and specificity is the ability to correctly identify those without the disease (true negative rate). Since the stem asks about the power of a positive result to confirm disease, the answer is (b) Positive predictive value.

Quick Tip: Among those who test positive, how many truly have the disease?

131. Paradoxical carriers are best defined as:

- (A) A person who acquires the microorganism due to his contact with the patient.
- (B) A person who acquires the microorganism from another carrier.
- (C) A person who is clinically recovered from an infectious disease but still capable of transmitting the infectious agent to others.
- (D) None

Correct Answer: (B) A person who acquires the microorganism from another carrier.

Solution:

Step 1: A carrier is a person who harbours and can transmit an infectious agent without showing overt clinical disease.

Step 2: A paradoxical carrier is a specific category defined as a person who acquires the microorganism from another carrier, rather than from a frank case of the disease.

Step 3: Option (a) describes someone infected through contact with a patient (a case), and option (c) describes a convalescent carrier - a person clinically recovered but still shedding the organism. Neither fits the paradoxical carrier definition, so the correct answer is (b).

Quick Tip: The source is not a patient but another carrier - that is the paradox.

132. According to IMNCI, for a baby of 6 months of age, the criterion for fast breathing is a respiratory rate of more than how many breaths per minute?

- (A) 60
- (B) 50
- (C) 40
- (D) 30

Correct Answer: (B) 50

Solution:

Step 1: As children grow older, their normal respiratory rate slows, so the cut-off for fast breathing depends on the child's age.

Step 2: The IMNCI age-based cut-offs for fast breathing are: child less than 2 months - 60 or more breaths/min; child 2 months up to 12 months - 50 or more breaths/min; child 12 months up to 5 years - 40 or more breaths/min.

Step 3: A 6-month-old falls in the 2 months up to 12 months band, so fast breathing is defined as a respiratory rate of 50 or more breaths per minute. The answer is (b) 50.

Quick Tip: 6 months falls in the 2-to-12-month IMNCI band - use its respiratory cut-off.

133. All of the following are examples of dietary fibre except:

- (A) Pectin
- (B) Lignin
- (C) Cellulose
- (D) Gums

Correct Answer: (D) Gums

Solution:

Step 1: Dietary fibre consists of the unabsorbable cell-wall and other constituents of plant foods, including cellulose, lignin, hemicellulose, gums, pectins, glycoproteins, and other polysaccharides. It absorbs water, swells, increases stool bulk, softens stool, and shortens transit time.

Step 2: Pectin, lignin, and cellulose are all recognised components of dietary fibre, so options (a), (b), and (c) are valid examples of fibre.

Step 3: The printed answer key marks (d) Gums as the exception. Note that gums are in fact a soluble dietary fibre, so on strict nutritional grounds this single-best-answer item is debatable; however, following the recall paper's official key, the marked answer is (d) Gums.

Quick Tip: Three options are classic plant fibres; pick the one marked as the exception.

134. Cross product ratio is determined by which type of study?

- (A) Case control
- (B) Cohort
- (C) Cross sectional
- (D) Randomised controlled trial (RCT)

Correct Answer: (A) Case control

Solution:

Step 1: The term "cross product ratio" is another name for the odds ratio. It is computed from a 2x2 table as $(a \times d)/(b \times c)$, which is why it is called a cross product.

Step 2: In a case-control study, subjects are selected on the basis of disease status (cases vs controls) and their past exposure is compared. Because incidence cannot be measured directly here, the strength of association is expressed as the odds ratio, i.e. the cross product ratio.

Step 3: Cohort studies measure incidence directly and report relative risk, not the cross product ratio. Cross sectional studies give prevalence, and an RCT estimates risk/relative risk from an experimental design. Hence the correct answer is the case-control study.

Quick Tip: Odds ratio = ad/bc , the measure of choice in retrospective designs.

135. In a normal curve, what is the area that comes under 1 standard deviation (mean ± 1 SD)?

- (A) 50%
- (B) 68%
- (C) 95%
- (D) 100%

Correct Answer: (B) 68%

Solution:

Step 1: A normal (Gaussian) curve is symmetrical about the mean, and the area under it represents the proportion of observations falling within a given range.

Step 2: The empirical rule gives the standard coverage: mean $\pm$ 1 SD covers about 68% of values, mean $\pm$ 2 SD covers about 95%, and mean $\pm$ 3 SD covers about 99.7% of values.

Step 3: The question asks specifically for 1 SD, so the area is 68%. 95% corresponds to 2 SD and 100% would require the entire infinite range, so they are incorrect.

Quick Tip: Remember the 68-95-99.7 rule for the normal curve.

136. A 2 year old boy weighing 12 kg has vitamin A deficiency. What is the recommended oral dose of vitamin A?

- (A) 50,000 I.U.
- (B) 1 lakh I.U.
- (C) 1.5 lakh I.U.
- (D) 2 lakh I.U.

Correct Answer: (D) 2 lakh I.U.

Solution:

Step 1: Treatment of clinical vitamin A deficiency uses age and weight based oral mega-doses. The standard oral regimen for a child more than 1 year of age and over 8 kg is 200,000 IU (2 lakh IU).

Step 2: This boy is 2 years old and weighs 12 kg, so he qualifies for the full adult-type oral dose of 2 lakh IU, given on the day of presentation, the next day, and again 2-4 weeks later.

Step 3: The 50,000 IU and 1 lakh IU doses apply to younger or lighter infants (under 6 months and under 1 year / under 8 kg respectively), so they are incorrect for this child. Hence the answer is 2 lakh IU.

Quick Tip: Child over 1 year and over 8 kg gets 200,000 IU orally.



137. Which of the following is NOT a personal protective equipment (PPE)?

- (A) Goggles
- (B) Badges for detecting radiation
- (C) Gloves
- (D) Lab coat

Correct Answer: (B) Badges for detecting radiation

Solution:

Step 1: Personal protective equipment refers to barriers worn to protect the user from a hazard, for example goggles, gloves, masks, gowns and lab coats.

Step 2: A radiation detection badge (film badge or TLD badge) is a monitoring or dosimetry device. It measures the cumulative radiation dose received but does not block or shield the wearer from radiation.

Step 3: Because it monitors rather than protects, the badge is not a PPE. Goggles, gloves and the lab coat all provide a physical protective barrier, so they are genuine PPE. The odd one out is the radiation detecting badge.

Quick Tip: A monitoring/dosimetry device is not a protective barrier.



138. A confounding factor is best defined as which of the following?

- (A) Factor associated with both the exposure and the disease and is distributed unequally in study and control groups.
- (B) Factor associated with exposure only and is distributed unequally in study and control groups.
- (C) Factor associated with both the exposure and the disease and is distributed equally in study and control groups.
- (D) Factor associated with the disease and is distributed equally in study and control groups.

Correct Answer: (A) Factor associated with both the exposure and the disease and is distributed unequally in study and control groups.

Solution:

Step 1: A confounder is an extraneous variable that distorts the observed relationship between an exposure and a disease. To do this it must be linked to both sides of the association.

Step 2: Two conditions must hold: the factor is associated with both the exposure and the disease, and it is distributed unequally between the study (exposed) and control (unexposed) groups. The unequal distribution is what creates the distortion.

Step 3: Options that link the factor to only exposure or only disease, or that say it is distributed equally, do not satisfy both criteria, so a true confounder cannot be defined that way. Hence option (a) is correct.

Quick Tip: Linked to both exposure and disease, and unequally distributed between groups.

139. The significance of the difference between proportions can also be tested by which of the following?

- (A) 't' test
- (B) Chi square test
- (C) ANOVA
- (D) Correlation and regression

Correct Answer: (B) Chi square test

Solution:

Step 1: Proportions arise from qualitative (categorical) data, such as the number of cases vs non-cases. A test of significance for such data must work on counts/frequencies.

Step 2: The chi-square test compares observed and expected frequencies and tests the significance of the difference between two or more proportions or ratios. It can handle more than two groups at once, which is an added advantage.

Step 3: The 't' test and ANOVA compare means of quantitative data, and correlation/regression studies the relationship between continuous variables. None of these directly test proportions, so the chi-square test is the correct choice.

Quick Tip: Categorical data and proportions call for the chi-square test.

140. The paired t-test is best defined as which of the following?

- (A) Test used to assess quantitative observations before and after an intervention
- (B) Test that is used when the observations are in the form of proportions (for qualitative data)
- (C) Test applied when separate observations are made on individuals of two separate groups, and these need to be compared
- (D) None

Correct Answer: (A) Test used to assess quantitative observations before and after an intervention

Solution:

Step 1: A paired t-test compares the means of two related samples, that is two measurements taken on the same individuals. The classic situation is a "before and after" intervention scenario.

Step 2: Because the two readings are paired (same subjects), the test analyses the differences within each pair and checks whether the mean difference is significantly different from zero. This makes option (a) the correct definition.

Step 3: Proportions point to the chi-square test, so option (b) is wrong. Comparing two separate independent groups describes the unpaired (independent) t-test, so option (c) is wrong. Therefore the paired t-test is the test for quantitative observations before and after an intervention.

Quick Tip: Paired = same subjects measured before and after.

141. Which diagram is the best representation of the incidence of a disease across different points on a timeline?

- (A) Histogram
- (B) Line diagram
- (C) Scattered diagram
- (D) Bar diagram

Correct Answer: (B) Line diagram

Solution:

Step 1: The question asks for the chart that best shows how disease incidence changes over time. The key requirement is a continuous time axis on which a trend can be read.

Step 2: A line diagram plots values against time and joins them, so it clearly displays the trend of events with the passage of time and how the frequency of a variable rises or falls over the timeline.

Step 3: The distractors are weaker. A histogram shows frequency distribution of a

continuous variable, a bar diagram compares discrete categories, and a scattered diagram shows correlation between two variables - none of these is designed for a time trend.

Step 4: Hence the line diagram is the best choice for incidence over a timeline.

Quick Tip: Think about which chart joins points to show a trend over time.

142. For the trench type of sanitary fill, the amount of land required for a 2 metre deep trench for a population of 10,000 is:

- (A) 1 acre
- (B) 2 acre
- (C) 3 acre
- (D) 4 acre

Correct Answer: (A) 1 acre

Solution:

Step 1: The trench method of sanitary refuse disposal needs land estimated from standard WHO guidelines for shallow trenches.

Step 2: The guideline is about 3 to 5 metres of trench per 100 people, which gives roughly 300 to 500 metres of trench length for 10,000 people, plus a perimeter of about 30 m around the trench area.

Step 3: One acre equals about 4046 square metres, which is roughly a 200 m by 200 m plot. This area comfortably accommodates the trench length and the surrounding margin needed for 10,000 people.

Step 4: Therefore the land required is about 1 acre.

Quick Tip: One acre is about 4046 square metres, roughly a 200 m square.

143. What is the approximate risk of genetic diseases in a consanguineous marriage between first cousins?

- (A) 1-2%
- (B) 4-8%
- (C) 8-10%
- (D) 12-14%

Correct Answer: (B) 4-8%

Solution:

Step 1: Consanguinity is marriage between relatives, and closely related partners share more alleles, so their children are more often homozygous for recessive alleles.

Step 2: Because of this, the frequency of congenital malformations among newborns of first cousin unions is about double that of the general population.

Step 3: The background rate of birth defects in the general population is roughly 2 to 3 percent. Doubling this gives about 4 to 6 percent for first cousin couples.

Step 4: Among the options, the band that contains this 4 to 6 percent figure is 4-8 percent, so that is the answer.

Quick Tip: First cousin risk is roughly double the general 2-3% birth defect rate.

144. Which of the following is NOT an epidemiological indicator?

- (A) ABER
- (B) Annual parasite index
- (C) Annual falciparum incidence
- (D) None of the Above

Correct Answer: (A) ABER

Solution:

Step 1: The question asks which malaria-related measure is not a true epidemiological indicator of disease burden.

Step 2: ABER, the Annual Blood Examination Rate, measures the proportion of the population whose blood is examined for malaria. It reflects how well the programme is performing its surveillance, not how much disease exists.

Step 3: Therefore ABER is an indicator of operational efficiency of the Malaria Control Programme rather than an epidemiological indicator.

Step 4: By contrast, the annual parasite index and the annual falciparum incidence are genuine epidemiological indicators of malaria burden, so the odd one out is ABER.

Quick Tip: One option measures programme effort, not disease burden.

145. The dose of diphtheria antitoxin (DAT) is:

- (A) 1000 to 5000 IU
- (B) 10000 to 100000 IU
- (C) 1000 to 2000 IU
- (D) None

Correct Answer: (B) 10000 to 100000 IU

Solution:

Step 1: Diphtheria antitoxin (DAT) is a horse-serum based passive immunising agent given to neutralise circulating diphtheria toxin.

Step 2: It is supplied in ampoules of about 10,000 IU each, and clinical dosing is built up in this range depending on the site and severity of the disease.

Step 3: The total therapeutic dose used in practice ranges from roughly 10,000 IU up to about 100,000 IU.

Step 4: Among the options, the 10,000 to 100,000 IU band matches the recognised dose, so it is the correct choice.

Quick Tip: DAT comes in 10,000 IU ampoules and dosing scales up with severity.

146. Vertical transmission of HIV from mother to child is highest with which of the following?

- (A) Elective caesarean section
- (B) High viral RNA load
- (C) Breast feeding
- (D) Term delivery

Correct Answer: (B) High viral RNA load

Solution:

Step 1: Vertical (mother-to-child) HIV transmission risk depends on maternal, obstetric, and infant factors, with maternal viraemia being the dominant driver.

Step 2: A high maternal viral RNA load is the single strongest predictor, because more circulating virus means a greater chance of exposure during pregnancy, labour, and feeding.

Step 3: The distractors all lower or do not maximise risk. Elective caesarean section before labour roughly halves transmission, term delivery carries lower risk than prematurity, and breastfeeding adds risk but less than uncontrolled high viraemia.

Step 4: Therefore high viral RNA load is the factor most associated with the highest vertical transmission.

Quick Tip: The more virus in maternal blood, the higher the transmission risk.

147. The most common site of a branchial cyst is:

- (A) Posterior border of sternocleidomastoid
- (B) Anterior border of sternocleidomastoid
- (C) Digastric muscle
- (D) Omohyoid muscle

Correct Answer: (B) Anterior border of sternocleidomastoid

Solution:

Step 1: A branchial cleft cyst typically presents as a solitary, painless neck swelling in a child or young adult.

Step 2: The classic location is along the anterior border and upper third of the sternocleidomastoid muscle, within the anterior triangle of the neck.

Step 3: The other options do not fit. The posterior border relates to lesions like cystic hygroma, while the digastric and omohyoid are not the typical reference borders for this cyst.

Step 4: Hence the most common site is the anterior border of the sternocleidomastoid.

Quick Tip: Think anterior triangle, upper third of the SCM muscle.

148. Inspiratory stridor is found in what kind of lesions?

- (A) Supraglottic
- (B) Subglottic
- (C) Tracheal
- (D) Bronchus

Correct Answer: (A) Supraglottic

Solution:

Step 1: Stridor is a harsh sound produced by turbulent airflow through a partially obstructed airway. The phase of the respiratory cycle in which it occurs tells you where the obstruction is.

Step 2: An inspiratory stridor points to obstruction ABOVE the level of the glottis, that is at the supraglottic region. During inspiration the negative airway pressure tends to collapse the lax supraglottic structures, making the noise loudest in this phase.

Step 3: By contrast, an expiratory stridor indicates obstruction in the lower trachea or bronchi, and a biphasic (both phases) stridor suggests a fixed glottic or subglottic lesion. This is why subglottic, tracheal and bronchial options are not the best fit for a purely inspiratory stridor.

Step 4: Therefore inspiratory stridor localises to a supraglottic lesion, making option (a) the correct answer.

Quick Tip: Inspiratory equals above the glottis; expiratory equals lower trachea.

149. In Retinitis pigmentosa there is a decreased level of which of the following?

- (A) Arachidonic acid
- (B) Trielonic acid
- (C) Thromboxane
- (D) Docosahexaenoic acid

Correct Answer: (D) Docosahexaenoic acid

Solution:

Step 1: Retinitis pigmentosa (RP) is a group of inherited progressive retinal dystrophies affecting the photoreceptors and the retinal pigment epithelium, leading to night blindness and constricted visual fields.

Step 2: The outer segments of photoreceptors are extremely rich in long-chain omega-3 polyunsaturated fatty acids, the most abundant being docosahexaenoic acid (DHA). DHA is essential for normal rod and cone membrane structure and function.

Step 3: In retinitis pigmentosa, blood and tissue levels of DHA are found to be reduced, which correlates with the photoreceptor degeneration seen in the disease.

Step 4: Arachidonic acid and thromboxane are eicosanoid pathway molecules not specifically depleted in RP, and trielonic acid is not a recognised relevant entity. Hence the decreased substance is docosahexaenoic acid, option (d).

Quick Tip: Think of the omega-3 fatty acid that fills photoreceptor outer segments.

150. What is the against-the-rule correction in astigmatism?

- (A) -1.25 cyl 90
- (B) -2 spherical 180
- (C) -3 cyl 180
- (D) +2 cyl 180

Correct Answer: (A) -1.25 cyl 90

Solution:

Step 1: In regular astigmatism the two principal meridians are at right angles. In against-the-rule astigmatism the HORIZONTAL meridian is more curved than the vertical meridian (the opposite of the normal with-the-rule pattern).

Step 2: The standard correction for against-the-rule astigmatism is a convex (plus) cylinder at 180 degrees axis OR a concave (minus) cylinder at 90 degrees axis (each plus or minus about 20 degrees).

Step 3: Option (a) -1.25 cyl 90 is a minus (concave) cylinder at 90 degrees, which fits the against-the-rule correction. Option (d) +2 cyl 180 is a plus (convex) cylinder at 180 degrees, which also fits, so both (a) and (d) describe against-the-rule correction; the marked key here is (a).

Step 4: Option (b) is a spherical lens (no cylinder, so not relevant to astigmatism axis) and option (c) -3 cyl 180 is a minus cylinder at 180 which corresponds to with-the-rule correction. Hence the answer is option (a).

Quick Tip: Against-the-rule equals plus cyl at 180 or minus cyl at 90.

151. Morbid fear of darkness is known as?

- (A) Claustrophobia
- (B) Xenophobia
- (C) Mysophobia
- (D) Nyctophobia

Correct Answer: (D) Nyctophobia

Solution:

Step 1: A phobia is a persistent, excessive and irrational fear of a specific object or situation that disrupts day-to-day life. Each phobia is named after its trigger.

Step 2: Nyctophobia comes from the Greek for night and is the extreme fear of night or darkness, which can cause intense anxiety and even depressive symptoms.

Step 3: The distractors name different triggers: claustrophobia is fear of enclosed spaces with no escape, xenophobia is fear or hatred of strangers or foreigners, and mysophobia (germophobia) is the fear of contamination and germs.

Step 4: Matching the morbid fear of darkness to its name gives nyctophobia, option (d).

Quick Tip: Nycto- is the Greek root for night.

152. A child has ptosis and poor levator function. What surgery will you do?

- (A) Levator muscle resection
- (B) Mullerectomy
- (C) Fasanella Servat surgery
- (D) Frontalis suspension surgery

Correct Answer: (D) Frontalis suspension surgery

Solution:

Step 1: The choice of ptosis surgery is guided mainly by the amount of LEVATOR FUNCTION. Good levator function favours levator-based procedures; poor or absent levator function does not.

Step 2: When levator function is poor (as in this child), levator resection, mullerectomy and the Fasanella-Servat procedure are inappropriate because they all depend on a working levator or are meant for minimal ptosis with good function.

Step 3: Frontalis suspension (sling) is the operation of choice for poor or absent levator function, typically in congenital ptosis. The eyelid is slung to the frontalis muscle so that raising the eyebrow lifts the lid.

Step 4: Hence, for a child with ptosis and poor levator function, the correct surgery is frontalis suspension, option (d).

Quick Tip: Poor levator function means borrow power from the frontalis muscle.

153. Which drug causes ocular hypotension with apnea in an infant?

- (A) Latanoprost
- (B) Timolol
- (C) Brimonidine
- (D) Dorzolamide

Correct Answer: (C) Brimonidine

Solution:

Step 1: The question links a glaucoma drug to lowered intraocular pressure (ocular hypotension) together with systemic apnea in an infant. The key is a drug that crosses the immature blood-brain barrier.

Step 2: Brimonidine is a relatively selective alpha-2 agonist that lowers intraocular pressure by reducing aqueous production and increasing uveoscleral outflow.

Step 3: In infants and young children, brimonidine readily crosses the blood-brain barrier and causes central nervous system depression. Reported effects

include bradycardia, hypotension, hypothermia, hypotonia and apnea, so it is contraindicated in this age group.

Step 4: Latanoprost (prostaglandin analogue), timolol (beta-blocker) and dorzolamide (carbonic anhydrase inhibitor) lower IOP but are not the classic cause of apnea in infants. Hence the answer is brimonidine, option (c).

Quick Tip: Alpha-2 agonist that crosses the infant blood-brain barrier.

154. Which combination of chemotherapy agents is used for retinoblastoma?

- (A) Vincristine, carboplatin and etoposide
- (B) Vinblastine, etoposide and bleomycin
- (C) Vinblastine, vincristine and etoposide
- (D) Vinblastine, vincristine and cisplatin

Correct Answer: (A) Vincristine, carboplatin and etoposide

Solution:

Step 1: Retinoblastoma is the most common primary intraocular malignancy of childhood, and systemic chemotherapy (chemoreduction) is a mainstay of management, often combined with focal therapy.

Step 2: The standard, most widely used regimen is the triple combination of carboplatin, vincristine and etoposide (the VEC regimen). For very small tumours, carboplatin and vincristine alone may suffice.

Step 3: Option (a) lists exactly vincristine, carboplatin and etoposide, matching the standard regimen.

Step 4: The other options substitute vinblastine, bleomycin or cisplatin, which are not the standard retinoblastoma combination, so they are incorrect. The answer is option (a).

Quick Tip: Remember the VEC trio: Vincristine, Etoposide, Carboplatin.

155. Drug used in acute congestive glaucoma are:

- (A) Atropine
- (B) Pilocarpine
- (C) Acetazolamide
- (D) Both B & C

Correct Answer: (D) Both B & C

Solution:

Step 1: Acute congestive glaucoma is the same as acute angle closure glaucoma, an emergency caused by a sudden rise in intraocular pressure (IOP) when the iris blocks aqueous outflow at the angle.

Step 2: Treatment aims to lower IOP rapidly and reopen the angle.

Acetazolamide, a carbonic anhydrase inhibitor, reduces aqueous production and lowers IOP. Pilocarpine, a miotic, contracts the pupil to pull the iris away from the angle and restore drainage.

Step 3: Because both pilocarpine and acetazolamide are used, the answer is Both B & C.

Step 4: Atropine is wrong - it is a mydriatic that dilates the pupil and can precipitate or worsen angle closure, so it is contraindicated here.

Quick Tip: Lower IOP by reducing aqueous and constricting the pupil - avoid any mydriatic.

156. Which is the most common ocular finding in myasthenia gravis?

- (A) Ptosis
- (B) Lagophthalmos
- (C) Proptosis
- (D) Enophthalmos

Correct Answer: (A) Ptosis

Solution:

Step 1: Myasthenia gravis is an autoimmune disorder of the neuromuscular junction caused by antibodies against acetylcholine receptors, leading to fatigable muscle weakness.

Step 2: In more than half of patients, the first signs are ocular. The earliest and most common finding is drooping of one or both eyelids, that is ptosis, due to weakness of the levator palpebrae superioris.

Step 3: Diplopia from extraocular muscle weakness is also common and worsens with use. The answer is Ptosis.

Step 4: Lagophthalmos, proptosis, and enophthalmos are not characteristic presenting features of myasthenia gravis.

Quick Tip: Fatigable drooping eyelid is the classic first sign.

157. Esotropia is usually associated with:

- (A) Myopia
- (B) Hypermetropia
- (C) Astigmatism
- (D) Presbyopia

Correct Answer: (B) Hypermetropia

Solution:

Step 1: Esotropia is an inward deviation of the eye (convergent squint). Accommodative esotropia is one of the most common types of childhood strabismus.

Step 2: It is usually seen in children with moderate hypermetropia (hyperopia). To focus a blurred image, the hypermetropic child accommodates strongly.

Step 3: Accommodation is linked to convergence, so the extra accommodative effort drives the eyes to converge inward, producing esotropia. Hence the answer is Hypermetropia.

Step 4: Myopia tends to relax accommodation and is linked with exotropia, not esotropia; astigmatism and presbyopia are not the usual association.

Quick Tip: Over-accommodation drives convergence - think long-sightedness.

158. Which wall of heart enlargement can be seen on barium swallow in patient with mitral stenosis?

- (A) Left atrium
- (B) Right atrium
- (C) Left ventricle
- (D) Right ventricle

Correct Answer: (D) Right ventricle

Solution:

Step 1: In mitral stenosis the narrowed mitral valve obstructs flow from the left atrium to the left ventricle, raising left atrial pressure.

Step 2: This pressure transmits backward, raising pulmonary venous and then pulmonary arterial pressure. The increased pulmonary arterial pressure imposes a high afterload on the right ventricle.

Step 3: The right ventricle struggles to empty against this load, its end-diastolic pressure and volume rise, and right ventricular hypertrophy develops. Hence right ventricular enlargement is the chamber change, so the answer is Right ventricle.

Step 4: The left ventricle is spared because filling is reduced, so left ventricular diastolic pressure stays normal in isolated mitral stenosis.

Quick Tip: Back-pressure to the lungs overloads which ventricle?

159. Which of the following statements is true about the bundle of Kent?

- (A) Abnormal pathway between two atria
- (B) It is muscular or nodal pathway between the atria and ventricle in WPW syndrome
- (C) It is slower than the AV nodal pathway
- (D) None

Correct Answer: (B) It is muscular or nodal pathway between the atria and ventricle in WPW syndrome

Solution:

Step 1: The bundle of Kent is an accessory atrioventricular pathway, an extra muscular connection that directly links the atria to the ventricles, bypassing the AV node.

Step 2: This bundle is the substrate of Wolff-Parkinson-White (WPW) syndrome, producing ventricular pre-excitation. So the true statement is that it is a muscular/nodal pathway between atria and ventricle in WPW syndrome.

Step 3: On ECG, pre-excitation gives a short PR interval, a wide QRS, and a delta wave because conduction skips the AV nodal delay.

Step 4: Option a is wrong (it connects atria to ventricles, not two atria) and option c is wrong (it conducts faster than the AV node, since it lacks the nodal delay).

Quick Tip: Accessory bypass of the AV node causing pre-excitation.

160. Deep venous thrombosis - which is incorrect?

- (A) Clinical assessment highly reliable
- (B) Mostly bilateral
- (C) Most common clinically presents as pain and tenderness in calf
- (D) Some cases may directly present as pulmonary thromboembolism

Correct Answer: (B) Mostly bilateral

Solution:

Step 1: This is a negative question - find the statement that is NOT true of deep venous thrombosis (DVT).

Step 2: DVT is characteristically unilateral. The Wells criteria themselves score unilateral calf swelling, unilateral pitting oedema, and swollen unilateral superficial veins, which confirms the typical asymmetry. So calling it mostly bilateral is incorrect, making option b the answer.

Step 3: The other options are correct - calf pain and tenderness are common presentations, and a DVT may first announce itself as a pulmonary thromboembolism when a clot embolizes to the lungs.

Step 4: Clinical assessment with a structured score (Wells) is a useful, reasonably reliable first step, so that statement is also acceptable, leaving bilateral as the wrong one.

Quick Tip: DVT is typically one-sided, not symmetrical.

161. Punched out ulcer in esophagus is seen in:

- (A) Herpes
- (B) CMV
- (C) Oesophagitis
- (D) Candida

Correct Answer: (C) Oesophagitis

Solution:

Step 1: The question asks which of the listed causes shows the classic ulcer morphology in the esophagus. The contrast intended is between viral causes and a large linear ulcer.

Step 2: CMV oesophagitis (the oesophagitis option) classically produces a single, large, shallow, linear or longitudinal ulcer.

Step 3: This is opposed to herpes simplex esophagitis, which gives multiple small

vesicular, punched-out, well-circumscribed ulcers. So per the key the answer is Oesophagitis (option c).

Step 4: Candida causes whitish plaques and pseudomembranes rather than discrete punched-out ulcers, so it is not the intended answer.

Quick Tip: Compare the single large linear ulcer with multiple punched-out viral ulcers.

162. In Brown-Sequard syndrome, which type of sensation is lost on the same (ipsilateral) side as the cord lesion?

- (A) Pain
- (B) Touch
- (C) Proprioception
- (D) Temperature

Correct Answer: (C) Proprioception

Solution:

Step 1: Brown-Sequard syndrome results from hemisection (damage to one half) of the spinal cord, producing a characteristic dissociated sensory loss.

Step 2: The dorsal column-medial lemniscus pathway carries proprioception, fine touch and vibration. These fibres ascend on the same side of the cord and only cross in the medulla. So below the lesion, proprioception is lost on the same (ipsilateral) side as the injury, along with ipsilateral motor paralysis.

Step 3: The spinothalamic tract carries pain and temperature. These fibres cross within one to two segments of entering the cord, so pain and temperature are lost on the opposite (contralateral) side. This is why Pain (a) and Temperature (d) are wrong for an ipsilateral loss.

Step 4: Hence the sensation lost on the same side as the lesion is proprioception, making option c correct.

Quick Tip: Dorsal columns cross high in the medulla, so position sense is lost on the same side as a cord hemisection.

163. Achondroplasia shows which type of inheritance?

- (A) X-linked recessive
- (B) X-linked dominant
- (C) Autosomal recessive
- (D) Autosomal dominant

Correct Answer: (D) Autosomal dominant

Solution:

Step 1: Achondroplasia is the most common form of short-limbed dwarfism and is caused by a gain-of-function mutation in the FGFR3 gene on chromosome 4.

Step 2: It is inherited in an autosomal dominant pattern, which means a single altered copy of the gene in each cell is enough to cause the disorder. This rules out the autosomal recessive option (c), which would need two altered copies.

Step 3: Because the FGFR3 gene is on an autosome, the condition is not X-linked, so X-linked recessive (a) and X-linked dominant (b) are incorrect.

Step 4: Most cases actually arise from a new (de novo) dominant mutation, often linked to advanced paternal age, but the transmission pattern remains autosomal dominant, making option d correct.

Quick Tip: FGFR3 mutation on an autosome, one copy is enough.

164. Which of the following is included in the MELD (Model for End-stage Liver Disease) score?

- (A) Serum creatinine
- (B) Transaminase
- (C) Albumin
- (D) Alkaline phosphatase

Correct Answer: (A) Serum creatinine

Solution:

Step 1: The MELD score is a validated severity score for chronic liver disease that predicts three-month mortality and is used to prioritise patients on the liver transplant waiting list (adopted by UNOS in 2002).

Step 2: The three laboratory variables in the original MELD score are serum bilirubin, serum creatinine and the INR (prothrombin time). Serum creatinine (a) is therefore correct, as it reflects the renal dysfunction (hepatorenal syndrome) that worsens prognosis in cirrhosis.

Step 3: Transaminases (b) and alkaline phosphatase (d) measure hepatocellular injury and cholestasis but are NOT part of MELD. Albumin (c) is a component of the older Child-Pugh score, not MELD.

Step 4: Hence among the options, only serum creatinine belongs to MELD, so option a is the answer.

Quick Tip: MELD uses bilirubin, INR and creatinine; albumin belongs to Child-Pugh.

165. Infarcts involving which portion of the myocardium most commonly cause a ventricular aneurysm as a post-MI complication?

- (A) Subendocardial
- (B) Anterior transmural
- (C) Posterior transmural
- (D) Inferior wall

Correct Answer: (B) Anterior transmural

Solution:

Step 1: A true left ventricular aneurysm is a late complication of a large transmural myocardial infarction. The infarcted full-thickness wall heals into thin fibrous scar that bulges (dyskinesis) outward during systole.

Step 2: The classic site is the antero-apical wall, which follows occlusion of the left anterior descending (LAD) artery. An anterior transmural infarct is the one that most often produces an apical aneurysm, so option b is correct.

Step 3: A subendocardial infarct (a) spares the outer wall and does not thin the full thickness, so it does not form a true aneurysm. Posterior (c) and inferior (d) wall infarcts are far less commonly associated with aneurysm formation than the anterior wall.

Step 4: The embedded explanation itself states the aneurysm follows antero-apical infarction after LAD occlusion, which corresponds to the anterior transmural option, not the inferior wall.

Quick Tip: True LV aneurysm follows antero-apical (LAD) transmural infarction.

166. Which of the following is a recognised risk factor for Alzheimer's disease?

- (A) Klinefelter syndrome
- (B) Low BP
- (C) Down's syndrome
- (D) None

Correct Answer: (C) Down's syndrome

Solution:

Step 1: Alzheimer's disease is characterised by deposition of beta-amyloid plaques, which are derived from the amyloid precursor protein (APP).

Step 2: The APP gene sits on chromosome 21. People with Down syndrome carry an extra copy of chromosome 21 (trisomy 21) and therefore an extra dose of the APP gene.

Step 3: This gene-dosage effect leads to excess amyloid accumulation in brain cells from an early age, so almost all individuals with Down syndrome develop Alzheimer-type pathology and early-onset dementia. Down's syndrome (c) is thus a clear risk factor.

Step 4: Klinefelter syndrome (a) and low blood pressure (b) are not established Alzheimer's risk factors, so option c is correct and option d (None) is wrong.

Quick Tip: APP gene is on chromosome 21, so trisomy 21 raises amyloid and Alzheimer's risk.

167. A 26-year-old female presents with oral ulcers, photosensitivity and a malar (butterfly) rash on the face that spares the nasolabial folds on both sides. What is the most likely diagnosis?

- (A) Sturge-Weber syndrome
- (B) SLE
- (C) Dermatitis
- (D) Psoriasis

Correct Answer: (B) SLE

Solution:

Step 1: The patient is a young woman, the typical demographic for systemic lupus erythematosus (SLE), an autoimmune connective tissue disease.

Step 2: The triad of oral ulcers, photosensitivity and a malar (butterfly) rash are all American College of Rheumatology classification criteria for SLE. The malar rash characteristically spares the nasolabial folds, exactly as described, which is a strong clue to lupus.

Step 3: Sturge-Weber (a) is a port-wine stain in a trigeminal distribution with seizures, not photosensitivity and ulcers. Dermatitis (c) and psoriasis (d) do not cause oral ulcers or photosensitivity with a nasolabial-sparing malar rash.

Step 4: The constellation fits SLE, so option b is correct.

Quick Tip: Young woman, oral ulcers, photosensitivity, malar rash sparing nasolabial folds equals lupus.

168. What is the most characteristic cardiovascular defect seen in congenital rubella syndrome?

- (A) Pulmonary artery stenosis
- (B) Coarctation of aorta
- (C) Ankylosing spondylitis
- (D) Rheumatic fever

Correct Answer: (A) Pulmonary artery stenosis

Solution:

Step 1: Congenital rubella syndrome results from maternal rubella infection in early pregnancy and has a classic triad of sensorineural deafness, eye defects (cataract, retinopathy, microphthalmia) and congenital heart disease.

Step 2: The cardiovascular lesions most characteristic of rubella are pulmonary artery stenosis (including peripheral pulmonary stenosis) and patent ductus arteriosus (PDA). Among the options given, pulmonary artery stenosis (a) is the answer.

Step 3: Coarctation of the aorta (b) is not the classic rubella lesion. Ankylosing spondylitis (c) is a spondyloarthropathy, not a congenital heart defect at all, and rheumatic fever (d) is an acquired post-streptococcal disease, unrelated to congenital rubella.

Step 4: Hence pulmonary artery stenosis is the most characteristic cardiovascular defect, making option a correct.

Quick Tip: Rubella heart lesions are PDA and pulmonary artery stenosis.

169. Osborn J waves are seen in-

- (A) Hypothermia
- (B) Hyperkalemia
- (C) Hypocalcemia
- (D) Hypokalemia

Correct Answer: (A) Hypothermia

Solution:

Step 1: The Osborn wave (J wave) is a positive deflection seen at the junction of the QRS complex and the ST segment (the J point) on the ECG. **Step 2:** Its classic and most characteristic cause is hypothermia, especially when the core body temperature falls below 32°C (90°F). The wave amplitude tends to increase as the temperature drops further. **Step 3:** So option (a) Hypothermia is correct. **Step 4:** The distractors are electrolyte disorders that produce different ECG patterns - hyperkalemia gives tall peaked T waves, hypokalemia gives U waves and flattened T waves, and hypocalcemia prolongs the QT interval. None of these classically produce a J wave.

Quick Tip: Think of the ECG hump at the J point that appears when a patient is very cold.

170. Alcoholic shows which type of cardiomyopathy-

- (A) Hypertrophic cardiomyopathy
- (B) Dilated cardiomyopathy
- (C) Pericarditis
- (D) Myocarditis

Correct Answer: (B) Dilated cardiomyopathy

Solution:

Step 1: Chronic long-term abuse of alcohol (ethanol) is directly toxic to cardiac muscle and leads to alcoholic cardiomyopathy. **Step 2:** This injury causes the

ventricular chambers to enlarge and the walls to thin and weaken, so the heart dilates and pumps poorly, eventually leading to heart failure. **Step 3:** By structure and behaviour this is a form of dilated cardiomyopathy, so option (b) is correct. **Step 4:** Hypertrophic cardiomyopathy is a genetic disease with thickened walls, while pericarditis and myocarditis are inflammatory conditions and not the cardiomyopathy pattern caused by alcohol.

Quick Tip: Alcohol weakens and stretches the heart muscle rather than thickening it.

171. Which is not related to HIV?

- (A) Primary CNS lymphoma
- (B) Tertiary syphilis
- (C) Oesophageal candidiasis
- (D) None

Correct Answer: (B) Tertiary syphilis

Solution:

Step 1: The question asks which condition is NOT linked to HIV infection. **Step 2:** Primary CNS lymphoma and oesophageal candidiasis are both classic AIDS-defining illnesses that appear when the CD4 count is very low, so they are strongly HIV-related. **Step 3:** Tertiary syphilis develops over many years and its onset depends on the duration of untreated infection and its complications, not on the patient's HIV status. **Step 4:** Therefore option (b) Tertiary syphilis is the answer, since it has no direct relation to being HIV-positive.

Quick Tip: Two options are AIDS-defining opportunistic conditions; pick the one that depends only on infection duration.

172. Essential major blood culture criteria for infective endocarditis.

- (A) Single positive culture of HACEK
- (B) Single positive culture of Coxiella
- (C) Single positive culture of Corynebacterium
- (D) Both a & b

Correct Answer: (A) Single positive culture of HACEK

Solution:

Step 1: The modified Duke criteria define the major microbiological evidence for infective endocarditis. **Step 2:** A single positive blood culture for *Coxiella burnetii* (or an anti-phase I IgG titre > 1:800) qualifies as a major criterion. However, among the listed single-culture options, a positive culture of a HACEK organism is also accepted as a major blood culture criterion because these fastidious organisms typically cause genuine endocarditis. **Step 3:** The printed key marks option (a), single positive culture of HACEK, as the essential major criterion. **Step 4:** *Corynebacterium* is usually a skin contaminant, so a single positive culture for it is not a major criterion, and option (c) is excluded.

Quick Tip: Fastidious, slow-growing oral-flora organisms counted as a major Duke criterion.

173. Respiratory centres are stimulated by-

- (A) Oxygen
- (B) Lactic acid
- (C) Carbon dioxide
- (D) Calcium

Correct Answer: (C) Carbon dioxide

Solution:

Step 1: The respiratory centre lies in the medulla and controls the rate and depth of breathing. **Step 2:** Its most powerful and normal stimulus is a rise in the

arterial concentration of carbon dioxide, which is sensed largely through the resulting change in pH by central chemoreceptors. **Step 3:** When carbon dioxide rises, the centre increases ventilation, blowing off the excess gas and reducing blood acidity, so option (c) is correct. **Step 4:** Oxygen acts as a much weaker (hypoxic) drive through peripheral chemoreceptors, and lactic acid and calcium are not the primary normal stimuli, so they are not the best answer.

Quick Tip: The medulla responds chiefly to the gas it tries to blow off, not to oxygen.

174. Which murmur increases on standing?

- (A) HOCM
- (B) MR
- (C) MS
- (D) VSD

Correct Answer: (A) HOCM

Solution:

Step 1: Standing up and the Valsalva manoeuvre both reduce venous return and therefore reduce left ventricular filling (preload). **Step 2:** In hypertrophic obstructive cardiomyopathy (HOCM) a smaller ventricular volume worsens the outflow obstruction, so the murmur gets louder on standing. **Step 3:** So option (a) HOCM is correct. **Step 4:** In contrast, mitral regurgitation (MR), mitral stenosis (MS) and ventricular septal defect (VSD) murmurs typically get softer when preload falls, because reduced filling and flow lessen the regurgitant or shunt sound, which is why they are not the answer.

Quick Tip: Standing lowers preload; pick the murmur that worsens when the ventricle holds less blood.

175. Most common indication for liver transplant in children-

- (A) Biliary atresia
- (B) Cirrhosis
- (C) Hepatitis
- (D) Drug reactions

Correct Answer: (A) Biliary atresia

Solution:

Step 1: Indications for liver transplantation in infants and children include acute liver failure, chronic liver failure with intractable pruritus, complications of cholestasis and failure to thrive. **Step 2:** Among these, the single most common underlying disease in young children is biliary atresia, a progressive obliteration of the bile ducts that leads to cholestasis and cirrhosis early in life. **Step 3:** So option (a) Biliary atresia is correct. **Step 4:** Cirrhosis, hepatitis and drug reactions can cause liver failure too, but they are not the leading paediatric indication, so they are excluded.

Quick Tip: Think of the infantile bile-duct disease often treated first with a Kasai procedure.

176. Most common type of gallstone is-

- (A) Mixed stones
- (B) Pure cholesterol stones
- (C) Pigment stones
- (D) Calcium bilirubinate

Correct Answer: (A) Mixed stones

Solution:

Step 1: Gallstones are broadly grouped into cholesterol stones, pigment (bilirubin) stones, and mixed stones, which contain both cholesterol and calcium salts.

Step 2: Mixed stones are the most common variety. They make up the large majority of stones (commonly quoted as around 90 percent of cases or the predominant mixed-cholesterol type) and typically contain cholesterol along with calcium salts of phosphate, carbonate, and palmitate, plus proteins.

Step 3: These stones are usually multiple and have faceted surfaces because they grind against one another in the gallbladder.

Step 4: Pure cholesterol stones and pure pigment stones are far less frequent, and calcium bilirubinate is the chemical seen mainly in pigment stones, so none of these is the single most common overall type. The correct answer is mixed stones.

Quick Tip: Think about which stone type blends cholesterol with calcium salts and is usually multiple and faceted.

177. Serpiginous ulcer in the distal esophagus is classically caused by-

- (A) CMV
- (B) Herpes
- (C) Pill
- (D) Corrosive

Correct Answer: (A) CMV

Solution:

Step 1: Infectious esophagitis produces characteristic ulcer patterns that help identify the organism on endoscopy.

Step 2: Cytomegalovirus (CMV) classically causes serpiginous (snake-like, winding) ulcers in the distal esophagus. These can coalesce to form large or giant ulcers.

Step 3: By contrast, herpes simplex virus typically produces small, shallow, well-

circumscribed ulcers (volcano-like) often in the mid esophagus, pill esophagitis causes a localized ulcer at a point of pill lodgement, and corrosive injury causes diffuse circumferential burns rather than serpiginous ulcers.

Step 4: Because the described lesion is serpiginous and distal, the answer is CMV.

Quick Tip: Which viral esophagitis gives winding serpentine ulcers in the lower esophagus that can merge into giant ulcers?

178. Omphalocele is caused by?

- (A) Duplications of intestinal loops
- (B) Abnormal rotation of the intestinal loop
- (C) Failure of gut to return to the body cavity from its physiological herniation
- (D) Reversed rotation of the intestinal loop

Correct Answer: (C) Failure of gut to return to the body cavity from its physiological herniation

Solution:

Step 1: Omphalocele (exomphalos) is herniation of the abdominal viscera through an enlarged umbilical ring, with the sac covered by amnion and peritoneum. The herniated contents may include liver, small and large intestine, stomach, spleen, or bladder.

Step 2: During normal development the midgut undergoes a physiological herniation into the umbilical cord and then returns into the abdominal cavity between roughly the 6th and 10th weeks of gestation.

Step 3: Omphalocele results when this gut fails to return to the body cavity from its physiological herniation, so the viscera remain outside, covered by the membrane.

Step 4: The other choices describe different anomalies: intestinal duplications, malrotation, and reversed rotation are rotation or developmental defects, not the cause of omphalocele. The correct answer is failure of the gut to return from physiological herniation.

Quick Tip: The midgut normally herniates into the cord then comes back. What happens if it never returns?

179. Dohlman procedure is performed for-

- (A) Meckel's diverticulum
- (B) Zenker's diverticulum
- (C) Dermatomyositis
- (D) Menetrier's disease

Correct Answer: (B) Zenker's diverticulum

Solution:

Step 1: A pharyngeal pouch, also called Zenker's diverticulum, is a posterior pulsion diverticulum that herniates through Killian's dehiscence between the cricopharyngeus and the thyropharyngeus muscles.

Step 2: It can be treated by open surgical excision or by endoscopic techniques. The endoscopic Dohlman procedure divides the common wall (party wall) between the pouch and the esophagus, including the cricopharyngeus, to relieve obstruction.

Step 3: The endoscopic Dohlman approach is especially suited to elderly or frail patients because it avoids an open neck operation.

Step 4: Meckel's diverticulum is an ileal anomaly, dermatomyositis is an inflammatory myopathy, and Menetrier's disease is a gastric mucosal disorder, none treated by the Dohlman procedure. The answer is Zenker's diverticulum.

Quick Tip: This endoscopic procedure divides the party wall of a pharyngeal pouch, ideal in the elderly.

180. If a mother is donating a kidney to her son, it is an example of-

- (A) Isograft
- (B) Allograft
- (C) Autograft
- (D) Xenograft

Correct Answer: (B) Allograft

Solution:

Step 1: Grafts are classified by the genetic relationship between donor and recipient.

Step 2: An allograft is a graft between two genetically non-identical members of the same species. A mother and her son are both humans but are not genetically identical, so a kidney transferred between them is an allograft.

Step 3: Because the genotypes differ, the recipient must take anti-rejection or immunosuppressant drugs to stop the body from rejecting the transplanted kidney. Most human organ transplants are allografts.

Step 4: The distractors do not fit: an isograft is between genetically identical individuals (identical twins), an autograft uses the patient's own tissue, and a xenograft is between different species. The answer is allograft.

Quick Tip: Same species, but genetically non-identical donor and recipient - what is that graft called?

181. Uvula vesicae is produced by which prostate lobe?

- (A) Anterior lobe
- (B) Posterior lobe
- (C) Median lobe
- (D) Lateral lobe

Correct Answer: (C) Median lobe

Solution:

Step 1: The trigone of the urinary bladder lies just behind the internal urethral orifice. Immediately behind this orifice there is a slight mucosal elevation called the uvula vesicae (uvula of the urinary bladder).

Step 2: This elevation is produced by the median lobe of the prostate, which lies between the two ejaculatory ducts and the urethra and bulges the overlying bladder mucosa.

Step 3: The median lobe is the part of the prostate that commonly enlarges in benign prostatic hyperplasia, which is why an enlarged median lobe can project into the bladder and obstruct outflow.

Step 4: The anterior, posterior, and lateral lobes do not lie in this midline position behind the internal urethral orifice, so they do not form the uvula vesicae. The answer is the median lobe.

Quick Tip: Which midline prostate lobe lies behind the internal urethral orifice and enlarges in BPH?

182. True about Barrett's esophagus are all of the following except:

- (A) Causes adenocarcinoma
- (B) Patient is usually asymptomatic
- (C) Histology of the lesion shows mucus secreting goblet cells
- (D) Chronic gastroesophageal reflux is a predisposing factor

Correct Answer: (A) Causes adenocarcinoma

Solution:

Step 1: This is a negative (except) question, so the answer is the statement that is NOT true of Barrett's esophagus.

Step 2: Barrett's esophagus is a premalignant metaplastic change in the lining of the distal esophagus, where the normal squamous epithelium is replaced by intestinal-type columnar epithelium. It is a risk factor for, and predisposes to, esophageal adenocarcinoma, but the metaplasia itself does not directly cause the cancer in every patient - so the statement that it causes adenocarcinoma is the

incorrect (except) choice.

Step 3: The other three statements are true: most patients with Barrett's are asymptomatic (the metaplasia itself causes no symptoms), histology shows intestinal metaplasia with mucus-secreting goblet cells, and chronic gastroesophageal reflux disease (GERD) is the main predisposing factor.

Step 4: Therefore the false statement, and the correct answer to this except question, is that Barrett's esophagus causes adenocarcinoma.

Quick Tip: It is premalignant and raises cancer risk, but is saying it directly causes adenocarcinoma accurate?



183. Parathyroid autoimplantation takes place in which of the muscle?

- (A) Biceps
- (B) Triceps
- (C) Brachioradialis
- (D) Sartorius

Correct Answer: (C) Brachioradialis

Solution:

Step 1: Total parathyroidectomy removes all four parathyroid glands from the neck. To avoid permanent hypoparathyroidism, a small amount of parathyroid tissue is autografted (reimplanted) into a muscle pocket.

Step 2: The morcellated parathyroid tissue is placed into a pocket created in the brachioradialis muscle of the forearm. This site is chosen because it is easily accessible, well vascularised, and any future graft hyperfunction can be removed under local anaesthesia.

Step 3: Hence the correct answer is the brachioradialis. Biceps, triceps and sartorius are not the standard reimplantation sites, so they are wrong.

Quick Tip: Think of the forearm muscle used as a host for parathyroid autograft.

184. Bell's palsy is associated with the lesion in which of the nerve?

- (A) 11th cranial nerve
- (B) 7th cranial nerve
- (C) 9th cranial nerve
- (D) 3rd cranial nerve

Correct Answer: (B) 7th cranial nerve

Solution:

Step 1: Bell's palsy is an acute, idiopathic, lower motor neuron paralysis of the facial nerve.

Step 2: The facial nerve is the 7th cranial nerve (VII). It supplies the muscles of facial expression, so its malfunction causes inability to control movement on the affected side of the face.

Step 3: Therefore the lesion is in the 7th cranial nerve. The 11th (accessory), 9th (glossopharyngeal) and 3rd (oculomotor) nerves do not supply facial expression muscles, so they are wrong.

Quick Tip: Which cranial nerve controls the muscles of facial expression?

185. Cushing ulcer is seen in case of-

- (A) Burns
- (B) Head injury
- (C) Cell necrosis
- (D) Stress

Correct Answer: (B) Head injury

Solution:

Step 1: Cushing ulcers are gastric (stress) ulcers associated with raised intracranial pressure, classically from a brain tumour or head injury. The condition is also called von Rokitansky-Cushing syndrome.

Step 2: Mechanism - increased intracranial pressure directly stimulates the vagal nuclei. The resulting vagal overactivity drives gastric acid hypersecretion, producing single, deep ulcers prone to perforation.

Step 3: Hence head injury is correct. Burn-related stress ulcers are Curling ulcers (a distractor), and "cell necrosis" and "stress" are too non-specific to be the classic association.

Quick Tip: Raised intracranial pressure ulcer - not the burns one.

186. Gasless abdomen seen in-

- (A) Ulcerative colitis
- (B) Acute pancreatitis
- (C) Intussusception
- (D) Necrotising enterocolitis

Correct Answer: (B) Acute pancreatitis

Solution:

Step 1: A gasless abdomen is a plain radiograph showing very little or no bowel gas. It occurs when fluid replaces gas in the gut, often due to excess vomiting or fluid-filled intestine.

Step 2: Acute pancreatitis classically produces this picture. Its plain-film signs include the renal halo sign, gasless abdomen, ground-glass appearance, colon cut-off sign and sentinel loop.

Step 3: Therefore acute pancreatitis is correct. Ulcerative colitis, intussusception and necrotising enterocolitis show abnormal gas patterns (such as toxic megacolon gas, target sign, or pneumatosis intestinalis) rather than a gasless abdomen.

Quick Tip: Which pancreatic emergency fills the gut with fluid, not gas?

187. Bidextrous grip is seen at what age?

- (A) 4 months
- (B) 5 months
- (C) 6 months
- (D) 7 months

Correct Answer: (A) 4 months

Solution:

Step 1: Fine motor milestones are tracked by the way an infant reaches for and grasps objects.

Step 2: Bidextrous reach (using both hands together to grasp) appears at 4 months. This is followed by unidextrous reach at 6 months, immature pincer grasp at 9 months, and mature pincer grasp at 12 months.

Step 3: Hence 4 months is correct. 5, 6 and 7 months do not correspond to bidextrous reach; 6 months is the age for unidextrous (one-handed) reach.

Quick Tip: Both-hand reach precedes one-hand reach - what is the earlier age?

188. Which vaccine to be given every year?

- (A) Hepatitis A
- (B) Hepatitis B
- (C) Influenza
- (D) Chicken pox

Correct Answer: (C) Influenza

Solution:

Step 1: The influenza virus changes its surface antigens frequently (antigenic drift), so the vaccine is reformulated each season.

Step 2: Because of this, the influenza (flu) vaccine is recommended annually for everyone 6 months and older. Children under 9 receiving it for the first time need two doses a month apart; thereafter a single yearly dose suffices.

Step 3: Therefore influenza is the once-a-year vaccine. Hepatitis A, hepatitis B and varicella (chicken pox) are given as fixed multi-dose primary schedules, not annually.

Quick Tip: Which vaccine targets a virus that drifts every season?

189. APGAR score 3 at 1 minute indicates:

- (A) Mildly depressed
- (B) Further resuscitation not needed
- (C) Severely depressed
- (D) Normal

Correct Answer: (C) Severely depressed

Solution:

Step 1: The APGAR score (0-10) grades a newborn at 1 and 5 minutes on Appearance, Pulse, Grimace, Activity and Respiration.

Step 2: Interpretation - 7 and above is normal, 4 to 6 is fairly low (mildly to moderately depressed), and 3 or below is critically low (severely depressed) needing immediate resuscitation.

Step 3: A score of 3 falls in the lowest band, so it indicates a severely depressed neonate. "Mildly depressed" matches 4-6, "normal" matches 7-10, and "further resuscitation not needed" is false at this score, so they are wrong.

Quick Tip: Score 3 or below is the lowest APGAR band - what does it mean?

190. Severe acute malnutrition as per WHO criteria is defined as:

- (A) Weight for age less than median plus -2 SD
- (B) Weight for height less than median plus 2 SD
- (C) Weight for age less than median plus 3 SD
- (D) Weight for height less than median minus -3 SD

Correct Answer: (D) Weight for height less than median minus -3 SD

Solution:

Step 1: The WHO defines severe acute malnutrition (SAM) using anthropometry against the WHO growth standards. The key indicator is weight-for-height (wasting), not weight-for-age.

Step 2: SAM is present when the weight-for-height (or weight-for-length) is below -3 SD (Z-score) of the median of the WHO growth standards. It may also be defined by visible severe wasting, mid-upper arm circumference < 115 mm, or the presence of bilateral pitting (nutritional) oedema.

Step 3: Option (d) matches this: weight-for-height less than median minus -3 SD. Options (a) and (c) use weight-for-age, which reflects underweight, not acute malnutrition. Option (b) uses a positive (+2 SD) cut-off, which indicates overweight, not malnutrition.

Step 4: Therefore the correct answer is (d).

Quick Tip: SAM is graded by wasting (weight-for-height), with the severe cut-off below -3 SD.

191. Where do you look for pre-ductal oxygen saturation in a patent ductus arteriosus (PDA) in a 3-minute-old born infant?

- (A) Fetal left upper limb
- (B) Fetal left lower limb
- (C) Fetal right upper limb
- (D) Fetal right lower limb

Correct Answer: (C) Fetal right upper limb

Solution:

Step 1: The ductus arteriosus connects the pulmonary artery to the aorta distal to the origin of the right subclavian artery (and the left common carotid). Blood reaching the right arm leaves the aorta proximal to the ductus, so it is pre-ductal.

Step 2: Pre-ductal oxygen saturation is therefore measured in the right upper limb (right hand/arm), which receives blood before any mixing through the ductus.

Step 3: Post-ductal saturation is measured in either lower limb, which receives blood after the ductus. A pre-ductal (right arm) saturation at least 3 percent higher than the post-ductal (lower limb) value indicates right-to-left ductal shunting.

Step 4: Hence the right upper limb is the site for pre-ductal SpO₂, making option (c) correct. The left arm can be ambiguous (the left subclavian arises close to the ductus), so the right arm is the standard pre-ductal site.

Quick Tip: Pre-ductal blood goes to the right arm because it leaves the aorta before the duct.

192. Which of the following is true about Fragile X syndrome?

- (A) Triple nucleotide CAG sequence mutation
- (B) 10% female carriers are mentally retarded
- (C) Males have IQ 20-40
- (D) Gain of function mutation

Correct Answer: (C) Males have IQ 20-40

Solution:

Step 1: Fragile X syndrome arises from a fragile site on the X chromosome (Xq27.3) due to expansion of a CGG trinucleotide repeat in the FMR1 gene. It is the commonest inherited cause of intellectual disability in males.

Step 2: When the repeat fully expands, the FMR1 gene is silenced, so there is a loss of function (no FMRP protein), not a gain of function. This rules out option (d).

Step 3: The repeat is CGG, not CAG, so option (a) is wrong (CAG expansions cause Huntington disease and several spinocerebellar ataxias).

Step 4: Affected males with complete FMR1 silencing have severe intellectual disability with an average IQ of about 40 (range roughly 20-40). This matches option (c). The carrier-female figure in option (b) is not the standard 10 percent (about 20 percent of premutation carrier women develop primary ovarian insufficiency, and only a proportion of full-mutation carrier females are affected), so (c) is the best answer.

Quick Tip: It is a CGG repeat loss-of-function disorder; fully affected males have IQ around 40.

193. Foot drop is caused by injury to which nerve?

- (A) Femoral nerve
- (B) Tibial nerve
- (C) Common peroneal nerve
- (D) Sciatic nerve

Correct Answer: (C) Common peroneal nerve

Solution:

Step 1: Dorsiflexion of the foot (lifting the front of the foot) is performed by the muscles of the anterior compartment of the leg (tibialis anterior, extensor digitorum longus, extensor hallucis longus), which are supplied by the deep

peroneal (fibular) nerve, a branch of the common peroneal nerve.

Step 2: The common peroneal nerve winds around the neck of the fibula, where it is superficial and easily compressed or injured (fibular neck fracture, tight cast, prolonged leg crossing, hip or knee surgery).

Step 3: Injury here paralyses the dorsiflexors and evertors, so the foot drops and the patient develops a high-stepping gait. This makes option (c) correct.

Step 4: The tibial nerve supplies plantar flexors (loss causes a different deficit), the femoral nerve supplies the quadriceps (knee extension), and a complete sciatic injury is proximal and far less common as an isolated cause, so the most specific and common answer is the common peroneal nerve.

Quick Tip: The dorsiflexors are supplied via the common peroneal nerve at the fibular neck.

194. Which part of a scaphoid fracture is most susceptible to avascular necrosis?

- (A) Distal 1/3rd
- (B) Middle 1/3rd
- (C) Proximal 1/3rd
- (D) Scaphoid tubercle

Correct Answer: (C) Proximal 1/3rd

Solution:

Step 1: The scaphoid receives its blood supply mainly from branches of the radial artery that enter through the distal pole and run in a retrograde (distal-to-proximal) direction to supply the proximal pole.

Step 2: Because the proximal pole has no separate direct blood supply and depends on this retrograde flow, a fracture proximally cuts off the proximal fragment from its blood supply.

Step 3: Therefore proximal-pole (proximal third) fractures carry the highest risk of avascular necrosis and non-union. This makes option (c) correct.

Step 4: Although waist fractures are the most common (70-80 percent), they are

not the most prone to AVN; the more proximal the fracture, the greater the risk to the proximal fragment's vascularity. Distal fractures and the tubercle have a good blood supply and rarely undergo AVN.

Quick Tip: Retrograde blood supply makes the proximal pole most prone to AVN.

195. Pott's puffy tumor is best described as:

- (A) Subperiosteal abscess of frontal bone
- (B) Subperiosteal abscess of ethmoid bone
- (C) Mucocele of frontal bone
- (D) Mucocele of ethmoid bone

Correct Answer: (A) Subperiosteal abscess of frontal bone

Solution:

Step 1: Pott's puffy tumor, first described by Sir Percivall Pott in 1760, is a subperiosteal abscess of the frontal bone associated with underlying osteomyelitis.

Step 2: It usually complicates frontal sinusitis (or trauma), with infection spreading either directly or haematogenously to the frontal bone, producing a doughy, tender swelling over the forehead, which gives the lesion its name.

Step 3: Inward spread can cause serious intracranial complications such as epidural abscess, subdural empyema, brain abscess, and cortical vein thrombosis.

Step 4: The lesion involves the frontal bone, not the ethmoid, and it is an abscess with osteomyelitis, not a mucocele. Hence option (a) is correct.

Quick Tip: It is a subperiosteal abscess over an osteomyelitic frontal bone from frontal sinusitis.

196. Scissor gait is seen in which of the following conditions?

- (A) Polio
- (B) Cerebral palsy
- (C) Hyperbilirubinemia
- (D) Hyponatremia

Correct Answer: (B) Cerebral palsy

Solution:

Step 1: Scissor gait is a spastic gait in which the legs cross over each other (adduction at the hips) with each step, due to increased tone in the hip adductors.

Step 2: It results from an upper motor neuron lesion that produces spasticity. The classic cause is spastic (especially diplegic) cerebral palsy.

Step 3: Polio causes a flaccid (lower motor neuron) paralysis, not spasticity, so it produces a different gait. Hyponatremia and uncomplicated hyperbilirubinemia do not produce a chronic spastic scissoring gait.

Step 4: Therefore the correct answer is cerebral palsy, option (b).

Quick Tip: Crossing legs from adductor spasticity points to an UMN lesion - cerebral palsy.



197.



Which statement is incorrect about the pathology shown in the image?

- (A) Tumor arises from epiphyseal to metaphyseal region
- (B) Tumor has distinct margin
- (C) Eccentric lesion
- (D) Chemotherapy is the treatment of choice

Correct Answer: (D) Chemotherapy is the treatment of choice

Solution:

Step 1: The image shows a Giant cell tumor (GCT) of bone, also called osteoclastoma. It is a relatively common, usually benign bone tumor.

Step 2: The true radiographic features of GCT are: it arises in the metaphysis and extends into the epiphysis up to the articular surface (so options a and the epiphyseal-metaphyseal location are correct), it has a well-defined non-sclerotic margin (option b correct), and it is an eccentric lesion (option c correct).

Step 3: The treatment of GCT is surgical - curettage and packing with bone chips or polymethylmethacrylate (PMMA), not chemotherapy. Chemotherapy is not the treatment of choice.

Step 4: Therefore the incorrect statement is option d, making it the answer to a "which is incorrect" question.

Quick Tip: Giant cell tumor is treated surgically by curettage, not by chemotherapy.

198.



A 65 year old lady presents with backache. Based on the following radiograph of the spine shown in the image, what should be the most likely diagnosis?

- (A) Osteoporosis
- (B) Spondylolisthesis
- (C) Spondylolysis
- (D) Discitis

Correct Answer: (B) Spondylolisthesis

Solution:

Step 1: The radiograph shows anterior subluxation of one lumbar vertebra over the one below it - the classic appearance of spondylolisthesis (here L5 slipping anterior to S1).

Step 2: Spondylolisthesis is forward slippage of a lumbar vertebra, most often at L3-L4, L4-L5 or L5-S1. It results from a defect in the pars interarticularis (spondylolysis).

Step 3: In older patients (over 60) it commonly occurs with osteoarthritis and

minimal trauma, fitting this 65 year old lady with backache.

Step 4: Spondylolysis (option c) is only the pars defect without slippage, osteoporosis (a) causes diffuse demineralisation, and discitis (d) is disc-space infection - none match a visible vertebral slip, so spondylolisthesis is correct.

Quick Tip: A vertebra slipping forward on the one below indicates spondylolisthesis.

199. Which of the following attitude will be seen in a patient with posterior dislocation of the hip?

- (A) Flexion, Abduction, Internal rotation
- (B) Flexion, Adduction, Internal rotation
- (C) Flexion, Abduction, External rotation
- (D) Flexion, Adduction, External rotation

Correct Answer: (B) Flexion, Adduction, Internal rotation

Solution:

Step 1: Hip dislocations are most often posterior, occasionally anterior, and sometimes central through the acetabulum.

Step 2: In a posterior dislocation, the hip is held flexed, adducted and internally rotated, and the limb appears shortened.

Step 3: This contrasts with an anterior dislocation, where the hip is flexed, abducted and externally rotated. The opposite rotation and abduction help distinguish the two.

Step 4: The combination of flexion, adduction and internal rotation matches option b.

Quick Tip: Posterior hip dislocation - limb is flexed, adducted, internally rotated and shortened.

200. Which of the following is true about tenosynovitis of the finger?

- (A) Fingers held in mild extension / extension deformity at the involved fingers
- (B) Tenosynovitis of little finger will spread to thumb rather than ring finger
- (C) With involvement of little finger the infection can spread to the index finger
- (D) Treatment is conservative

Correct Answer: (B) Tenosynovitis of little finger will spread to thumb rather than ring finger

Solution:

Step 1: Pyogenic flexor tenosynovitis is infection of the synovial sheath surrounding a flexor tendon.

Step 2: The flexor sheath of the thumb continues as the radial bursa, and the flexor sheath of the little finger continues as the ulnar bursa. These two bursae often communicate at the wrist via the space of Parona.

Step 3: Because of this connection, infection of the little finger sheath can track to the thumb (and vice versa), producing a "horseshoe" abscess. So option b is true.

Step 4: Option a is wrong - the digit is held in slight flexion (Kanavel sign), not extension. Spread to the index finger (c) is not the typical pathway, and treatment is usually surgical drainage with antibiotics, not conservative, so d is wrong.

Quick Tip: Radial and ulnar bursae communicate, so little finger infection reaches the thumb (horseshoe abscess).

201. Most common joint involved in septic arthritis is?

- (A) Knee
- (B) Hip
- (C) Shoulder
- (D) Elbow

Correct Answer: (A) Knee

Solution:

Step 1: Septic (acute suppurative) arthritis is a pyogenic bacterial infection of a joint, usually reaching the joint by haematogenous spread from a distant site.

Step 2: It is more common in children, who present toxic with fever, severe pain, swelling and redness, with the joint held in the position of ease.

Step 3: Among all joints, the knee is the most commonly affected joint.

Step 4: The hip, shoulder and elbow are also involved but less frequently than the knee, so the answer is knee.

Quick Tip: The knee is the most commonly affected joint in septic arthritis.

202. In painful arc syndrome, pain is felt during?

- (A) Mid abduction
- (B) Initial abduction
- (C) Full range of abduction
- (D) Overhead abduction

Correct Answer: (A) Mid abduction

Solution:

Step 1: Painful arc syndrome, also called impingement or supraspinatus syndrome, is shoulder pain occurring during a specific arc of abduction.

Step 2: The pain is felt between about 60 degrees and 120 degrees of abduction - that is, during mid abduction, when the rotator cuff is compressed under the acromion.

Step 3: It results from supraspinatus tendinitis or minor tears, calcification, subacromial bursitis or a fractured greater tuberosity narrowing the subacromial space.

Step 4: Because pain occurs in the middle arc and not at the start, end, or overhead, the answer is mid abduction.

Quick Tip: Pain in the 60-120 degree mid arc of abduction defines painful arc syndrome.

203. Which of the following is false as a physiological change in pregnancy?

- (A) Increase cardiac output
- (B) Increase total protein
- (C) Increase residual volume
- (D) Increase GFR

Correct Answer: (C) Increase residual volume

Solution:

Step 1: The question asks which statement is FALSE about the normal physiological changes of pregnancy.

Step 2: During pregnancy the respiratory rate is essentially unchanged, but tidal volume and resting minute ventilation rise. The diaphragm is pushed up by the enlarging uterus, which DECREASES the functional residual capacity and the residual volume.

Step 3: So saying residual volume increases is false - it actually decreases. That makes option c the answer.

Step 4: The other statements are true changes of pregnancy: cardiac output increases, GFR increases, and plasma proteins shift, so they are not the false statement.

Quick Tip: The elevated diaphragm in pregnancy lowers residual volume, so its increase is false.

204. Overt gestational diabetes is defined as blood glucose more than _?

- (A) >200 mg/dl
- (B) >126 mg/dl
- (C) >100 mg/dl
- (D) >180 mg/dl

Correct Answer: (B) >126 mg/dl

Solution:

Step 1: Recall the diagnostic thresholds for hyperglycaemia in pregnancy. A fasting plasma glucose of 92 to 125 mg/dl is labelled as gestational diabetes mellitus (GDM).

Step 2: When the fasting plasma glucose reaches or exceeds 126 mg/dl, the degree of hyperglycaemia is in the diabetic range and the patient is classified as having overt (pre-existing or undiagnosed) diabetes rather than simple GDM.

Step 3: Therefore overt gestational diabetes is defined by fasting blood glucose >126 mg/dl, making option b correct.

Step 4: Values such as >100, >180 or >200 mg/dl do not match the accepted fasting cut-off for overt diabetes, so options a, c and d are wrong.

Quick Tip: Think of the same fasting cut-off used to diagnose diabetes outside pregnancy.

205. MgSO₄ has no role in prevention of -

- (A) Seizures in severe pre-eclampsia
- (B) Recurrent seizures in eclampsia
- (C) RDS in premature baby
- (D) Bradycardia

Correct Answer: (C) RDS in premature baby

Solution:

Step 1: Magnesium sulfate is principally an anticonvulsant in obstetrics. It is given to prevent the first seizure in severe pre-eclampsia and to control or prevent recurrent seizures in eclampsia.

Step 2: It also acts as a tocolytic, relaxing the uterus to delay premature labour, and antenatal MgSO₄ is recognised for fetal neuroprotection - but it does not prevent respiratory distress syndrome (RDS).

Step 3: RDS results from surfactant deficiency in the premature lung; it is prevented by antenatal corticosteroids (such as betamethasone), not by magnesium. So option c is the correct answer to "no role."

Step 4: Options a and b are established MgSO₄ indications and option d (bradycardia) is unrelated, so they are not the "no role" choice.

Quick Tip: Which condition is prevented by steroids, not magnesium?

206. Green frothy vaginal discharge is produced by -

- (A) Herpes simplex
- (B) Candida albicans
- (C) Trichomonas vaginalis
- (D) Normal vaginal flora

Correct Answer: (C) Trichomonas vaginalis

Solution:

Step 1: Recognise the classic discharge pattern. A frothy, profuse, greenish vaginal discharge is the hallmark of trichomoniasis, a sexually transmitted infection of the child-bearing age group.

Step 2: Trichomonas vaginalis also produces multiple punctate "strawberry spots" on the vaginal vault and cervix, and culture is about 98% reliable for diagnosis.

Step 3: Candida albicans causes a thick, white, curdy discharge with itching, not a green frothy one, so option b is wrong. Herpes simplex causes painful genital

ulcers, and normal flora gives no abnormal discharge, ruling out options a and d.

Step 4: Therefore the green frothy discharge points to *Trichomonas vaginalis*.

Quick Tip: Frothy green discharge plus strawberry cervix is a classic STI sign.

207. 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) DVT

Solution:

Step 1: Combined oral contraceptive pills (OCPs) carry an oestrogen-driven pro-thrombotic effect, so any condition with an existing or strong tendency to clot is an absolute contraindication.

Step 2: Deep vein thrombosis (DVT) is a venous thromboembolic event; giving combined OCPs would sharply raise the risk of further clots, so DVT is an absolute contraindication (option b).

Step 3: Other absolute contraindications include pre-existing cardiovascular disease, familial thrombophilia (such as factor V Leiden), severe obesity with hypercholesterolaemia, smokers over age 40, liver tumours, severe cirrhosis, and known or suspected breast cancer.

Step 4: Chronic renal disease, diabetes mellitus (without vascular complications) and a history of amenorrhoea are relative concerns or unrelated, not absolute contraindications, so options a, c and d are wrong.

Quick Tip: Oestrogen raises clotting risk - which option is itself a clot?

208. Which of the following statement is correct about acute fatty liver of pregnancy?

- (A) Occurs in 1 in 1000 pregnancy
- (B) Mostly seen in last trimester
- (C) Common if female fetus is present
- (D) May be associated with decreased uric acid

Correct Answer: (B) Mostly seen in last trimester

Solution:

Step 1: Acute fatty liver of pregnancy (AFLP) is a rare, serious third-trimester complication. It most commonly presents in the last (3rd) trimester, so option b is the correct statement.

Step 2: It is more often seen with a male fetus, not a female fetus, which makes option c incorrect.

Step 3: AFLP is rare - far less frequent than 1 in 1000, so the stated incidence in option a is not the accepted figure.

Step 4: AFLP is associated with raised, not decreased, uric acid, so option d is wrong. Hence the single correct statement is that it is mostly seen in the last trimester.

Quick Tip: AFLP is a late-pregnancy, male-fetus, high-uric-acid disorder.

209. Female with 41 weeks gestation confirmed by radiological investigation, very sure of her LMP, no uterine contractions, no effacement and no dilatation. What should not be done?

- (A) Intracervical Foley's
- (B) PGE1 tab
- (C) PGE2 gel
- (D) PGF2alpha

Correct Answer: (D) PGF2alpha

Solution:

Step 1: This is a post-term pregnancy with an unfavourable, closed cervix, so the clinical task is cervical ripening and induction of labour.

Step 2: Accepted ripening or induction methods here include an intracervical Foley's catheter (mechanical), misoprostol (PGE1) tablets, and dinoprostone (PGE2) gel - all valid, so options a, b and c can be done.

Step 3: PGF2-alpha behaves as a uterine relaxant in this context and is not used to induce labour, so it should not be given. Option d is the action that should not be done.

Step 4: Hence the correct answer is PGF2alpha.

Quick Tip: Three options ripen or induce - one acts as a uterine relaxant.

210. Double decidua sign is seen during -

- (A) 1st trimester
- (B) 2nd early trimester
- (C) 2nd late trimester
- (D) 3rd trimester

Correct Answer: (A) 1st trimester

Solution:

Step 1: The double decidual sac sign (DDSS) is an early first-trimester ultrasound feature used to confirm an intrauterine pregnancy before the yolk sac or embryo can be seen.

Step 2: It appears as two echogenic rings around the hypoechoic gestational sac. The inner ring is the chorion with embryonic disc and decidua capsularis; the outer ring is the decidua parietalis.

Step 3: Because it is an early-gestation finding tied to the appearance of the gestational sac, it is seen in the 1st trimester, making option a correct.

Step 4: The 2nd and 3rd trimester options are wrong because by then the pregnancy is well past the gestational-sac stage where this sign is assessed.

Quick Tip: It confirms early intrauterine pregnancy before the yolk sac appears.



211. A 60 year old woman comes with 3rd degree uterine prolapse. What will be the management?

- (A) Vaginal hysterectomy with pelvic floor repair
- (B) Pelvic floor repair
- (C) Sacrospinous fixation
- (D) Pessary

Correct Answer: (A) Vaginal hysterectomy with pelvic floor repair

Solution:

Step 1: Assess the patient. She is a 60 year old postmenopausal woman with 3rd degree (complete) uterine prolapse. At this age childbearing is complete and the uterus has no further reproductive role.

Step 2: Choose the definitive procedure. Severe (3rd degree) prolapse in an elderly woman who has finished childbearing is best treated by removing the uterus and supporting the vaginal vault. Vaginal hysterectomy combined with pelvic floor repair (anterior and posterior colporrhaphy) corrects the descent and restores pelvic support in one operation.

Step 3: Why the other options are wrong. Pelvic floor repair alone leaves the prolapsing uterus in place and recurrence is high. Sacrospinous fixation is mainly for vault prolapse, not the primary choice here. A pessary is a conservative measure reserved for women unfit for surgery or those who decline it, not the definitive management for an otherwise fit elderly woman with marked prolapse.

Quick Tip: Postmenopausal woman, family complete, severe descent - remove the uterus and rebuild the floor.

212. Day 20 of the menstrual cycle falls under which phase?

- (A) Menstrual phase
- (B) Follicular phase
- (C) Ovulation phase
- (D) Luteal phase

Correct Answer: (D) Luteal phase

Solution:

Step 1: Recall the phases of a standard 28 day cycle. Menstrual phase is day 1 to 5, follicular phase day 1 to 13, ovulation around day 14, and luteal phase day 15 to 28.

Step 2: Place day 20. Day 20 is well after ovulation (day 14) and before the next menses, so it lies within day 15 to 28, the luteal phase.

Step 3: Why the others are wrong. The menstrual and follicular phases are over by day 13, and ovulation is a single day around day 14, so none of those include day 20. Hence the luteal phase is correct.

Quick Tip: Ovulation is day 14; anything from day 15 to 28 is the luteal phase.

213. Chromosome number of a partial hydatidiform mole is-

- (A) 46 XX
- (B) 45 XO
- (C) 46 XXY
- (D) 69 XXX

Correct Answer: (D) 69 XXX

Solution:

Step 1: Recall the genetics. A partial hydatidiform mole is a triploid conception, usually formed when one ovum is fertilised by two sperms (dispermy). This gives 69 chromosomes instead of the normal 46.

Step 2: Identify the matching karyotype. Triploid karyotypes are 69,XXX, 69,XXY or 69,XXY. Among the options, only 69 XXX fits a partial mole.

Step 3: Why the others are wrong. 46 XX is the diploid karyotype of a complete mole, 45 XO is Turner syndrome, and 46 XXY is Klinefelter syndrome - none of these represent a partial mole. Hence 69 XXX is correct.

Quick Tip: Partial mole = triploid; total of 69 chromosomes (e.g. 69 XXX).

214. Vulvar atrophy and itching are treated by-

- (A) Estrogen ointment
- (B) Antihistamines
- (C) Tamoxifen
- (D) None

Correct Answer: (A) Estrogen ointment

Solution:

Step 1: Identify the cause. Vulvar and vaginal atrophy with itching (atrophic vaginitis) occurs in postmenopausal women because falling estrogen makes the genital tissue thin, dry and easily irritated.

Step 2: Choose the treatment that reverses the cause. Replacing estrogen locally restores the epithelium. Topical estrogen cream, vaginal tablets or an estrogen-releasing ring relieve the dryness and itching.

Step 3: Why the others are wrong. Antihistamines only blunt itch and do not correct the atrophy. Tamoxifen is an anti-estrogen used in breast cancer and would worsen, not help, atrophic changes. Hence estrogen ointment is correct.

Quick Tip: Postmenopausal atrophy is estrogen lack - replace estrogen topically.

215. Premature ejaculation is a part of which phase of sexual disorders?

- (A) Excitement phase
- (B) Plateau phase
- (C) Orgasm phase
- (D) Refractory phase

Correct Answer: (C) Orgasm phase

Solution:

Step 1: Recall the sexual response cycle: desire, arousal/excitement, orgasm (with ejaculation in the male) and resolution.

Step 2: Place premature ejaculation. Ejaculation is the event of the orgasm phase. Premature ejaculation is a disorder of ejaculation, so it is an orgasm-phase dysfunction.

Step 3: Why the others are wrong. Erectile dysfunction belongs to the excitement/arousal phase, the plateau is sustained arousal before orgasm, and the refractory period follows orgasm. Since the abnormality is the timing of ejaculation itself, it falls in the orgasm phase.

Quick Tip: Ejaculation happens at orgasm - so premature ejaculation is an orgasm-phase disorder.

216. Nuchal translucency on USG can be detected at how many weeks of gestation?

- (A) 11-13 weeks
- (B) 18-20 weeks
- (C) 8-10 weeks
- (D) 20-22 weeks

Correct Answer: (A) 11-13 weeks

Solution:

Step 1: Define nuchal translucency. It is the normal fluid-filled subcutaneous space at the back of the fetal neck, measured by ultrasound as a first-trimester aneuploidy screen.

Step 2: Recall the timing window. It is reliably measured in the late first to early second trimester, specifically about 11 weeks 3 days to 13 weeks 6 days, i.e. 11-13 weeks.

Step 3: Why the others are wrong. At 8-10 weeks the measurement is unreliable, and 18-20 or 20-22 weeks are too late - the nuchal space has resolved and the scan is then used for anomaly assessment, not NT. Hence 11-13 weeks is correct.

Quick Tip: NT is a first-trimester screen, measured at about 11 to 13 weeks 6 days.



217. First line of treatment of mastitis in a lactating mother is-

- (A) Dicloxacillin
- (B) Cefazolin
- (C) Ceftriaxone
- (D) Ampicillin

Correct Answer: (A) Dicloxacillin

Solution:

Step 1: Identify the organism. Lactational mastitis is most often caused by *Staphylococcus aureus*, which produces beta-lactamase and is therefore resistant to plain penicillins.

Step 2: Choose the right drug. The beta-lactamase-resistant penicillins - dicloxacillin (or cloxacillin/flucloxacillin) - are the recommended first line because they cover penicillinase-producing staphylococci and are safe in breastfeeding.

Step 3: Why the others are wrong. Ampicillin is destroyed by staphylococcal

beta-lactamase, so it is ineffective. Cefazolin and ceftriaxone are cephalosporins kept as alternatives, not the first choice. Hence dicloxacillin is correct.

Quick Tip: Mastitis is staphylococcal - use a penicillinase-resistant penicillin like dicloxacillin.



218. A patient with recurrent abortion is diagnosed to have antiphospholipid syndrome. What will be the treatment?

- (A) Aspirin only
- (B) Aspirin + Low molecular weight Heparin
- (C) Aspirin + Low molecular weight Heparin + Prednisolone
- (D) No Treatment

Correct Answer: (B) Aspirin + Low molecular weight Heparin

Solution:

Step 1: Antiphospholipid syndrome (APS) is an autoimmune thrombophilia in which antiphospholipid antibodies cause placental thrombosis and recurrent pregnancy loss. The goal of therapy is to prevent these thrombotic events and improve live birth rates.

Step 2: The recommended regimen for women with recurrent pregnancy loss due to APS is the combination of low-dose aspirin with heparin (standard or low molecular weight heparin). Prospective controlled trials in pregnant patients with antiphospholipid antibodies and prior fetal loss show that this combination significantly increases the proportion of live births.

Step 3: Aspirin alone (option a) is less effective than the combination. Adding prednisolone (option c) is not standard and raises maternal risks without added benefit. No treatment (option d) leaves the patient at high risk of further loss. Hence aspirin plus low molecular weight heparin is the preferred therapy.

Quick Tip: Think antiplatelet plus anticoagulant - the classic APS pregnancy regimen.

219. Gestational trophoblastic neoplasm does not include-

- (A) Choriocarcinoma
- (B) Placental site trophoblastic tumour
- (C) Invasive mole
- (D) Partial mole

Correct Answer: (D) Partial mole

Solution:

Step 1: Gestational trophoblastic neoplasia (GTN) refers to the malignant or persistent forms of gestational trophoblastic disease that follow any pregnancy event.

Step 2: The recognised gestational trophoblastic neoplasms are invasive mole, choriocarcinoma, placental-site trophoblastic tumour, and epithelioid trophoblastic tumour. These all behave as neoplastic conditions.

Step 3: A partial hydatidiform mole is a form of molar pregnancy (gestational trophoblastic disease), not a neoplasm in the GTN category. Among the given options, the partial mole is the entity that does not belong to gestational trophoblastic neoplasm, so it is the correct answer.

Quick Tip: One of these is a molar pregnancy, not a trophoblastic neoplasm.

220. Which vaccine is contraindicated in pregnancy:

- (A) Chicken pox
- (B) Rabies
- (C) Tet toxoid
- (D) Hepatitis B

Correct Answer: (A) Chicken pox

Solution:

Step 1: The guiding rule is that live viral or live bacterial vaccines are contraindicated in pregnancy because of the theoretical risk of fetal infection from the attenuated organism.

Step 2: The chicken pox (varicella) vaccine is a live attenuated vaccine, so it is contraindicated in pregnancy. Other live vaccines to avoid include measles, mumps, rubella, BCG, oral polio, and yellow fever.

Step 3: Rabies vaccine and hepatitis B vaccine are inactivated, and tetanus toxoid is a toxoid - all three are safe and in fact tetanus toxoid is routinely given in pregnancy. Therefore the contraindicated vaccine among the options is chicken pox.

Quick Tip: Live attenuated vaccines are avoided in pregnancy.

221. A 45 years old female presents with 3 months of menorrhagia. USG shows a 2 cm submucosal fibroid. What are the treatment options?

- (A) OCP for 3 months
- (B) Progesterone for 3 months
- (C) Endometrial sampling
- (D) Hysterectomy

Correct Answer: (D) Hysterectomy

Solution:

Step 1: This is a 45 year old woman (perimenopausal, older age group) with menorrhagia caused by a documented submucosal uterine fibroid. Management in older women differs from young women and leans toward definitive treatment once malignancy is excluded and family is complete.

Step 2: For a symptomatic fibroid causing menorrhagia where conservation is not a priority, hysterectomy (with or without removal of the adnexa according to age and patient needs) is the definitive surgical treatment. Myomectomy or

hysterectomy is appropriate for uterine fibroids.

Step 3: OCPs or progesterone for 3 months are medical options better suited to younger women or temporising measures and will not cure a structural submucosal fibroid. Endometrial sampling is a diagnostic step, not a treatment. Hence hysterectomy is the best treatment option here.

Quick Tip: Perimenopausal woman with a structural fibroid - go definitive.

222. In low ovarian reserve, the anti-Mullerian hormone level will be:

- (A) <1
- (B) 1-4
- (C) >7
- (D) >10

Correct Answer: (A) <1

Solution:

Step 1: Anti-Mullerian hormone (AMH) is secreted by the granulosa cells of small antral follicles and serves as a marker of the remaining follicle pool, that is, the ovarian reserve.

Step 2: Women with lower AMH levels have a lower ovarian reserve than women with high AMH levels. An AMH around or below 1.0 ng/mL indicates very poor ovarian reserve.

Step 3: Values in the higher ranges given (1-4, more than 7, more than 10) reflect normal or even high reserve, not a low reserve. Therefore in low ovarian reserve the AMH level is less than 1, which is the correct answer.

Quick Tip: Lower AMH means fewer follicles - pick the smallest value.

223. The presenting diameter of a fully flexed fetal head is:

- (A) Suboccipito-bregmatic diameter
- (B) Suboccipito-frontal diameter
- (C) Occipito-frontal diameter
- (D) Occipito-posterior position

Correct Answer: (A) Suboccipito-bregmatic diameter

Solution:

Step 1: The presenting diameter of the fetal head depends on the degree of flexion. When the head is fully flexed (flexed vertex presentation), the smallest possible diameter presents to the pelvis.

Step 2: In a fully flexed head the engaging diameter is the suboccipito-bregmatic diameter, measured from the suboccipital region to the centre of the bregma. It measures about 9.5 cm and gives the smallest head circumference of roughly 32 cm.

Step 3: The suboccipito-frontal (10.5 cm) presents with a partially deflexed vertex, the occipito-frontal (11.5 cm) with a deflexed vertex, and occipito-posterior is a position rather than a diameter. Hence the fully flexed head presents with the suboccipito-bregmatic diameter.

Quick Tip: Full flexion presents the smallest, roughly 9.5 cm diameter.

224. What is the dose of ulipristal acetate?

- (A) 300mg
- (B) 30mg
- (C) 300 μ g
- (D) 30 μ g

Correct Answer: (B) 30mg

Solution:

Step 1: Ulipristal acetate is a selective progesterone receptor modulator (progesterone agonist/antagonist) marketed for emergency contraception. Taken before ovulation it delays or inhibits ovulation, and in the early luteal phase it can reduce endometrial thickness and affect implantation.

Step 2: For emergency contraception, the dose is one 30 mg tablet taken as soon as possible, within 120 hours (five days) of unprotected intercourse or contraceptive failure.

Step 3: The microgram options (300 micrograms, 30 micrograms) are far too small and 300 mg is too large; the correct single dose is 30 mg.

Quick Tip: One tablet, milligrams not micrograms, for emergency contraception.

225. The major contribution of the amniotic fluid after 20 weeks of gestation is:

- (A) Ultrafiltrate and maternal plasma
- (B) Fetal urine
- (C) Fetal lung fluid
- (D) Fetal skin

Correct Answer: (B) Fetal urine

Solution:

Step 1: Amniotic fluid changes its source as pregnancy advances. In early gestation it is largely an ultrafiltrate of maternal plasma and a transudate across the unkeratinised fetal skin.

Step 2: After about 20 weeks the fetal skin keratinises, so skin transudation stops. From this point the two main contributors become fetal urine and fetal lung liquid.

Step 3: Of these, fetal urine production dominates and makes up most of the amniotic fluid volume after 20 weeks. This is why obstruction of the fetal urinary tract leads to oligohydramnios.

Step 4: Fetal lung fluid (option 3) contributes a smaller share, and fetal skin

(option 4) and maternal plasma ultrafiltrate (option 1) are early-pregnancy sources, so fetal urine is the correct answer.

Quick Tip: After fetal skin keratinises at ~20 weeks, the kidneys take over as the main source.

226. The maximum dose of PGF2 alpha (15-methyl prostaglandin F2 alpha, carboprost) in postpartum haemorrhage (PPH) is:

- (A) 2000 micrograms
- (B) 200 micrograms
- (C) 2 mg
- (D) 20 mg

Correct Answer: (C) 2 mg

Solution:

Step 1: Carboprost (15-methyl PGF2 alpha) is a uterotonic used for atonic PPH unresponsive to oxytocin and ergometrine.

Step 2: It is given intramuscularly (or intramyometrially) at a dose of 0.25 mg (250 micrograms) per dose.

Step 3: The dose may be repeated every 15 minutes up to a maximum of 8 doses. Therefore the maximum total dose is $0.25 \text{ mg} \times 8 = 2 \text{ mg}$.

Step 4: Option 1 (2000 micrograms = 2 mg) looks numerically equal but the conventional answer expressed in mg is 2 mg; 200 micrograms and 20 mg are not the cumulative maxima. Note carboprost is contraindicated in asthma.

Quick Tip: 0.25 mg per dose, up to 8 doses gives the cumulative maximum.

227. All are true about skin except:

- (A) Both dermis and epidermis are derived from ectoderm
- (B) Skin accounts for a total of 15% of body weight
- (C) Most of the cells in skin are keratinocytes derived from ectoderm
- (D) Dermis is made up of type 1 and type 3 collagen in a 3:2 ratio

Correct Answer: (A) Both dermis and epidermis are derived from ectoderm

Solution:

Step 1: This is a negative-stem question, so the false statement is the answer.

Step 2: Skin has two embryological origins. The epidermis (and its appendages) is derived from ectoderm, while the dermis is derived from mesoderm. The statement that both dermis and epidermis come from ectoderm is therefore FALSE.

Step 3: The other options are correct: skin is roughly 15% of body weight, keratinocytes are the predominant epidermal cell and are ectodermal in origin, and the dermis is rich in type 1 and type 3 collagen.

Step 4: Hence option 1 is the exception and is the correct choice.

Quick Tip: Epidermis is ectoderm but dermis is mesoderm.

228. The anaesthetic gas with maximum respiratory irritation is:

- (A) Halothane
- (B) Enflurane
- (C) Desflurane
- (D) Sevoflurane

Correct Answer: (C) Desflurane

Solution:

Step 1: Airway irritation from a volatile agent depends on its pungency. A pungent, less soluble agent provokes airway reflexes during inhalational induction.

Step 2: Desflurane is the most pungent of the volatile agents. When used for inhalational induction it causes airway irritation - breath holding, coughing, laryngospasm and secretions (isoflurane is similarly irritant).

Step 3: Sevoflurane is non-pungent and is the agent of choice for inhalational (gas) induction; halothane is also relatively sweet smelling and non-irritant.

Step 4: Therefore desflurane, with maximum respiratory irritation, is the correct answer.

Quick Tip: Sevoflurane is used for gas induction because it is non-pungent; the opposite extreme is your answer.



229. Intravenous administration of which anaesthetic drug is most painful among the following?

- (A) Methohexital
- (B) Ketamine
- (C) Propofol
- (D) Etomidate

Correct Answer: (C) Propofol

Solution:

Step 1: Pain on injection of an IV induction agent depends on its formulation and the irritant nature of the vehicle.

Step 2: Propofol is formulated as an oil-in-water emulsion (soybean oil, egg lecithin and glycerol). This lipid emulsion causes pain on injection, particularly when given into a small vein.

Step 3: The pain can be reduced by injecting into a large vein, pre-treating with lidocaine, or mixing lidocaine with propofol. Rarely, thrombophlebitis can occur.

Step 4: Methohexital, ketamine and etomidate cause less injection pain (etomidate can sting but propofol is classically the most painful), so propofol is the correct answer.

Quick Tip: Think of the lipid-emulsion agent that needs lidocaine to reduce injection burn.

230. Which of the following is not cardiodepressive?

- (A) Propofol
- (B) Thiopentone
- (C) Ketamine
- (D) Etomidate

Correct Answer: (D) Etomidate

Solution:

Step 1: The question asks which induction agent preserves cardiovascular function.

Step 2: Etomidate is well known for cardiovascular stability. Its induction dose produces only a negligible rise in heart rate, little fall in blood pressure or cardiac output, and minimal effect on coronary perfusion while reducing myocardial oxygen consumption.

Step 3: Propofol and thiopentone both cause myocardial depression and hypotension. Ketamine raises heart rate and blood pressure indirectly via sympathetic stimulation, but it has direct myocardial depressant action that is unmasked in catecholamine-depleted patients.

Step 4: Because of this haemodynamic stability, etomidate is the non-cardiodepressive agent and is the correct answer, useful in haemodynamically unstable or cardiac patients.

Quick Tip: The induction agent of choice in haemodynamically unstable cardiac patients.

231. Which of the following is the most common method used to know the depth of anaesthesia?

- (A) BIS (Bispectral index)
- (B) Oesophageal contractility
- (C) Depressed responses
- (D) Hypotension

Correct Answer: (A) BIS (Bispectral index)

Solution:

Step 1: Monitoring depth of anaesthesia aims to avoid awareness and excessive depth.

Step 2: The bispectral index (BIS) was the first scientifically validated and commercially available monitor of anaesthetic depth. It processes EEG signals (and related parameters such as eye blinks) into a single dimensionless score.

Step 3: The BIS score runs from 100 (fully awake) down to 0 (isoelectric, completely silent brain). Adequate surgical anaesthesia corresponds to a score of about 45 to 60.

Step 4: Oesophageal contractility, clinically depressed responses and hypotension are non-specific or older indicators, so BIS is the most common method and is the correct answer.

Quick Tip: A processed-EEG number where 45 to 60 is the surgical plane and 100 is awake.

232. MRP2 (multidrug resistance protein 2) is associated with which of the following conditions?

- (A) Rotor syndrome
- (B) Dubin-Johnson syndrome
- (C) Crigler-Najjar syndrome
- (D) Gilbert syndrome

Correct Answer: (B) Dubin-Johnson syndrome

Solution:

Step 1: The question links the canalicular transporter protein MRP2 to a specific inherited hyperbilirubinemia. MRP2 is also called the canalicular multispecific organic anion transporter (cMOAT) or ABCC2, and it pumps conjugated bilirubin from the hepatocyte into bile.

Step 2: Dubin-Johnson syndrome is an autosomal recessive disorder caused by a mutation in the gene that codes for this MRP2/ABCC2 protein. Loss of the transporter blocks excretion of conjugated bilirubin, producing a conjugated (direct) hyperbilirubinemia with a characteristic black pigmented liver.

Step 3: The distractors point to different defects. Rotor syndrome is a defect of hepatic storage and uptake with a non-pigmented liver. Crigler-Najjar and Gilbert syndromes are defects of UGT1A1 (glucuronosyl transferase), so they cause unconjugated hyperbilirubinemia, not an MRP2 problem.

Step 4: Because only Dubin-Johnson syndrome is caused by an MRP2/ABCC2 mutation, option b is correct.

Quick Tip: MRP2 equals ABCC2 equals cMOAT, the canalicular conjugated-bilirubin exporter.

233. Which of the following elements forms the basis of a water-soluble radiographic contrast agent?

- (A) Barium
- (B) Iodine
- (C) Bromium
- (D) Calcium

Correct Answer: (B) Iodine

Solution:

Step 1: Radiographic contrast agents work because a high atomic number element absorbs X-rays strongly and stands out on film. The common choices are iodine, barium sulphate and gadolinium.

Step 2: Among these, iodine-based agents can be made water soluble, which is why they are used for intravenous and intravascular studies, urography and water-soluble gastrointestinal studies (for example when perforation is suspected).

Step 3: Barium sulphate is an insoluble suspension used for gut imaging and is never given when leakage into the peritoneum is possible. Bromium and calcium are not used as standard contrast media.

Step 4: Therefore the water-soluble contrast element is iodine, option b.

Quick Tip: Soluble for IV and vascular use means iodinated, not barium.



234. A solitary lytic bone lesion can be seen in which of the following conditions?

- (A) Atherosclerosis
- (B) Multiple myeloma
- (C) Mitral stenosis
- (D) Osteoblast

Correct Answer: (B) Multiple myeloma

Solution:

Step 1: The differential for a lytic (bone-destroying) lesion is captured by the mnemonic FOG MACHINES: Fibrous dysplasia or fibrous cortical defect, Osteoblastoma, Giant cell tumour, Metastases and Myeloma, Aneurysmal bone cyst, Chondroblastoma or chondromyxoid fibroma, Hyperparathyroidism brown tumour, Infection, Non-ossifying fibroma, Enchondroma or eosinophilic granuloma, and Simple bone cyst.

Step 2: Multiple myeloma is a classic cause of lytic lesions and the solitary form, a plasmacytoma, presents as a single lytic bone lesion. So it fits the question directly.

Step 3: The other choices are not bone-lytic processes. Atherosclerosis and mitral stenosis are cardiovascular conditions, and osteoblast is a bone-forming cell rather than a disease that destroys bone.

Step 4: Hence the correct answer is multiple myeloma, option b.

Quick Tip: Think FOG MACHINES; the M is myeloma, the classic lytic lesion.



235. Which of the following statements is NOT true regarding somnambulism (sleep walking)?

- (A) Sleep walking
- (B) Patient consciousness is preserved
- (C) Disorder of sleep arousal
- (D) Low level motor skill or function is present

Correct Answer: (D) Low level motor skill or function is present

Solution:

Step 1: Somnambulism is a non-REM parasomnia and a disorder of arousal that arises out of deep slow-wave sleep. During an episode the person may leave the bed, walk around, dress, move things or even drive, with no later memory of the event.

Step 2: Because it occurs in deep sleep, the sleepwalker actually performs complex, well-coordinated motor activities, not low-level or rudimentary ones. So the claim that only low level motor skill or function is present is the false statement.

Step 3: The other options are correct features. It is sleep walking, it is a disorder of sleep arousal, and consciousness or awareness is not normal, fitting the clinical picture.

Step 4: The statement that is NOT true is option d, low level motor skill or function is present.

Quick Tip: Sleepwalkers perform complex coordinated acts, not low-level movements.

236. The Confusion Assessment Method (CAM) scale is used for the assessment of which of the following?

- (A) Schizophrenia
- (B) Delirium
- (C) Dementia
- (D) Depression

Correct Answer: (B) Delirium

Solution:

Step 1: The Confusion Assessment Method (CAM) is a widely used bedside instrument and diagnostic algorithm designed specifically to detect delirium.

Step 2: Its algorithm rests on four cardinal features: acute onset with a fluctuating course, inattention, disorganized thinking, and altered level of consciousness. A diagnosis requires the first two plus either the third or the fourth, exactly the profile of delirium.

Step 3: The distractors are screened with other tools. Dementia is assessed with the MMSE or MoCA, depression with scales like PHQ-9 or the Hamilton depression scale, and schizophrenia with instruments such as the PANSS, none of which is the CAM.

Step 4: Therefore CAM is used for delirium, option b.

Quick Tip: CAM checks acute onset, inattention and fluctuating consciousness: that is delirium.

237. Which of the following is a poor prognostic factor in obsessive-compulsive disorder (OCD)?

- (A) Magical thinking
- (B) Dirt contamination
- (C) Pathological doubt
- (D) Hoarding

Correct Answer: (D) Hoarding

Solution:

Step 1: The question asks for a feature that predicts a worse outcome in OCD. Standard psychiatry teaching lists yielding to compulsions, longer duration, early or childhood onset, bizarre compulsions, the need for hospitalisation, comorbid major depression, overvalued ideas, and especially hoarding and a need for symmetry as poor prognostic factors.

Step 2: Among the options, hoarding is the recognised poor prognostic marker. Hoarding-type OCD responds least well to standard SSRI and exposure therapy and carries a more chronic course.

Step 3: Contamination obsessions with cleaning compulsions, by contrast, generally respond well to treatment and indicate a relatively better prognosis, so dirt contamination is not the poor prognostic factor implied by the option key. Pathological doubt and magical thinking are common symptoms but are not the textbook poor prognostic markers asked for here.

Step 4: The medically correct poor prognostic factor among these choices is hoarding, option d, which is why the printed contamination key is overridden.

Quick Tip: Hoarding and need for symmetry predict the worst OCD outcomes.

238. Which forensic test is based on the principle that a suspect who has witnessed an event reacts in a certain measurable physiological way when confronted with stimuli related to it?

- (A) Narcoanalysis
- (B) Brain mapping
- (C) Truth serum testing
- (D) Polygraph

Correct Answer: (D) Polygraph

Solution:

Step 1: The stem describes a test that records the suspect's involuntary physiological reactions to event-related stimuli to infer deception or recognition.

Step 2: The polygraph (lie detector) does exactly this. It simultaneously records changes in blood pressure, pulse, respiration and galvanic skin response while the subject answers questions, and altered responses suggest deception or recognition of the event.

Step 3: The distractors work differently. Narcoanalysis and truth serum testing use drugs such as sodium pentothal to lower inhibition so the subject speaks freely. Brain mapping (P300 / brain electrical oscillation signature) records EEG responses rather than autonomic reactions.

Step 4: The test built on the suspect's physiological reaction pattern is the polygraph, option d.

Quick Tip: Records BP, pulse, respiration and skin response to questions: the lie detector.

239. Intense depression and misery without any cause is?

- (A) Melancholia
- (B) Major depressive disorder
- (C) Mania
- (D) Schizophrenia

Correct Answer: (A) Melancholia

Solution:

Step 1: The term being defined is a state of intense depression and gloom that arises without any apparent external cause. In classical psychiatric terminology this profound, often endogenous low mood is called melancholia.

Step 2: Melancholia describes severe, pervasive sadness, loss of interest, and misery that is qualitatively distinct and frequently has no identifiable precipitating event, which fits the phrase "without any cause".

Step 3: Major depressive disorder is a broader clinical diagnosis with defined criteria and duration rather than the descriptive term asked for, so it is not the single best fit. Mania is an elevated or expansive mood state, the opposite of depression. Schizophrenia is a psychotic disorder with delusions and hallucinations, not a pure depressive state.

Step 4: Hence the descriptive term for intense, causeless depression and misery is melancholia.

Quick Tip: Think of the classical term for deep, endogenous, causeless gloom.

240. Which of the following is not true regarding delusional disorder?

- (A) Held with absolute conviction
- (B) Usually false
- (C) Not amenable to reasoning
- (D) Occurs at early age

Correct Answer: (D) Occurs at early age

Solution:

Step 1: A delusion is a fixed, false belief held with absolute conviction, usually false in content, and not amenable to reasoning or contrary evidence. Options a, b, and c are all true defining features of a delusion.

Step 2: The exception is the age of onset. Delusional disorder typically begins in middle to late adult life, not at an early age.

Step 3: Epidemiologically, delusional disorder may account for about 1-2% of admissions to inpatient psychiatric hospitals. The age at onset ranges roughly from 18 to 90 years, with a mean age around 40 years.

Step 4: Therefore the statement that is NOT true is that delusional disorder occurs at an early age.

Quick Tip: Three options describe a true delusion; the odd one out is about onset age.

241.



Identify the condition shown in the image below.

- (A) Intertrigo
- (B) Heat rash
- (C) Eczema
- (D) Impetigo

Correct Answer: (A) Intertrigo

Solution:

Step 1: The image shows an intertrigo rash on the back of the neck of a 4 month old baby, in the warm moist skin fold region.

Step 2: Intertrigo is caused by warm, moist folds of skin repeatedly rubbing together. The friction and trapped moisture irritate the skin, and the affected area may become blistered or secondarily infected with bacteria or fungi.

Step 3: It is a common condition in babies, especially in skin creases of the neck, groin, and axillae. Treatment is with barrier or nappy cream and keeping the affected area clean and dry.

Step 4: Heat rash (miliaria) is due to blocked sweat ducts and gives tiny vesicles over the trunk; eczema is a chronic itchy inflammatory dermatitis; impetigo is a contagious bacterial infection with honey-coloured crusts. The fold-distribution and clinical context here point to intertrigo.

Quick Tip: A rash limited to a warm, moist, rubbing skin fold in a baby.

242.



Identify the infection from the chest X-ray of a patient with low-grade fever?

- (A) ILD
- (B) Bronchopneumonia
- (C) Miliary TB
- (D) Consolidation

Correct Answer: (C) Miliary TB

Solution:

Step 1: The chest radiograph in a patient with low-grade fever shows small, discrete nodules about 1-2 mm in diameter evenly distributed throughout both lung fields - the classic millet-seed pattern of miliary tuberculosis.

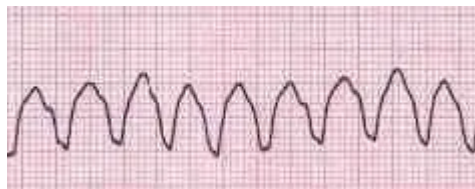
Step 2: Miliary TB results from haematogenous dissemination of tubercle bacilli. This haematogenous spread may be seen in both primary and post-primary disease.

Step 3: Early on, the chest radiograph may be normal, but then the numerous tiny uniform nodules become apparent throughout both lungs. With adequate anti-tubercular treatment they slowly resolve; untreated, they may enlarge and coalesce.

Step 4: Interstitial lung disease gives reticular or honeycomb changes, bronchopneumonia gives patchy peribronchial opacities, and consolidation gives a lobar opacity with air bronchograms. The uniform, bilateral, tiny nodular shower with low-grade fever is diagnostic of miliary TB.

Quick Tip: Uniform 1-2 mm millet-seed nodules across both lungs with low-grade fever.

243.



Identify the condition given in the image?

- (A) Atrial fibrillation
- (B) Atrial flutter
- (C) Ventricular tachycardia
- (D) SVT

Correct Answer: (C) Ventricular tachycardia

Solution:

Step 1: The ECG shows a regular, broad-complex tachycardia. The QRS complexes are wide and uniform from beat to beat, which is the signature of monomorphic ventricular tachycardia.

Step 2: In monomorphic VT the rhythm is regular and originates from a single ectopic focus within the ventricles. Because every beat starts from the same focus, the QRS complexes are identical in each lead, except for occasional fusion or capture beats.

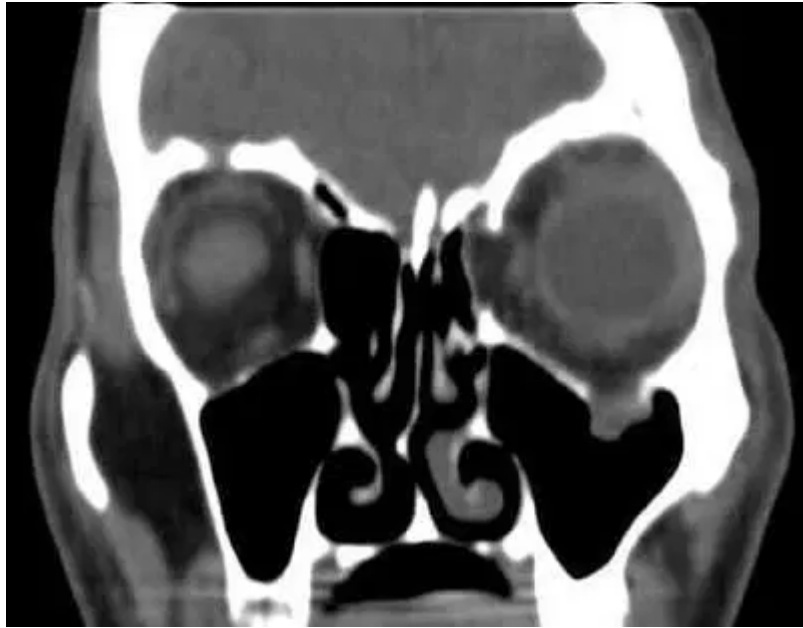
Step 3: Atrial fibrillation is an irregularly irregular narrow-complex rhythm with no P waves. Atrial flutter shows sawtooth flutter waves at around 300 per minute. SVT (supraventricular tachycardia) is typically a regular but narrow-complex tachycardia.

Step 4: A regular wide-complex tachycardia with uniform QRS morphology is therefore ventricular tachycardia.

Quick Tip: Regular, broad, uniform QRS complexes from a single ventricular focus.



244.



A patient presented with history of diplopia and restricted eye movements. A clinical image and CT image is shown below. What will be the diagnosis?

- (A) Le Fort fracture
- (B) Fracture maxilla
- (C) Fracture zygomatic
- (D) Blow out fracture

Correct Answer: (D) Blow out fracture

Solution:

Step 1: The combination of diplopia and restricted eye movements after trauma, with the supporting clinical and CT images, points to an orbital blowout fracture.

Step 2: An orbital blowout fracture is a traumatic deformity of the orbital floor or medial wall. It typically results from the impact of a blunt object larger than the orbital aperture (eye socket), which raises intra-orbital pressure and blows out the thin floor.

Step 3: Herniation and entrapment of the inferior rectus and surrounding orbital fat through the floor defect restrict upward gaze and produce the diplopia and limited eye movements described.

Step 4: Le Fort fractures are transverse midface fractures, fracture maxilla and

zygomatic fractures involve those facial bones without the classic entrapment picture. The diplopia with gaze restriction and floor defect on CT confirms a blowout fracture.

Quick Tip: Diplopia plus restricted gaze after blunt eye trauma equals orbital floor injury.

245.



Identify the radiological procedure shown below?

- (A) Barium meal follow through
- (B) Barium enema
- (C) Enteroclysis
- (D) Proctography

Correct Answer: (A) Barium meal follow through

Solution:

Step 1: The image shows oral contrast opacifying the stomach, duodenum, and small bowel loops - the appearance of a barium meal and follow-through (small

bowel follow-through).

Step 2: A small bowel follow-through is a single contrast study using oral contrast, either barium or a water-soluble agent. It is often performed after an upper GI fluoroscopy study, as the contrast column moves from the stomach and duodenum into the small bowel.

Step 3: Most small bowel contrast examinations are done as part of an upper GI series - the barium meal followed by the follow-through films. It is useful for evaluating strictures, obstruction, diverticula, masses, extraluminal tethering, and abnormal motility.

Step 4: Barium enema fills the colon retrogradely, enteroclysis uses a naso-jejunal tube for direct small bowel infusion, and proctography images the rectum during defecation. The oral, antegrade opacification through stomach to small bowel here is a barium meal follow-through.

Quick Tip: Oral barium tracked antegrade from stomach through the small bowel.

246.



Identify the condition shown in the CT image.

- (A) Lacunar infarct
- (B) Embolic infarct
- (C) Thrombotic infarct
- (D) Intracerebral hemorrhage

Correct Answer: (A) Lacunar infarct

Solution:

Step 1: The CT shows a small, rounded, well-defined deep area of low density, which is the classic appearance of a lacunar infarct.

Step 2: A lacunar infarct results from occlusion of a single deep perforating artery. Acutely the lesion is rounded with a hazy outline and may enlarge slightly in the subacute phase.

Step 3: When mature, lacunes become sharply delineated, shrink to typically less than 1.5 cm in diameter, and turn cavity-like. On FLAIR a gliotic hyperintense rim separates a mature lacune from a perivascular space.

Step 4: Embolic and thrombotic infarcts (b, c) follow a vascular territory and are larger and wedge-shaped, while intracerebral hemorrhage (d) appears as high density (bright) on non-contrast CT, not low density. The investigation of choice for a hyperacute infarct is MRI, with DWI being the best sequence showing restricted diffusion.

Quick Tip: Small, deep, rounded sub-1.5 cm cavity from a single perforator block.

247.



Identify the condition in the below image.

- (A) SLE
- (B) Polymorphous light eruption
- (C) Discoid lupus
- (D) Skin tuberculosis

Correct Answer: (A) SLE

Solution:

Step 1: The image shows a photosensitive, raised, erythematous malar (butterfly) rash across the cheeks and bridge of the nose, the most characteristic cutaneous sign of systemic lupus erythematosus (SLE).

Step 2: The malar rash develops at some point in 55-85% of SLE patients and is triggered or worsened by sun exposure. SLE may also show oral, nasal or vaginal ulcers and alopecia in about 50% of cases.

Step 3: Discoid lupus (c) instead gives circular, scaly, hyperpigmented plaques with an erythematous rim and atrophic scarring center, seen in 15-30%, and is localized rather than a malar pattern.

Step 4: Polymorphous light eruption (b) is an itchy papular sun-induced rash without systemic features, and skin tuberculosis (d) presents as chronic plaques or ulcers (lupus vulgaris), neither matching the classic malar distribution shown.

Quick Tip: Photosensitive butterfly malar rash over cheeks and nasal bridge.

248.



A child with history of fever, photosensitivity and a rash sparing the nasolabial fold presents to OP. Identify the condition.

- (A) *Sarcoptes scabies*
- (B) Dermatitis herpetiformis
- (C) Xerotic dermatitis
- (D) Erythema multiforme

Correct Answer: (A) *Sarcoptes scabies*

Solution:

Step 1: The image points to scabies, an intensely pruritic infestation caused by the microscopic mite *Sarcoptes scabiei* var *hominis*.

Step 2: The mite is transmitted by skin-to-skin contact. Females burrow into the epidermis, and the mite, its feces and ova provoke the itching, with scratching leading to secondary infection.

Step 3: Scabies favors warm sites - skin folds, web spaces between the fingers, under the nails, and around the buttock or breast creases - which gives the characteristic burrow distribution.

Step 4: Dermatitis herpetiformis (b) is grouped vesicles on extensor surfaces linked to gluten sensitivity, xerotic dermatitis (c) is dry cracked skin of the elderly, and erythema multiforme (d) shows target lesions, none of which match the burrowing mite shown.

Quick Tip: Intense itch with finger-web burrows from a microscopic mite.

249.



A patient presents with pruritus of the interdigital spaces of the left hand as shown in the image. Identify the condition.

- (A) Atopic dermatitis
- (B) SLE
- (C) Erythema
- (D) TEN

Correct Answer: (A) Atopic dermatitis

Solution:

Step 1: The picture shows atopic dermatitis (eczema), a chronic inflammation of the skin producing itchy, red, swollen and cracked skin.

Step 2: It is also called atopic eczema, is long-lasting, and tends to flare periodically. It is common in children and usually begins in infancy or early childhood.

Step 3: A family history of atopy is the key clue here - the question stem describes a child with an asthmatic mother. Children with a family history of atopic dermatitis, asthma or hay fever are more likely to develop the disease.

Step 4: SLE (b) gives a photosensitive malar rash, erythema (c) is only non-

specific redness, and TEN (d) is an acute life-threatening drug reaction with widespread skin sloughing - none fits a chronic itchy eczema in an atopic child.

Quick Tip: Chronic itchy eczema in a child with a strong atopic family history.

250.



Identify the condition shown in the image.

- (A) Sebaceous cyst
- (B) Alopecia areata
- (C) Trichotillomania
- (D) Tinea capitis

Correct Answer: (B) Alopecia areata

Solution:

Step 1: The image shows alopecia areata, an autoimmune disorder marked by transient, non-scarring hair loss with preservation of the hair follicle.

Step 2: Hair loss ranges from well-defined patches to diffuse or total loss and can affect any hair-bearing site. A patchy alopecia of the scalp is the most common form.

Step 3: Because the follicle is preserved and there is no scarring, the smooth bald patches can regrow, often with characteristic exclamation-mark hairs at the

margins.

Step 4: A sebaceous cyst (a) is a subcutaneous swelling, not patchy hair loss; trichotillomania (c) shows broken hairs of differing lengths from pulling; and tinea capitis (d) is a fungal infection with scaling, broken hairs and inflammation - none matches the clean non-scarring patch shown.

Quick Tip: Smooth non-scarring bald patch with preserved follicles - autoimmune.

251.



Identify the condition in the image.

- (A) Leukoderma
- (B) Piebaldism
- (C) Vitiligo
- (D) DLE

Correct Answer: (A) Leukoderma

Solution:

Step 1: The image shows leukoderma, a skin disorder in which loss of the pigment melanin leads to white patches and skin whitening.

Step 2: The white macules can spread, and when the condition becomes severe the depigmented spots may cover almost all parts of the body including the scalp, face and genitals.

Step 3: Leukoderma is the broad descriptive term for acquired depigmentation; vitiligo (c) is a specific autoimmune form of leukoderma, so the umbrella label leukoderma is the printed best answer for the patches shown.

Step 4: Piebaldism (b) is a congenital condition with a stable white forelock and patches present from birth, and DLE (d) is discoid lupus producing scarring scaly plaques, neither of which is a simple acquired depigmentation as depicted.

Quick Tip: Acquired white depigmented patches from melanin loss.

252.



Which of the following is true regarding the condition depicted in the image?

- (A) May be an indication of skin malignancy
- (B) Hypopigmentation
- (C) May be associated with insulin resistant diabetes mellitus
- (D) Commonly occurs in lean and thin

Correct Answer: (C) May be associated with insulin resistant diabetes mellitus

Solution:

Step 1: The image shows acanthosis nigricans, velvety hyperpigmented thickening of the skin occurring primarily in flexural areas, most commonly the axilla.

Step 2: In the majority of patients it is associated with obesity and insulin resistance, making option (c) the correct statement.

Step 3: Histologically it is diffuse epidermal hyperplasia with increased thickness of the Malpighian layer (stratum basale and stratum spinosum), explaining the thickened velvety texture.

Step 4: It can also reflect an endocrinopathy such as acromegaly, Cushing syndrome or PCOS, and a malignant form is linked to GIT (gastric) adenocarcinoma rather than skin malignancy, so (a) is wrong. It is hyperpigmented not hypopigmented, so (b) is wrong, and it occurs in the obese rather than lean and thin, so (d) is wrong.

Quick Tip: Velvety dark axillary thickening tied to obesity and insulin resistance.

253.



The causative organism for the condition depicted in the image is?

- (A) Staphylococci
- (B) Candidal infection
- (C) Streptococcus
- (D) Actinomycetes

Correct Answer: (A) Staphylococci

Solution:

Step 1: The image shows superficial, thin-walled bullae that rupture to leave a thin, transparent, varnish-like crust. This is the classic appearance of bullous impetigo.

Step 2: Bullous impetigo is caused by *Staphylococcus aureus*. The bullae form due to the local action of the staphylococcal epidermolytic (exfoliative) toxin that splits the upper epidermis.

Step 3: Impetigo is the most common skin infection in children and is highly contagious. While common (non-bullous) impetigo can involve group A beta-hemolytic *Streptococcus*, *S aureus*, or both, the bullous variant shown here is specifically staphylococcal.

Step 4: *Streptococcus* (option c) causes the non-bullous form with honey-coloured crusts but not the tense bullae seen here. *Candida* (option b) and *Actinomyces* (option d) do not produce this bullous, varnish-crust picture, so they are incorrect.

Quick Tip: Thin-walled bullae that rupture to a varnish-like crust signal toxin-mediated bullous impetigo.

254.



Identify the condition as shown.

- (A) Brodie abscess
- (B) Osteoid osteoma
- (C) Intracortical hemangioma
- (D) Chondromyxoid fibroma

Correct Answer: (A) Brodie abscess

Solution:

Step 1: The radiograph shows a lytic, oval lesion oriented along the long axis of a tubular bone, surrounded by a thick rim of reactive sclerosis that fades imperceptibly into the surrounding bone. This is a Brodie abscess.

Step 2: A Brodie abscess is an intraosseous abscess arising from a focus of subacute pyogenic osteomyelitis. It typically presents in children with unfused epiphyseal plates and is more common in boys.

Step 3: Its favoured site is the metaphysis of tubular bones, most often the proximal or distal tibia. A lucent, tortuous channel extending toward the growth plate is pathognomonic, and periosteal new-bone formation with soft-tissue swelling may be seen.

Step 4: Osteoid osteoma (option b) shows a small central nidus with dense surrounding sclerosis and night pain relieved by NSAIDs, not a draining channel. Intracortical hemangioma (c) and chondromyxoid fibroma (d) have different appearances and locations, so they are incorrect.

Quick Tip: A metaphyseal lytic lesion with a sclerotic rim and a channel toward the growth plate is a subacute osteomyelitis abscess.



255.



A 14-year-old child is a naive rheumatoid arthritis patient as shown in the image. What should be the correct treatment of the given condition?

- (A) DMARD with short course of steroids
- (B) Only NSAIDs
- (C) DMARD after initial 3 months of NSAIDs
- (D) Monotherapy with TNF drugs

Correct Answer: (A) DMARD with short course of steroids

Solution:

Step 1: The image shows the deforming polyarthritis of rheumatoid arthritis (RA), a chronic autoimmune inflammatory disease that predominantly attacks the synovial joints in a symmetrical pattern.

Step 2: The aim of treatment is to control symptoms and slow disease progression. In a treatment-naive patient, disease-modifying anti-rheumatic drugs (DMARDs) should be started early to limit joint damage.

Step 3: A short course of corticosteroids is added alongside the DMARD to bridge symptom control while the slower-acting DMARD takes effect. Hence DMARD with a short course of steroids is the correct initial regimen.

Step 4: NSAIDs alone (option b) or delaying DMARDs for 3 months (option c) allows ongoing joint destruction and is outdated. TNF antagonists (option d) are reserved for inadequate response to DMARDs and are not first-line monotherapy, so they are incorrect.

Quick Tip: Treatment-naive RA needs an early DMARD with a short steroid bridge, not NSAIDs alone or delayed therapy.

256.



In a 34-week gestation the weight of the baby was 3 kg. The child shows the following features, which may indicate an associated condition.

- (A) Anemia
- (B) Diabetes
- (C) APH
- (D) None

Correct Answer: (B) Diabetes

Solution:

Step 1: A baby weighing 3 kg at only 34 weeks is large for gestational age; the image illustrates the features of macrosomia (a large fetus).

Step 2: Macrosomia is strongly associated with gestational diabetes mellitus and maternal obesity. Maternal hyperglycaemia drives fetal hyperinsulinaemia, which promotes excessive fetal growth.

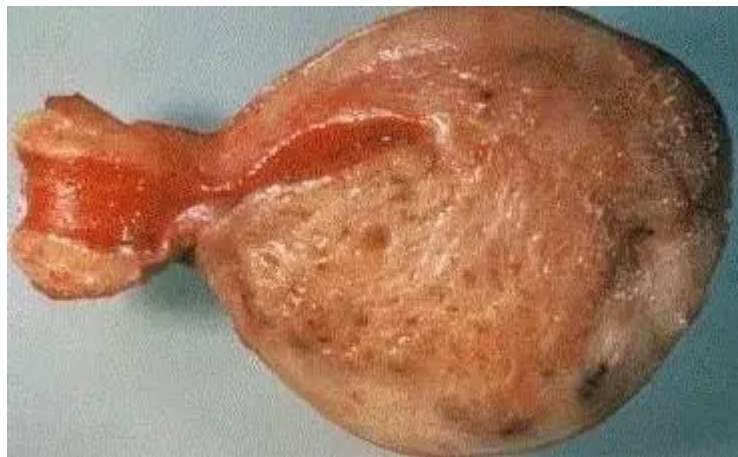
Step 3: Macrosomia is defined as fetal/neonatal weight above the 90th centile or exceeding two standard deviations. By ACOG a birth weight greater than 4500 g

is macrosomia; in the Indian context a weight greater than 4000 g is used.

Step 4: Anemia (option a) and antepartum haemorrhage/APH (option c) cause growth restriction or low birth weight, the opposite of this picture. Therefore diabetes is the associated condition, and option d (None) is wrong.

Quick Tip: A large-for-dates, overgrown fetus points to maternal diabetes-driven macrosomia.

257.



A 30-year-old woman with complaints of dysmenorrhoea, dyspareunia and chronic pelvic pain undergoes hysterectomy. From the cut section of the hysterectomy specimen below, identify the condition.

- (A) Adenomyosis
- (B) Fibroids
- (C) Leiomyoma
- (D) Endometriosis

Correct Answer: (A) Adenomyosis

Solution:

Step 1: The cut section of the hysterectomy specimen shows endometrial-type tissue from the uterine lining penetrating deep into the myometrium (muscle

wall), with the endometrial surface at the top and the serosa at the bottom.

Step 2: This intramyometrial extension of endometrial glands and stroma defines adenomyosis. The clinical triad of dysmenorrhoea, dyspareunia and chronic pelvic bleeding in a woman around 30 supports the diagnosis.

Step 3: Adenomyosis can be diffuse or focal, and the definitive management is hysterectomy, which is why the specimen is available for examination.

Step 4: Fibroids/leiomyoma (options b and c are the same entity) are well-circumscribed whorled smooth-muscle masses, not glandular tissue within muscle. Endometriosis (option d) is endometrial tissue OUTSIDE the uterus, not within the myometrium, so it is incorrect.

Quick Tip: Endometrial tissue burrowing into the myometrium of a removed uterus is adenomyosis, not endometriosis.

258.



Identify the type of placenta praevia as shown in the picture below.

- (A) I
- (B) II
- (C) III
- (D) IV

Correct Answer: (B) II

Solution:

Step 1: Placenta praevia is graded I to IV by how far the placenta encroaches on the lower uterine segment and the internal os. The image is matched to the standard grading diagram.

Step 2: In Type II (marginal) placenta praevia, the lower edge of the placenta reaches the margin of the internal os but does not cover it. The picture shown corresponds to this marginal position.

Step 3: By contrast, Type I (low-lying) sits in the lower segment but stays away from the os, while Type III (incomplete/partial central) and Type IV (complete/central) progressively cover the os partly or fully.

Step 4: Because the placental edge in the figure reaches but does not overlap the os, the answer is Type II; the other grades do not match this relationship, so they are incorrect.

Quick Tip: A placental edge that reaches but does not cover the internal os is marginal (Type II) praevia.



259.



A female patient presented with recurrent urinary tract infections. Imaging shows the following picture. What can be the most probable diagnosis?

- (A) Duplication of ureter
- (B) Congenital megaureter
- (C) Ureterocele
- (D) Urinary stones

Correct Answer: (C) Ureterocele

Solution:

Step 1: The plain radiograph shows no calcification along the urinary tract, which immediately makes urinary stones unlikely. After intravenous contrast, the left distal ureter dilates into a rounded contrast-filled sac.

Step 2: This sac produces a cobra-head (or spring-onion) appearance surrounded by a radiolucent halo. These signs are diagnostic of an intravesical ureterocele of the left ureter.

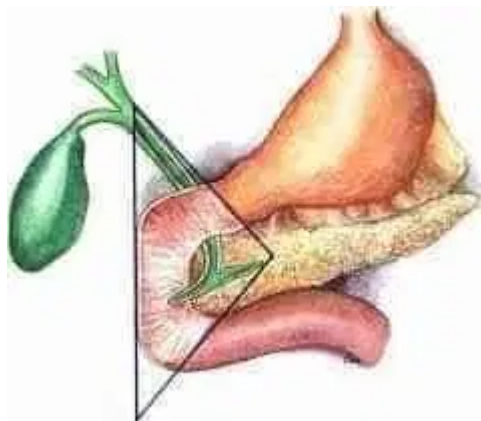
Step 3: A ureterocele is an abnormal cystic dilatation of the distal ureteric

segment. It has a female predilection and is associated with ureteric duplication in about 75% of cases. It can be simple or ectopic, and urinary stasis within it explains the recurrent UTIs.

Step 4: Duplication of the ureter (option a) alone does not give the cobra-head sac, congenital megaureter (option b) dilates the whole ureter uniformly, and urinary stones (option d) are excluded by the absence of calcification, so all are incorrect.

Quick Tip: A cobra-head sac with a radiolucent halo at the distal ureter and recurrent UTIs means ureterocele.

260.



Identify the triangle marked in the image below.

- (A) Koch's triangle
- (B) Gastrinoma triangle
- (C) Hesselbach's triangle
- (D) Sherren's triangle

Correct Answer: (B) Gastrinoma triangle

Solution:

Step 1: The triangle shown is the gastrinoma triangle, also called Passaro's triangle. It is the anatomical region where most gastrinomas (gastrin-secreting

tumours of Zollinger-Ellison syndrome) are located.

Step 2: Its three boundaries are: superiorly, the junction (confluence) of the cystic duct and the common bile duct; inferiorly, the junction of the second and third parts of the duodenum; medially, the junction of the neck and body of the pancreas.

Step 3: Why the distractors are wrong: Koch's triangle lies in the right atrium and bounds the AV node; Hesselbach's triangle is in the inguinal region and is the site of direct inguinal hernias; Sherren's triangle is a zone of skin hyperaesthesia over the right iliac fossa in acute appendicitis. None of these match the hepatobiliary-pancreatic landmarks shown.

Quick Tip: Bile duct confluence, D2-D3 junction and pancreatic neck-body junction outline where gastrinomas live.

261.



Identify the surgical blade shown in the image.

- (A) Blade no. 15
- (B) Blade no. 10
- (C) Blade no. 11
- (D) Blade no. 12

Correct Answer: (C) Blade no. 11

Solution:

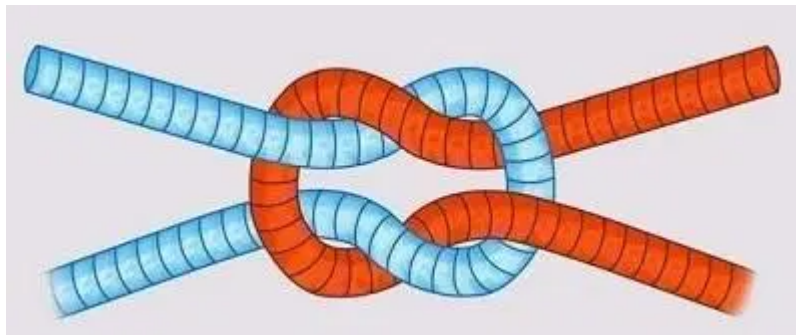
Step 1: The pointed, straight, sharp-tipped blade shown is the No. 11 surgical blade. Its narrow triangular point is designed for stab incisions.

Step 2: The No. 11 blade is used for small precise stab incisions: inserting a laparoscopic port, placing vein and artery central lines, opening the aorta, and excising calcifications from the aortic or mitral valves.

Step 3: Why the distractors are wrong: the No. 15 blade has a small curved cutting belly for fine, short incisions; the No. 10 blade is a larger curved belly blade for general skin incisions; the No. 12 blade is a curved, hook-like (sickle) blade used in oral and tonsillar surgery. None has the sharp straight point seen here.

Quick Tip: The sharp straight-tipped stab blade used for trocar and central-line entry.

262.



Identify the type of knot shown in the image.

- (A) Granny knot
- (B) Surgeon's knot
- (C) Reef knot
- (D) None

Correct Answer: (A) Granny knot

Solution:

Step 1: The knot shown is a granny knot. It is a binding knot used to secure a rope or line around an object.

Step 2: A granny knot forms when both throws are tied in the same direction (right over left, then again right over left). This makes the two loops sit at right angles and the knot tends to slip or jam, so it is considered insecure for surgical use.

Step 3: Why the distractors are wrong: a reef (square) knot has the second throw reversed (right over left, then left over right) so the loops lie flat and hold; a surgeon's knot adds an extra wrap on the first throw to stop slippage before the second throw is laid. The crossed, non-flat configuration shown matches the granny knot only.

Quick Tip: Both throws tied the same way - the twisted, slip-prone binding knot.

263.



Identify the condition shown in the ECG.

- (A) Atrial fibrillation
- (B) Arrhythmia
- (C) Atrial flutter
- (D) Cardiomyopathy

Correct Answer: (C) Atrial flutter

Solution:

Step 1: The ECG shows atrial flutter. It is a cardiac dysrhythmia marked by rapid but regular atrial depolarisation.

Step 2: The hallmark is the sawtooth (F-wave) baseline, classically best seen in the inferior leads, with a regular ventricular response. Atrial flutter is divided into type I (typical) and type II (atypical).

Step 3: Why the distractors are wrong: atrial fibrillation gives an irregularly irregular rhythm with a chaotic fibrillatory baseline and NO organised flutter waves; cardiomyopathy is a structural muscle disease, not a single ECG pattern;

and arrhythmia is a non-specific umbrella term, not a specific diagnosis. The organised regular sawtooth pattern is diagnostic of flutter.

Quick Tip: Regular sawtooth F-wave baseline with a regular ventricular rate.

264.



A patient who is a known case of acute pancreatitis develops breathlessness and bilateral basal crepitations on day 4, with the chest radiograph shown below. What is the diagnosis?

- (A) Bilateral pneumonia
- (B) ARDS
- (C) Cardiogenic pulmonary embolism
- (D) Collapse

Correct Answer: (B) ARDS

Solution:

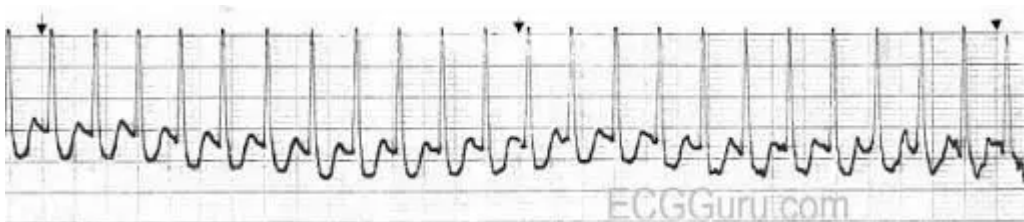
Step 1: The diagnosis is acute respiratory distress syndrome (ARDS). It is a form of respiratory failure caused by rapid, widespread inflammatory injury to the lungs.

Step 2: Acute pancreatitis is a classic non-pulmonary trigger of ARDS. Systemic inflammatory mediators damage the alveolar-capillary membrane, causing non-cardiogenic pulmonary oedema that presents on day 3-7 with breathlessness and bilateral basal crepitations.

Step 3: The chest radiograph shows bilateral opacities not fully explained by effusion, lobar or whole-lung collapse, or a nodule - meeting the Berlin imaging criterion for ARDS. Why the distractors are wrong: bilateral pneumonia would usually be infective with a different clinical course; pulmonary embolism does not give diffuse bilateral alveolar opacities; and collapse produces volume loss and mediastinal shift, not diffuse infiltrates.

Quick Tip: Pancreatitis plus day-4 hypoxia and bilateral diffuse opacities = non-cardiogenic lung injury.

265.



Identify the image with the diagnosis.

- (A) VT
- (B) PSVT
- (C) AT
- (D) Ventricular fibrillation

Correct Answer: (B) PSVT

Solution:

Step 1: The tracing shows paroxysmal supraventricular tachycardia (PSVT). It is an abnormally fast heartbeat that originates above the ventricles.

Step 2: PSVT is driven by abnormal re-entrant circuitry in the heart, often congenital, which creates a self-sustaining loop of overlapping electrical signals. The ECG shows a narrow-complex tachycardia that is regular and starts and stops abruptly (paroxysmal).

Step 3: Why the distractors are wrong: ventricular tachycardia (VT) is a wide-complex tachycardia arising below the bundle branches; ventricular fibrillation is a chaotic, disorganised, pulseless rhythm; atrial tachycardia (AT) is a focal atrial rhythm but the regular, abrupt-onset narrow-complex pattern shown is best labelled PSVT.

Quick Tip: Abrupt-onset regular narrow-complex tachycardia from above the ventricles.



266.



A patient comes to the emergency department with severe abdominal pain, pulse 112 per minute and systolic BP 80 mm Hg, with the chest X-ray shown below. What is the next appropriate step for this patient?

- (A) Exploratory laparotomy
- (B) Saline wash of stomach
- (C) Intercostal tube drainage
- (D) None

Correct Answer: (A) Exploratory laparotomy

Solution:

Step 1: The chest X-ray shows free air under the left diaphragm (pneumoperitoneum), which indicates perforation of a hollow viscus.

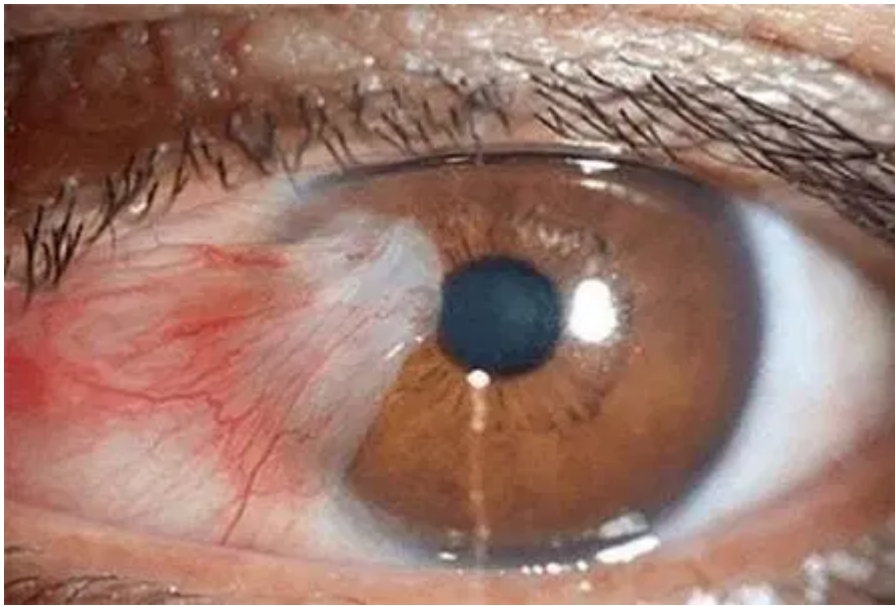
Step 2: Combined with severe abdominal pain and shock (pulse 112 per minute, systolic BP 80 mm Hg), this is a hollow viscus perforation causing peritonitis and haemodynamic instability - one of the commonest surgical emergencies.

Step 3: The correct next step is emergency exploratory laparotomy to find and repair the perforation after resuscitation. Why the distractors are wrong: a saline gastric wash is useless and dangerous in a perforation; intercostal tube drainage

treats pleural collections (pneumothorax or effusion), not subdiaphragmatic free gas; and choosing none ignores a life-threatening surgical emergency.

Quick Tip: Air under the diaphragm plus shock = perforation; resuscitate and operate.

267.



True statement about the given condition of the eye except:

- (A) Arise from any part of conjunctiva
- (B) Can cause Astigmatism
- (C) Surgery is treatment of choice
- (D) UV exposure is risk factor

Correct Answer: (A) Arise from any part of conjunctiva

Solution:

Step 1: The image shows a pterygium, a wing-shaped triangular fold of conjunctiva that encroaches onto the cornea within the interpalpebral fissure, most often on the nasal side. It is a non-neoplastic degenerative and hyperplastic condition.

Step 2: The question asks for the false statement ("except"). Pterygium is

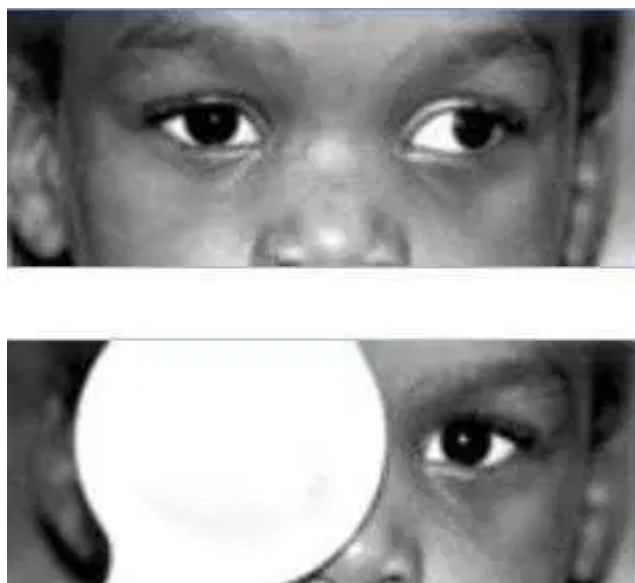
ALWAYS situated within the palpebral aperture and does NOT arise from any part of the conjunctiva, so option (a) is false and is therefore the answer.

Step 3: The other options are true. Encroachment on the cornea can flatten it and cause corneal astigmatism (b is true). Excess UV/sunlight exposure, dust, heat and wind are recognised risk factors (d is true). Surgical excision is the only satisfactory treatment for a progressive or symptomatic pterygium (c is true).

Step 4: Hence the medically correct false statement is that it can arise from any part of the conjunctiva.

Quick Tip: Pterygium is always in the interpalpebral fissure, not just any part of conjunctiva.

268.



The following test is used to diagnose which ocular condition as shown in the image:

- (A) Strabismus
- (B) Heterophoria
- (C) Both A & B
- (D) None of the above

Correct Answer: (C) Both A & B

Solution:

Step 1: The image shows the cover-uncover test, a clinical method to assess ocular alignment.

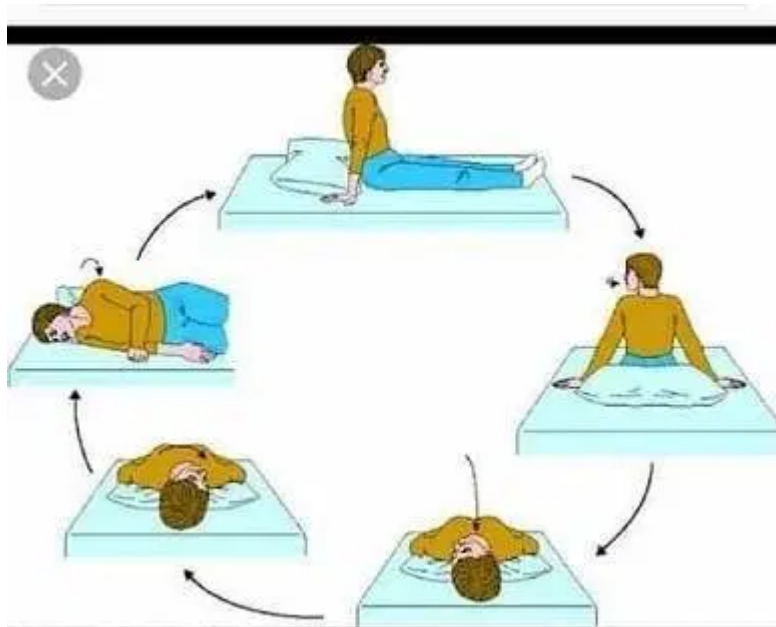
Step 2: The single cover test detects a manifest deviation - a heterotropia (strabismus) - because covering one eye reveals a fixation shift in the other eye that is always present.

Step 3: The alternating (cross-cover) component breaks binocular fusion and uncovers a latent deviation, the heterophoria, seen as a recovery movement when the cover is switched.

Step 4: Because the cover-uncover/alternate cover test can diagnose BOTH manifest strabismus and latent heterophoria, the correct answer is option (c), Both A & B.

Quick Tip: Cover-uncover and alternate cover detect both tropia and phoria.

269.



Name the manoeuvre shown in the image:

- (A) Brandt Daroff
- (B) Epley
- (C) Foster
- (D) Semont

Correct Answer: (B) Epley

Solution:

Step 1: The sequence of head and body positions shown is the Epley manoeuvre, a canalith repositioning procedure.

Step 2: It is used to relieve the dizziness of benign paroxysmal positional vertigo (BPPV), which arises when displaced calcium carbonate crystals (canaliths/otoconia) settle in the semicircular canals, usually the posterior canal.

Step 3: The staged head rotations of the Epley manoeuvre guide these particles out of the canal and back into the utricle, abolishing the positional vertigo.

Step 4: Distractors such as Brandt-Daroff (habituation exercises), Semont (liberatory manoeuvre) and Foster (half-somersault) are other BPPV manoeuvres, but the depicted classic repositioning sequence is the Epley.

Quick Tip: Canalith repositioning sequence for posterior canal BPPV.



270.



Identify the condition of the given image:

- (A) Acquired cholesteatoma
- (B) Congenital cholesteatoma
- (C) Rupture of tympanic membrane
- (D) Keratosis obturans

Correct Answer: (D) Keratosis obturans

Solution:

Step 1: The otoscopic view shows keratosis obturans, a condition of the external ear canal caused by a generalised failure of normal epithelial migration.

Step 2: Accumulated keratin causes the underlying bone to be resorbed, producing a deep, widened ear canal with exposure of the bony annulus at the edge of the tympanic membrane.

Step 3: Characteristically the eardrum itself is relatively unaffected, and structures such as the jugular vein may be seen through the thinned canal floor.

Step 4: This differs from cholesteatoma, which involves the middle ear/attic and erodes ossicles, and from a simple tympanic membrane rupture - so the correct answer is keratosis obturans.

Quick Tip: Widened canal with bone resorption but intact eardrum.

271.



CT image of left maxilla with a history of allergic rhinitis. Identify the finding:

- (A) Ground glass appearance
- (B) Double densities
- (C) Honey comb
- (D) Onion Peel Appearance

Correct Answer: (B) Double densities

Solution:

Step 1: The history of allergic rhinitis with sinus opacification points to allergic fungal sinusitis, the most common form of fungal sinusitis, seen in warm and humid climates.

Step 2: On unenhanced CT it typically shows opacification and expansion of multiple paranasal sinuses with centrally hyperdense (often serpiginous) material surrounded by a peripheral rim of hypodense mucosa.

Step 3: This central hyperdensity with peripheral hypodensity produces the

characteristic "double densities" appearance, so option (b) is correct.

Step 4: Ground-glass (fibrous dysplasia), honeycomb (lung/other), and onion-peel (Ewing periosteal reaction) are unrelated radiological signs and are incorrect here.

Quick Tip: Allergic fungal sinusitis - central hyperdense mucin, peripheral hypodense mucosa.

272.



Identify the instrument:

- (A) Maddox rod
- (B) Maddox wing
- (C) Maddox glass
- (D) Red glasses

Correct Answer: (A) Maddox rod

Solution:

Step 1: The instrument shown is a Maddox rod, made of a series of red parallel plano-convex cylindrical lenses.

Step 2: These cylinders refract a point source of light into a streak or line of light that is seen perpendicular to the axis of the cylinders, dissociating the two eyes.

Step 3: Working on the principle of diplopic projection, it subjectively detects and measures latent or manifest, horizontal or vertical strabismus for near and

distance.

Step 4: It is especially useful in small to moderate decompensated phorias and acquired strabismus, distinguishing it from the Maddox wing (used for near phorias) - hence the answer is Maddox rod.

Quick Tip: Red cylinder lenses turning a light point into a streak.

273.



Identify the lesion of the vocal cord in the image given below:

- (A) Reinke's edema
- (B) Laryngeal Papilloma
- (C) Malignancy
- (D) Tracheomalacia

Correct Answer: (B) Laryngeal Papilloma

Solution:

Step 1: The image shows laryngeal papillomatosis (recurrent respiratory papillomatosis, RRP), the most frequent benign tumour of the larynx.

Step 2: It is caused by human papillomavirus (HPV) types 6 and 11 and is the

second most common cause of hoarseness in children.

Step 3: The papillomas sit primarily on the vocal cord margins, anterior commissure and epiglottis, and although benign they cause obstructive symptoms due to their location on the cords.

Step 4: The wart-like, frond appearance distinguishes it from Reinke's edema (smooth polypoid swelling), malignancy (ulceroproliferative mass) and tracheomalacia - so the lesion is laryngeal papilloma.

Quick Tip: HPV 6 and 11 wart-like growth on vocal cords - benign.

274.



A patient gives a history of hoarseness in the voice and presents with the clinical condition shown in the image. Identify the lesion.

- (A) Membranous tonsillitis
- (B) Follicular tonsillitis
- (C) Diphtheria
- (D) Aphthous ulcer

Correct Answer: (C) Diphtheria

Solution:

Step 1: The image shows a thick, grey pseudomembrane covering the throat and tonsils, the hallmark finding of diphtheria. Diphtheria is a serious bacterial infection that mainly affects the mucous membranes of the nose and throat.

Step 2: It is caused by *Corynebacterium diphtheriae*. The exotoxin produces a tough, adherent grey membrane that bleeds on attempted removal, along with sore throat, hoarseness, swollen cervical lymph nodes (bull neck), difficulty breathing, nasal discharge, fever and malaise.

Step 3: Follicular and membranous tonsillitis produce whitish exudate that is easily wiped off and is confined to the tonsils, not a firmly adherent grey membrane. Aphthous ulcers are small painful shallow oral ulcers, not a membrane. Therefore the lesion is diphtheria.

Quick Tip: A thick, firmly adherent grey membrane over the tonsils and throat is the giveaway.

275.



A patient presented with the following picture of the tympanic membrane. What is the most probable diagnosis (marked with the arrow)?

- (A) Tubercular Otitis Media
- (B) Syphilitic Otitis Media
- (C) Pseudomonas infection
- (D) Fungal Otitis Media

Correct Answer: (A) Tubercular Otitis Media

Solution:

Step 1: The image shows a tympanic membrane with multiple perforations and associated otorrhea. Multiple perforations together with painless otorrhea strongly suggest tuberculous otitis media.

Step 2: In tuberculous otitis media these perforations result from the breaking down of tubercles in the middle ear mucosa, which then coalesce. Infection usually reaches the middle ear through the eustachian tube.

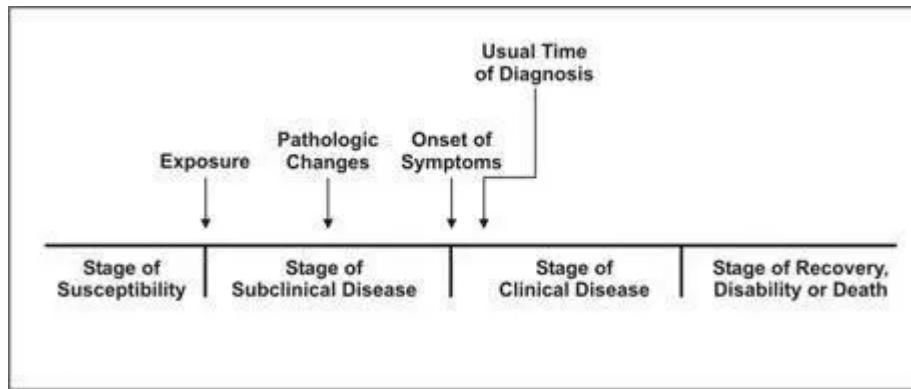
Step 3: Rare routes include hematogenous spread from a pulmonary, tonsillar or cervical lymph node focus, or ingestion of infected cow's milk. It commonly affects children and young adults.

Step 4: A single central perforation is typical of ordinary chronic otitis media; pseudomonas and fungal infections do not characteristically give multiple perforations. Hence the diagnosis is tubercular otitis media.

Quick Tip: Multiple perforations of the tympanic membrane point to a specific granulomatous infection.



276.



Which method is used to study the timeline shown in the image?

- (A) Cohort Study
- (B) Cross sectional study
- (C) Randomized Control Trials
- (D) Interventional Studies

Correct Answer: (A) Cohort Study

Solution:

Step 1: The timeline depicts the natural history of disease, that is, the progression of a disease process in an individual over time in the absence of treatment.

Step 2: It shows the stage of susceptibility, exposure, subclinical disease where pathologic changes occur, onset of symptoms, the usual time of diagnosis, clinical disease, and finally recovery, disability or death.

Step 3: Longitudinal (cohort) studies follow a group forward over time and are the method used to study the natural history of disease. Cross sectional studies capture only a single point in time, while randomized controlled trials and interventional studies introduce a treatment and so cannot describe untreated natural history. Hence a cohort study is correct.

Quick Tip: Studying the untreated natural history over time needs a forward-looking longitudinal design.

277.



A 6 year old boy has fever and chills, cough, rapid breathing, difficulty breathing and chest pain. Culture from a sample shows a Gram-positive organism. Identify the image.

- (A) Streptococcus pneumoniae
- (B) Staphylococcus
- (C) Propionibacterium
- (D) Mycobacterium

Correct Answer: (A) Streptococcus pneumoniae

Solution:

Step 1: Streptococcus pneumoniae (pneumococcus) is a Gram-positive bacterium responsible for the majority of community-acquired pneumonia, which fits the clinical picture of fever, chills, cough, rapid breathing and chest pain in this child.

Step 2: The image shows the typical lancet-shaped Gram-positive diplococci. S. pneumoniae is alpha-hemolytic, breaking down red blood cells by producing hydrogen peroxide (H_2O_2).

Step 3: This H_2O_2 production damages DNA and kills lung cells, producing pneumococcal pneumonia; spread to the central nervous system can cause pneumococcal meningitis.

Step 4: Staphylococci appear as Gram-positive clusters and are usually beta-hemolytic; Propionibacterium is an anaerobic skin commensal; Mycobacterium is acid-fast and not seen as Gram-positive cocci. Hence the organism is Streptococcus pneumoniae.

Quick Tip: Alpha-hemolytic, lancet-shaped Gram-positive diplococci causing childhood community-acquired pneumonia.

278.



Identify the picture.

- (A) Herpes zoster
- (B) Small pox
- (C) Chicken pox
- (D) Atopic dermatitis

Correct Answer: (A) Herpes zoster

Solution:

Step 1: The image shows a painful skin rash with grouped blisters confined to a localized band, the typical appearance of herpes zoster (shingles).

Step 2: Shingles results from reactivation of the varicella zoster virus (VZV) within the body. The initial infection with VZV causes chickenpox; after it resolves the virus stays dormant in nerve cells.

Step 3: On reactivation the virus travels along the nerve from the ganglion to the skin endings, producing the characteristic dermatomal blisters. Risk factors include old age and poor immune function.

Step 4: Chickenpox and smallpox give widespread (centripetal or centrifugal) lesions, not a single dermatomal band, and atopic dermatitis is an itchy eczematous rash without grouped vesicles in a dermatome. Hence the picture is herpes zoster.

Quick Tip: Painful grouped vesicles in a single dermatome from reactivated varicella zoster virus.

279.



Identify the image.

- (A) Malaria
- (B) Plague
- (C) Japanese encephalitis
- (D) Paragonimus

Correct Answer: (C) Japanese encephalitis

Solution:

Step 1: The image relates to Japanese encephalitis (JE), an infection of the brain caused by the Japanese encephalitis virus (JEV).

Step 2: JEV is spread by mosquitoes, specifically those of the Culex type. Pigs and wild birds act as the reservoir hosts that maintain the virus in nature.

Step 3: Symptoms may include headache, vomiting, fever, confusion and seizures, reflecting brain involvement.

Step 4: Malaria is a protozoal Anopheles-borne febrile illness, plague is caused by Yersinia pestis via rat fleas, and Paragonimus is a lung fluke; none fit the mosquito-borne encephalitis depicted here. Hence the answer is Japanese encephalitis.

Quick Tip: A Culex mosquito-borne brain infection with pigs and birds as reservoirs.

280.

Cause of death*		Time interval between onset and death
1	Direct cause of death	
a	Cerebral haemorrhage	4 hours
b	Due to Metastasis of the brain	4 months
c	Due to Breast cancer	5 years
d	Due to	
2	Arterial hypertension (3 years); Diabetes mellitus (10 years)	

*This does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.

What is the cause of death according to the death certificate shown below?

- (A) Breast Cancer
- (B) Secondaries
- (C) Cerebral Hemorrhage
- (D) All of the Above

Correct Answer: (D) All of the Above

Solution:

Step 1: A death certificate records the sequence of events leading to death, not just a single isolated entry. Each line in the certified causal chain is part of the cause of death.

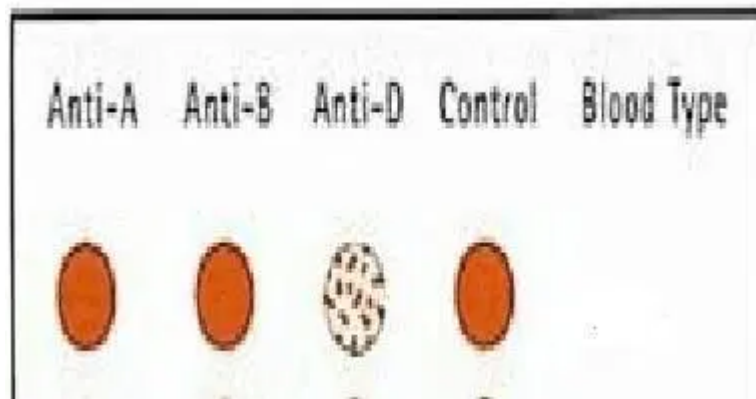
Step 2: Here the certificate lists breast cancer, its secondaries (metastases) and

the terminal cerebral hemorrhage. All three are linked in describing the sequence of events that ended in death.

Step 3: Because every one of these conditions contributes to and forms part of the certified causal sequence, the correct answer is all of the above rather than any single one in isolation.

Quick Tip: A death certificate captures the whole sequence of events, so consider every listed condition together.

281.



Identify the blood grouping process done here. The slide shows the test cells with anti-D reagent and a control. Which blood group does this signify?

- (A) A-ve
- (B) B+ve
- (C) O+ve
- (D) Rh group

Correct Answer: (D) Rh group

Solution:

Step 1: The slide demonstrates testing of red cells with Anti-D reagent, which is the method used to determine the Rh (D) blood group, not the ABO group.

Step 2: The D antigen is the most important blood group antigen in routine

blood banking after ABO. Agglutination (clumping) with Anti-D indicates D-positive cells, while no agglutination indicates D-negative cells.

Step 3: Antibodies of the Rh system do not occur naturally in serum. They develop only after antigen exposure, mostly during pregnancy or through transfusion.

Step 4: Because the reaction shown is read against Anti-D, the process identifies the Rh group. ABO-specific options (A+ve, B+ve, O+ve) describe end results of separate anti-A and anti-B testing and do not name what this single Anti-D process determines.

Quick Tip: A reaction read against Anti-D reagent tells you the D antigen status, not the ABO type.

282.



Identify the condition as shown in the image given below.

- (A) Callosal dysgenesis
- (B) Dandy walker syndrome
- (C) Aicardi syndrome
- (D) Septo optic dysplasia

Correct Answer: (A) Callosal dysgenesis

Solution:

Step 1: The image shows the classic racing car sign, which is characteristic of callosal dysgenesis (agenesis of the corpus callosum).

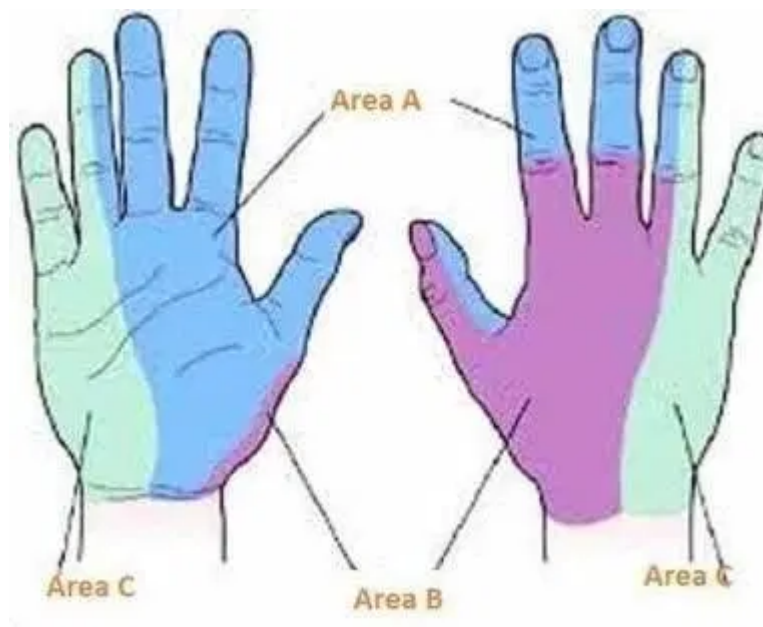
Step 2: The racing car sign refers to widely spaced lateral ventricles caused by agenesis of the corpus callosum, with intervening Probst bundles between them.

Step 3: On axial MRI or CT, the appearance resembles a Formula One car seen from above. The tyres are represented by the widely spaced frontal horns, and the dilated trigones (colpocephaly) complete the pattern.

Step 4: Dandy-Walker shows a posterior fossa cyst with vermian hypoplasia, septo-optic dysplasia shows an absent septum pellucidum with optic nerve hypoplasia, and Aicardi has its own triad. None produces the racing car sign, so callosal dysgenesis is correct.

Quick Tip: Widely spaced lateral ventricles resembling a Formula One car from above is the racing car sign.

283.



Which nerve supplies the region marked as 'Area B' in the image?

- (A) Ulnar nerve
- (B) Median nerve
- (C) Radial nerve
- (D) Posterior interosseous nerve

Correct Answer: (C) Radial nerve

Solution:

Step 1: Area B corresponds to the cutaneous territory on the dorsum (back) of the hand supplied by the radial nerve.

Step 2: The superficial terminal branch of the radial nerve is purely cutaneous. It supplies the lateral half of the dorsum of the hand.

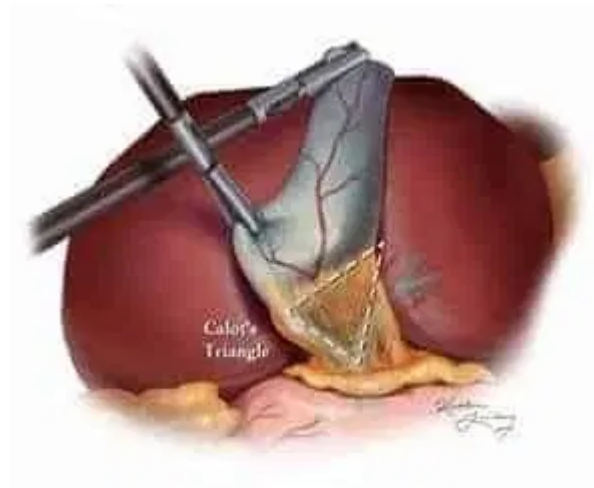
Step 3: It also supplies the proximal parts of the dorsal surfaces of the thumb, the index finger, and the lateral half of the middle finger.

Step 4: The ulnar nerve supplies the medial dorsum and medial one and a half digits, the median nerve supplies the palmar lateral digits, and the posterior interosseous nerve is mainly motor. Hence the radial nerve supplies Area B.

Quick Tip: The lateral dorsum of the hand and dorsal thumb-index skin is radial nerve territory.



284.



Which of the following is NOT a boundary of the structure shown in the given image?

- (A) Common hepatic duct
- (B) Cystic duct
- (C) Inferior surface of the liver
- (D) Gall bladder

Correct Answer: (D) Gall bladder

Solution:

Step 1: The image depicts Calot's triangle (the cystohepatic triangle), a small anatomical space at the porta hepatis where the hepatic ducts and neurovascular structures enter and exit the liver.

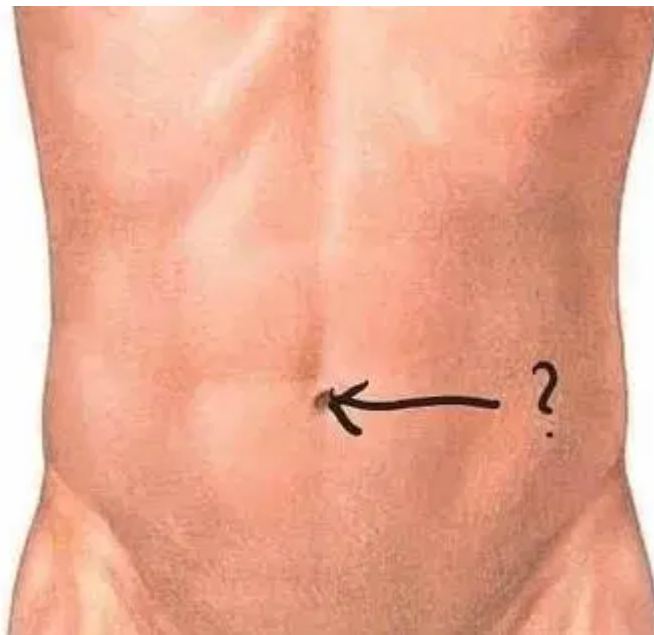
Step 2: Its three boundaries in the modern definition are: medial - common hepatic duct; inferior - cystic duct; superior - inferior surface of the liver.

Step 3: The gall bladder itself is not a boundary of this triangle. The cystic artery lies within the triangle and was the superior border in the original 1891 description, later revised because of its variable course.

Step 4: Since common hepatic duct, cystic duct, and inferior surface of liver are all true borders, the option that is NOT a boundary is the gall bladder.

Quick Tip: Calot's triangle borders are common hepatic duct, cystic duct, and inferior liver surface.

285.



The marked area in the given image is supplied by which dermatome?

- (A) T8
- (B) T9
- (C) T10
- (D) T11

Correct Answer: (C) T10

Solution:

Step 1: The marked landmark is the umbilicus, which is the standard reference point for the T10 dermatome.

Step 2: The T10 dermatome lies at the intersection of the midclavicular line and the horizontal level of the umbilicus.

Step 3: By contrast, T8 lies halfway between the xiphoid process and the umbilicus, T9 lies at three quarters of that distance, and T11 lies midway between the umbilicus and the inguinal ligament.

Step 4: Because the marked area is at the level of the umbilicus, the correct dermatome is T10.

Quick Tip: The umbilicus is the landmark for the T10 dermatome.

286.



Identify the type of the fibre marked in the image of the internal capsule.

- (A) Projection fibres
- (B) Short association fibres
- (C) Long association fibres
- (D) Commissural fibres

Correct Answer: (A) Projection fibres

Solution:

Step 1: The marked tract is the internal capsule, an area of white matter that separates the caudate nucleus and thalamus from the putamen and globus pallidus.

Step 2: The internal capsule contains both ascending and descending axons that run between the cerebral cortex and lower structures such as the pyramids of the medulla. These are projection fibres.

Step 3: Projection fibres connect the cortex with subcortical and spinal targets.

The internal capsule is V-shaped when cut horizontally, with the bend forming the genu, an anterior limb, and a posterior limb.

Step 4: Commissural fibres (such as the corpus callosum) link the two hemispheres, and association fibres link regions within one hemisphere. The internal capsule does neither, so the marked fibres are projection fibres.

Quick Tip: The internal capsule carries cortex-to-cord axons, which are projection fibres.

287.



Identify the structure marked by the red arrow in the given image.

- (A) Great vein of Galen
- (B) Pineal gland
- (C) Fornix
- (D) Falx cerebri

Correct Answer: (C) Fornix

Solution:

Step 1: The arrow points to the fornix, the main efferent (output) tract of the hippocampus and an important part of the limbic system.

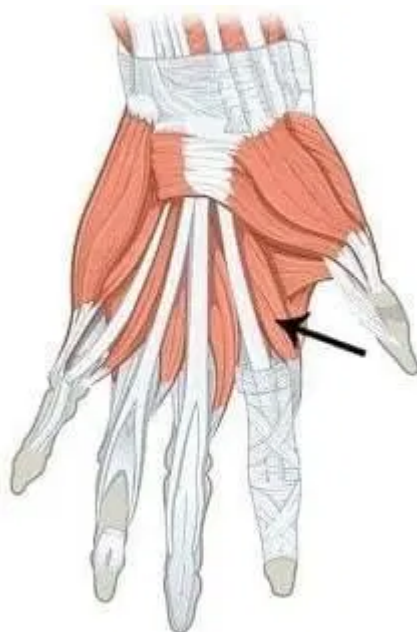
Step 2: The fornix is a curvilinear, roughly C-shaped bundle of white matter. It extends from the hippocampus to the mammillary bodies of the hypothalamus and the anterior nuclei of the thalamus.

Step 3: Hippocampal fibres begin as the alveus, which forms the fimbria; the fimbria thickens and splits off as the crus of the fornix. The fornix has four parts: crura, commissure, body, and columns (anterior pillars).

Step 4: The great vein of Galen is a venous channel, the pineal gland is a midline endocrine body, and the falx cerebri is a dural fold; none matches this C-shaped white matter tract, so the answer is the fornix.

Quick Tip: The C-shaped tract from hippocampus to mammillary bodies is the fornix.

288.



What is the nerve supply of the marked structure in the given image?

- (A) Anterior interosseous nerve
- (B) Posterior interosseous nerve
- (C) Ulnar nerve
- (D) Median nerve

Correct Answer: (D) Median nerve

Solution:

Step 1: The marked structure is the first lumbrical muscle of the hand. The lumbricals are intrinsic muscles of the hand that flex the metacarpophalangeal joints and extend the interphalangeal joints.

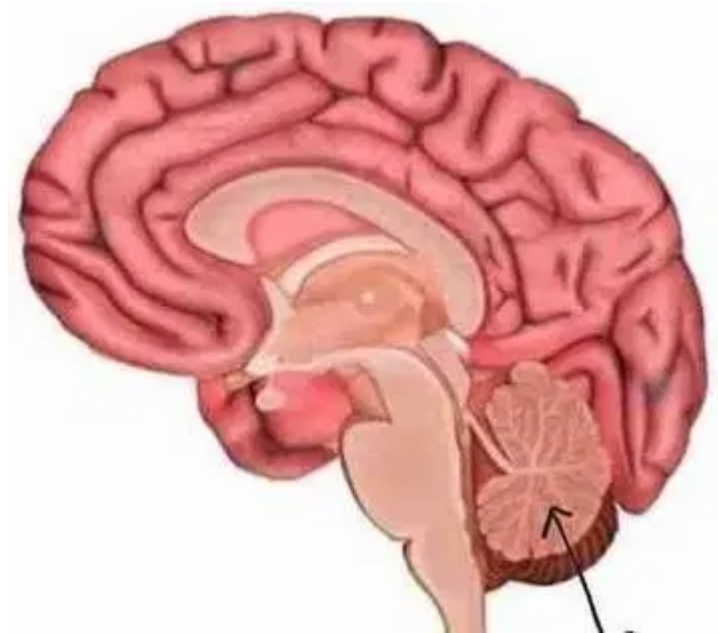
Step 2: Most intrinsic hand muscles are supplied by the deep branch of the ulnar nerve. The two exceptions are the thenar muscles and the lateral two lumbricals.

Step 3: The lateral two lumbricals (to the index and middle fingers) and the thenar muscles are supplied by the median nerve. Recall the mnemonic MEAT-LOAF: Median nerve supplies the Lateral two lumbricals, Opponens pollicis, Abductor pollicis brevis and Flexor pollicis brevis.

Step 4: Because the first lumbrical is one of the lateral two, its nerve supply is the median nerve, making option (d) correct. The ulnar nerve (c) supplies only the medial two lumbricals, so it is wrong. The anterior and posterior interosseous nerves (a, b) are branches of the median and radial nerves respectively that do not innervate the lumbricals.

Quick Tip: First lumbrical belongs to the lateral two - think MEAT-LOAF.

289.



Identify the marked structure in the image.

- (A) Cerebrum
- (B) Brain stem
- (C) Corpus callosum
- (D) Cerebellum

Correct Answer: (D) Cerebellum

Solution:

Step 1: The marked structure is the cerebellum, literally the "little brain". It is a central nervous system structure with a key role in motor control and coordination; cerebellar lesions present with motor signs such as ataxia.

Step 2: Location confirms the identity. The cerebellum lies at the back of the brain, immediately inferior to the occipital and temporal lobes, within the posterior cranial fossa.

Step 3: It is separated from the overlying occipital lobe by the tentorium cerebelli, a tough fold of dura mater. It lies posterior to the pons, separated from it by the fourth ventricle.

Step 4: These features make option (d) cerebellum correct. The cerebrum (a) is the large supratentorial mass, the brain stem (b) is anterior, and the corpus

callosum (c) is the midline commissure connecting the hemispheres - none match the marked posterior-fossa structure.

Quick Tip: Posterior cranial fossa, below the tentorium - the little brain.

290. Nerve injured in Frey's syndrome is:

- (A) Auriculotemporal nerve
- (B) Great auricular nerve
- (C) Lingual nerve
- (D) Inferior alveolar nerve

Correct Answer: (A) Auriculotemporal nerve

Solution:

Step 1: Frey's syndrome (auriculotemporal syndrome, also called Baillarger or Dupuy syndrome) is a complication that typically follows parotid gland surgery or injury near the parotid region.

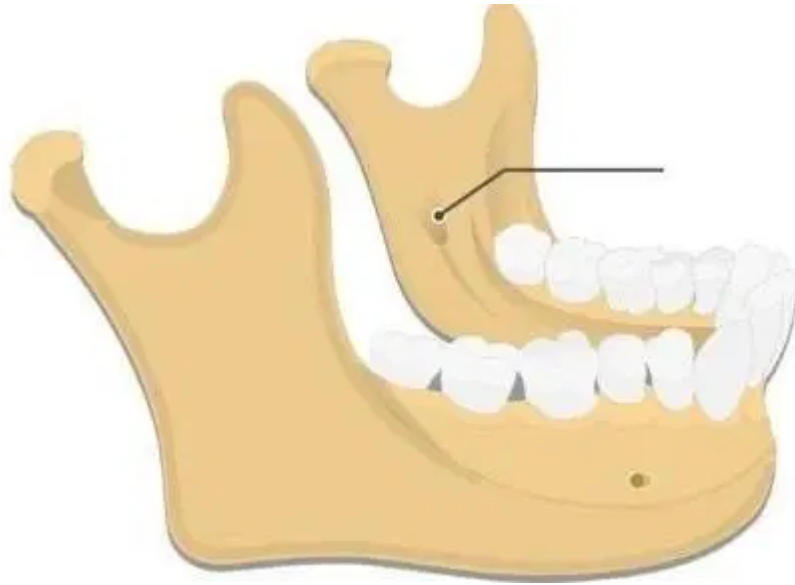
Step 2: It results from damage to the auriculotemporal nerve, which carries parasympathetic secretomotor fibres to the parotid gland and sympathetic fibres to the overlying facial skin sweat glands.

Step 3: During healing, the regenerating parasympathetic fibres aberrantly connect to the sweat glands and cutaneous vessels. As a result, eating triggers facial sweating and flushing instead of salivation - the classic gustatory sweating.

Step 4: Hence the injured nerve is the auriculotemporal nerve, option (a). The great auricular, lingual and inferior alveolar nerves are not responsible for this misdirected gustatory sweating.

Quick Tip: Gustatory sweating after parotid surgery points to one nerve near the parotid.

291.



Which nerve passes through the marked foramen in the given image?

- (A) Lingual nerve
- (B) Mandibular nerve
- (C) Chorda tympani nerve
- (D) Inferior alveolar nerve

Correct Answer: (D) Inferior alveolar nerve

Solution:

Step 1: The marked opening is the mandibular foramen, located on the medial surface of the ramus of the mandible.

Step 2: The mandibular foramen is the entrance to the mandibular canal and transmits the inferior alveolar nerve along with the inferior alveolar artery and vein.

Step 3: Inside the canal the inferior alveolar nerve supplies the lower teeth, then exits at the mental foramen as the mental nerve to supply the chin and lower lip skin.

Step 4: Therefore the nerve passing through the marked foramen is the inferior alveolar nerve, option (d). The lingual and chorda tympani nerves run in the soft tissue medial to the ramus but do not enter this bony foramen, and the

mandibular nerve (V3) is the parent trunk in the infratemporal fossa, not the structure within the foramen.

Quick Tip: Medial surface of the ramus - the gateway to the lower teeth.

292.



Identify the marked muscle 'A' in the diagram.

- (A) Brachioradialis
- (B) Extensor carpi radialis longus
- (C) Flexor carpi radialis
- (D) Extensor carpi ulnaris

Correct Answer: (B) Extensor carpi radialis longus

Solution:

Step 1: The marked muscle 'A' is the extensor carpi radialis longus. It arises from the lateral supraepicondylar ridge and lateral epicondyle of the humerus.

Step 2: Its tendon runs down the dorsal forearm and inserts on the dorsal base of the second metacarpal. In its proximal course it lies deep to the brachioradialis.

Step 3: It is innervated by the radial nerve. Acting at the wrist it extends and abducts (radially deviates) the hand.

Step 4: These features identify option (b). Brachioradialis (a) inserts on the radial styloid and flexes the elbow; flexor carpi radialis (c) is on the flexor (anterior) side; extensor carpi ulnaris (d) inserts on the fifth metacarpal and causes ulnar deviation, so none fit the marked dorsal radial-side extensor inserting on metacarpal II.

Quick Tip: Dorsal forearm, inserts on metacarpal II, deep to brachioradialis.

293.



Which of the following nail findings is seen in the condition shown below?

- (A) Pterygium
- (B) Pigmentation
- (C) Pitting
- (D) Ridges

Correct Answer: (C) Pitting

Solution:

Step 1: The image shows nail pitting - shallow or deep punctate depressions (small holes) scattered over the nail plate surface.

Step 2: Pitting arises from defective keratinisation of the proximal nail matrix, where small foci of abnormal cells are shed, leaving pin-point depressions as the nail grows out.

Step 3: It is a classic finding in psoriasis, and is also seen in alopecia areata and eczema. This makes option (c) pitting correct.

Step 4: The distractors describe different changes: pterygium (a) is a wing-like scar bridging cuticle to nail bed (lichen planus); pigmentation (b) is a colour change such as a melanonychia band; ridges (d) are longitudinal or transverse lines, not discrete holes - none match the punctate depressions shown.

Quick Tip: Pin-point holes in the nail plate - think psoriasis.