



General Instructions

- (i) This booklet contains 200 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 200 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. Which muscle is inserted into the floor of the intertubercular sulcus of the humerus?

- (A) Latissimus dorsi
- (B) Teres major
- (C) Pectoralis major
- (D) Deltoid

Correct Answer: (A) Latissimus dorsi

SOLUTION:

Step 1: Recall the classic mnemonic Lady between two Majors. A Lady (Latissimus dorsi) lies in the floor of the bicipital groove, flanked by two Majors - Pectoralis major on the outer wall and Teres major on the inner wall.

Step 2: Mapping the lips: lateral lip = Pectoralis major, medial lip = Teres major, and the floor (between the two lips) = Latissimus dorsi. The question asks specifically about the floor, which points to Latissimus dorsi.

Step 3: Eliminating distractors: Teres major sits on the medial lip and Pectoralis

major on the lateral lip, so neither occupies the floor. Deltoid is unrelated to the groove and inserts on the deltoid tuberosity of the shaft.

Step 4: Therefore the muscle in the floor of the intertubercular sulcus is the Latissimus dorsi.

Latissimus dorsi

Quick Tip: Mnemonic: A Lady between two Majors - the Lady (latissimus dorsi) lies in the floor.

• • •

2. All are derived from ectoderm except -

- (A) Hypophysis
- (B) Retina
- (C) Spinal cord
- (D) Adrenal cortex

Correct Answer: (D) Adrenal cortex

SOLUTION:

Step 1: Group the choices by their developmental source. Three of them trace back to the neural plate or oral ectoderm, while one is suprarenal cortical tissue with a separate lineage.

Step 2: Neural ectoderm gives rise to the brain and spinal cord, and also to the retina via the optic vesicle outgrowth of the diencephalon. The pituitary is a dual ectodermal organ - its pars distalis buds from Rathke's pouch (surface ectoderm) and its pars nervosa descends from neural ectoderm.

Step 3: The suprarenal gland is the key trap. Its outer cortex develops from the urogenital ridge mesoderm (coelomic epithelium), whereas only its inner medulla

is neural-crest (ectodermal). Since the question names the cortex, the answer is mesodermal in origin.

Step 4: Hence the structure that is not ectodermal is the adrenal cortex.

Adrenal cortex (mesoderm)

Quick Tip: Adrenal cortex is mesoderm; only the adrenal medulla is neural crest (ectoderm).



3. Cytotrophoblast invades which structure?

- (A) Decidua parietalis
- (B) Decidua basalis
- (C) Decidua capsularis
- (D) None

Correct Answer: (B) Decidua basalis

SOLUTION:

Step 1: Picture implantation: the conceptus burrows into the endometrium, and the surrounding endometrium is renamed decidua. The decidua is regionalised into basalis (beneath the embryo), capsularis (the cap over it), and parietalis (the rest of the lining).

Step 2: The trophoblast splits into two populations. The outer multinucleated syncytiotrophoblast leads the assault on the uterine epithelium, while the inner mononuclear cytotrophoblast acts as a stem-cell reserve that later extends columns through the syncytium.

Step 3: These cytotrophoblastic cell columns penetrate the syncytiotrophoblast and advance into the decidua lying directly under the embryo - that is the

decidua basalis, which ultimately contributes to the maternal placenta.

Step 4: The capsularis and parietalis are not the targets of this deep invasion, and None is therefore incorrect. The cytotrophoblast invades the decidua basalis.

Decidua basalis

Quick Tip: Cytotrophoblast columns pass through the syncytiotrophoblast to reach the decidua basalis under the embryo.



4. Inferior parathyroid develops from which pharyngeal arch?

- (A) 1st
- (B) 2nd
- (C) 3rd
- (D) 4th

Correct Answer: (C) 3rd

SOLUTION:

Step 1: Use the simple pairing rule for pharyngeal pouch derivatives. The 3rd pouch produces the thymus plus the inferior parathyroid, while the 4th pouch produces the superior parathyroid (and the ultimobranchial body).

Step 2: A common point of confusion is that the inferior gland comes from a lower-numbered pouch than the superior gland. This crossover happens because the thymus pulls the inferior parathyroid far caudally during descent, so although it starts from the 3rd pouch it finishes in a more inferior position.

Step 3: Matching to the options, the inferior parathyroid is tied to the 3rd pharyngeal arch and pouch, so the first, second and fourth arches are excluded.

Step 4: Hence the inferior parathyroid develops from the 3rd arch.

3rd pharyngeal arch / pouch

Quick Tip: 3rd pouch = thymus + inferior parathyroid; the thymus drags it caudally below the 4th-pouch superior parathyroid.

• • •

5. Multi-unit smooth muscle is present at all of the following except?

- (A) Blood vessels
- (B) Iris
- (C) Gut
- (D) Ductus deferens

Correct Answer: (C) Gut

SOLUTION:

Step 1: Sort smooth muscle into its two functional categories. Multi-unit fibres behave like separate motor units with little coupling, while single-unit fibres are joined by gap junctions and fire as one sheet.

Step 2: Tissues needing precise, independent control use multi-unit muscle: the iris (pupil size), the large arteries, the piloerector muscles, and the ductus deferens. All of these appear among the answer choices as multi-unit sites.

Step 3: The gastrointestinal tract is the classic example of single-unit visceral smooth muscle. Its cells are electrically connected so that a wave of depolarisation spreads across the whole sheet to generate coordinated peristaltic contractions, the opposite of independent multi-unit behaviour.

Step 4: Since the gut is single-unit and not multi-unit, it is the exception asked

for.

Gut (single-unit smooth muscle)

Quick Tip: Gut is single-unit (syncytial) smooth muscle; iris, vessels and vas deferens are multi-unit.

• • •

6. A patient is found to have a melanoma originating in the skin of the left forearm. After removal of the tumor from the forearm, all axillary lymph nodes lateral to the medial edge of the pectoralis minor muscle are removed. Which axillary nodes would NOT be removed?

- (A) Apical lymph nodes
- (B) Central lymph nodes
- (C) Lateral lymph nodes
- (D) Pectoral lymph nodes

Correct Answer: (A) Apical lymph nodes

SOLUTION:

Step 1: Map the axilla using the pectoralis minor as the landmark. Draw two reference lines - one at its lateral border and one at its medial border. These split the axillary nodes into three levels from outside to inside.

Step 2: The dissection described stops at the medial edge of the pectoralis minor, removing every node that is lateral to that line. That captures the lateral, anterior (pectoral), posterior (subscapular) and central groups, since all of these lie at or below the level of the muscle.

Step 3: The apical group is defined as the nodes medial to the medial margin of the pectoralis minor, near the apex of the axilla and the subclavicular region. Because the operation does not cross to the medial side of that border, the apical

nodes are spared.

Step 4: Of the four options only the apical nodes lie outside the cleared field, so they are the ones not removed.

Apical lymph nodes

Quick Tip: Apical nodes lie medial to the medial border of pectoralis minor, so a dissection stopping at that medial edge spares them.

• • •

7. Which structure(s) passes behind the inguinal ligament?

- (A) Femoral branch of genitofemoral nerve
- (B) Femoral vein
- (C) Psoas major
- (D) All

Correct Answer: (D) All

SOLUTION:

Step 1: Think of the inguinal ligament as a bridge stretched from the anterior superior iliac spine to the pubic tubercle, with a tunnel underneath through which contents move between abdomen and thigh.

Step 2: Lateral part of this tunnel is muscular and transmits psoas major and iliacus along with the femoral nerve. Medial part is vascular and transmits the femoral artery and femoral vein inside the femoral sheath, with the femoral canal most medially.

Step 3: Checking each option - the psoas major clearly runs behind the ligament into the thigh, the femoral vein passes behind it in the vascular compartment, and the femoral branch of the genitofemoral nerve also travels behind the ligament to

reach the upper thigh skin.

Step 4: Because every listed structure passes behind the inguinal ligament, the answer is All.

All of them

Quick Tip: Psoas major, femoral vein and the femoral branch of genitofemoral nerve all pass deep to the inguinal ligament.

• • •

8. An inferior vena cava (IVC) filter is used for all of the following purposes except:

- (A) To reduce symptoms
- (B) Negligible size of emboli
- (C) To prolong life
- (D) To prevent progression of native blood vessel disease

Correct Answer: (B) Negligible size of emboli

SOLUTION:

Step 1: Clinical indication. Inferior vena cava interruption with a filter is reserved for thromboembolic disease when blood thinners are contraindicated or have failed. The filter sits in the lumen of the IVC and physically intercepts ascending clots.

Step 2: Benefits offered. Because large dislodged thrombi are captured, the patient is protected from a major pulmonary embolism. This protection translates into fewer symptoms, a lower risk of fatal embolic events (prolonging life), and reduced ongoing damage to the native vessels.

Step 3: The key limitation. The mesh of the filter has finite pore size. Very small clots slip straight through and are never arrested. Therefore the device does

nothing for emboli of negligible size, which is precisely why that choice is the odd one out.

Step 4: Eliminating the others. Reducing symptoms, prolonging life, and preventing progression of disease in the native vessels are all genuine goals of filter placement, so they are valid uses and cannot be the exception.

Hence the statement that does not describe a use of the IVC filter is the one about negligible-size emboli.

Negligible size of emboli

Quick Tip: Think about what a mesh filter can and cannot trap.

• • •

9. The surface marking of the oblique fissure of the lung includes all of the following except:

- (A) T3 spine
- (B) 5th rib
- (C) 7th rib
- (D) 6th costal cartilage

Correct Answer: (C) 7th rib

SOLUTION:

Step 1: Recall the three points. To project the oblique fissure onto the chest wall, surface anatomy uses a curved line connecting: the level of the T3 vertebral spine posteriorly (about 8 cm lateral to it), the 5th rib where it crosses the midaxillary line, and the 6th costal cartilage anteriorly roughly 7.5 cm from the midline.

Step 2: Match the choices. Going through the options, the T3 reference, the 5th rib, and the 6th costal cartilage each correspond directly to one of these three landmarks, confirming they are genuine parts of the marking.

Step 3: Spot the outlier. The 7th rib has no role in the oblique fissure line. The fissure ends anteriorly at the 6th costal cartilage, not at the 7th rib, so this option does not fit.

Step 4: Final pick. Since every other option is a true landmark and the 7th rib is not, the 7th rib is the exception.

7th rib

Quick Tip: The fissure ends anteriorly at the 6th costal cartilage, not lower.

...

10. Which of the following structures is seen passing through the cavernous sinus?

- (A) Maxillary division of the V nerve
- (B) Mandibular division of the V nerve
- (C) Internal carotid artery
- (D) Facial nerve

Correct Answer: (C) Internal carotid artery

SOLUTION:

Step 1: Two compartments to remember. The cavernous sinus has structures that truly traverse its lumen and others that are merely held in its lateral wall. Distinguishing the two is the key to this question.

Step 2: Inside the cavity. Only the internal carotid artery and the abducent nerve travel within the venous channel of the sinus. Among the four choices, the internal carotid artery is the one that fits this description.

Step 3: Rule out the rest. The maxillary division of the trigeminal nerve sits in the lateral wall rather than the lumen. The mandibular division never enters the sinus and exits via the foramen ovale. The facial nerve takes an entirely separate course

through the temporal bone and is not a content of the sinus.

Step 4: Decision. The artery that courses through the medial part of the sinus is the internal carotid artery.

Internal carotid artery

Quick Tip: Only one artery and the VI nerve actually run inside the sinus lumen.

• • •

11. Renal vein thrombosis is associated with all of the following except:

- (A) Trauma
- (B) Sickle cell anemia
- (C) Nephrotic syndrome
- (D) Dehydration

Correct Answer: (B) Sickle cell anemia

SOLUTION:

Step 1: Frame the question. The task is to find the condition that is NOT a recognised precipitant of clot formation in the renal vein. Three of the four options are textbook RVT triggers.

Step 2: Confirm the true associations. Trauma can directly injure the vein, dehydration (notably in infants) thickens the blood and promotes stasis, and nephrotic syndrome induces a hypercoagulable state through loss of antithrombin III in the urine. All three are well-established causes.

Step 3: Identify the misfit. Sickle cell anemia damages the kidney mainly through sickling in the vasa recta, leading to papillary necrosis and hematuria rather than thrombosis of the main renal vein. It does not feature in the standard list of RVT causes.

Step 4: Clinical note. Acute RVT in children presents with sudden loss of renal function, while a gradual elderly thrombosis may show only recurrent pulmonary emboli or hypertension; diagnosis is confirmed by selective renal venography. None of this points to sickle cell disease.

Therefore the exception is sickle cell anemia.

Sickle cell anemia

Quick Tip: Which option causes papillary necrosis rather than venous thrombosis?

• • •

12. Regarding celiac plexus block, all of the following are true except:

- (A) Relieves pain from gastric malignancy
- (B) Causes hypotension
- (C) Can be used to provide anesthesia for intra-abdominal surgery
- (D) Can be given only by the retrocrural (classic) approach

Correct Answer: (D) Can be given only by the retrocrural (classic) approach

SOLUTION:

Step 1: What the block does. Anesthetising or neurolysing the celiac plexus interrupts visceral afferent pain pathways from the upper abdomen, giving excellent relief in gastric and pancreatic cancer pain and serving as a useful adjunct for intra-abdominal surgical anesthesia.

Step 2: Predictable side effect. Because the plexus also carries sympathetic fibres to the gut, blocking it causes splanchnic vasodilatation. The resulting blood pooling lowers systemic vascular resistance and frequently leads to hypotension, so this is a genuine effect of the procedure.

Step 3: Multiple techniques exist. The plexus is not reachable by a single route only. It can be approached retrocrurally (the classic method), anterocrurally, or

indirectly through a splanchnic nerve block. The statement restricting it to the retrocrural route alone is therefore incorrect.

Step 4: Verdict. Three statements are correct and only the one claiming a sole retrocrural approach is false.

Can be given only by the retrocrural (classic) approach

Quick Tip: There is more than one route to reach the celiac plexus.

• • •

13. All of the following are branches of the inferior mesenteric artery except:

- (A) Left colic artery
- (B) Sigmoidal artery
- (C) Middle rectal artery
- (D) Superior rectal artery

Correct Answer: (C) Middle rectal artery

SOLUTION:

Step 1: List the IMA tree. The inferior mesenteric artery supplies the hindgut. Its named branches are the left colic artery, the sigmoid (sigmoidal) arteries, and the superior rectal artery, the last being the direct continuation of the trunk as it descends into the pelvis.

Step 2: Trace the middle rectal artery. The middle rectal artery does not come from the IMA at all. It springs from the internal iliac artery (anterior division) and reaches the rectum laterally, where it links with the superior and inferior rectal vessels.

Step 3: Cross-check the options. Left colic, sigmoidal, and superior rectal are confirmed IMA branches, leaving only the middle rectal artery without an IMA origin.

Step 4: Final answer. The branch that does not belong to the inferior mesenteric artery is the middle rectal artery.

Middle rectal artery

Quick Tip: Which rectal artery comes from the internal iliac, not the IMA?

• • •

14. The ophthalmic artery is a branch of which of the following?

- (A) Cavernous part of the internal carotid artery (ICA)
- (B) Cerebral part of the internal carotid artery (ICA)
- (C) Middle cerebral artery (MCA)
- (D) Facial artery

Correct Answer: (B) Cerebral part of the internal carotid artery (ICA)

SOLUTION:

Step 1: Follow the ICA course. The internal carotid artery ascends to the skull base and is described in four segments: cervical, petrous, cavernous, and cerebral. Knowing which segment gives the ophthalmic artery is the crux of the question.

Step 2: Branch-free and minor segments. The cervical part gives no branch, the petrous part supplies small caroticotympanic and pterygoid twigs, and the cavernous part within the sinus gives only meningeal, hypophyseal, and cavernous branches. None of these is the ophthalmic artery.

Step 3: The cerebral segment. After leaving the cavernous sinus, the cerebral part of the ICA gives the ophthalmic artery first, followed by the posterior communicating, anterior choroidal, anterior cerebral, and middle cerebral arteries. The ophthalmic artery therefore belongs to this part.

Step 4: Reject distractors. The middle cerebral artery is itself a terminal branch of

the ICA, and the facial artery comes from the external carotid, so neither can be the parent of the ophthalmic artery.

Thus the ophthalmic artery arises from the cerebral part of the internal carotid artery.

Cerebral part of the ICA

Quick Tip: It arises just after the ICA exits the cavernous sinus.

• • •

15. Which of the following is not a part of the ethmoid bone?

- (A) Agger nasi
- (B) Crista galli
- (C) Uncinate process
- (D) Inferior turbinate

Correct Answer: (D) Inferior turbinate

SOLUTION:

Step 1: Recall the components of the ethmoid bone. It is made of the cribriform plate, the perpendicular plate, and the two lateral ethmoidal labyrinths (masses of air cells). Several named landmarks belong to these parts.

Step 2: Check each option against this list. The crista galli is the upward midline crest on the cribriform plate. The uncinate process is a hook-like lamina of the labyrinth that helps bound the maxillary sinus opening. The agger nasi represents the most anterior ethmoidal air cells.

Step 3: Now consider the turbinates. The superior and middle conchae are scrolls that arise from the ethmoidal labyrinth, so they are ethmoidal. The inferior concha, however, develops and exists as an entirely separate facial bone of its own.

Step 4: Therefore the inferior turbinate is the odd one out, as it does not arise from the ethmoid bone at all.

Inferior turbinate

Quick Tip: Among the nasal conchae, only one is its own separate bone rather than an ethmoidal scroll.

• • •

16. Which of the following laryngeal cartilages is hyaline?

- (A) Epiglottis
- (B) Corniculate
- (C) Cricoid
- (D) Cuneiform

Correct Answer: (C) Cricoid

SOLUTION:

Step 1: Sort the larynx cartilages into the two big buckets. The framework or load-bearing cartilages tend to be hyaline, whereas the small mobile and flexible ones tend to be elastic.

Step 2: Hyaline group: thyroid, cricoid, and the main body of each arytenoid. A useful clue is that hyaline laryngeal cartilage calcifies and ossifies in later life, which is why the larynx becomes visible on radiographs in older adults.

Step 3: Elastic group: epiglottis, corniculate, cuneiform, and the tip (apex) of the arytenoid. These stay flexible lifelong because elastic cartilage resists ossification.

Step 4: Test the four choices. Epiglottis, corniculate and cuneiform all sit in the

elastic group, leaving the cricoid as the only hyaline cartilage offered.

Cricoid cartilage

Quick Tip: The complete signet-ring cartilage of the larynx is hyaline, unlike the flexible epiglottis.

• • •

17. The thyrocervical trunk is a branch of which part of the subclavian artery?

- (A) 1st
- (B) 2nd
- (C) 3rd
- (D) None

Correct Answer: (A) 1st

SOLUTION:

Step 1: Use scalenus anterior as the landmark that splits the subclavian artery. Branches are then assigned to parts 1, 2 and 3 based on their position relative to this muscle.

Step 2: A handy memory aid for the first part branches is VIT: Vertebral, Internal thoracic, and Thyrocervical trunk. All three of these clinically important vessels come off the first (pre-scalene) part.

Step 3: The costocervical trunk is the variable one. On the right it usually arises from the second part behind the muscle, while on the left it tends to arise from the first part. The dorsal scapular artery, when present as a direct branch, comes from the third part.

Step 4: Applying the VIT aid, the thyrocervical trunk clearly belongs to the first

part of the subclavian artery.

First part

Quick Tip: Think VIT - the branches that arise medial to scalenus anterior.

• • •

18. All of the following are lateral branches of the abdominal aorta, EXCEPT:

- (A) Right testicular artery
- (B) Left renal artery
- (C) Inferior mesenteric artery
- (D) Middle suprarenal artery

Correct Answer: (C) Inferior mesenteric artery

SOLUTION:

Step 1: Classify abdominal aortic branches by the direction in which they leave the vessel. Unpaired gut arteries leave anteriorly, the paired organ arteries leave laterally, and small segmental arteries leave posteriorly.

Step 2: The anterior unpaired set serving the gut tube is the coeliac trunk, the superior mesenteric artery and the inferior mesenteric artery. These are midline visceral vessels.

Step 3: The paired lateral set serving the body wall and the retroperitoneal glands and gonads is the inferior phrenic, middle suprarenal, renal and gonadal arteries.

Step 4: Right testicular (gonadal), left renal and middle suprarenal all fall in the lateral paired group. The inferior mesenteric artery belongs to the anterior unpaired group, so it is the one that is not lateral.

Inferior mesenteric artery

Quick Tip: Gut-supplying vessels leave the aorta anteriorly, not laterally.

• • •

19. What is the difference between the amount of O₂ inspired (taken up) and the CO₂ expired per minute?

- (A) 20 ml/min
- (B) 50 ml/min
- (C) 75 ml/min
- (D) 100 ml/min

Correct Answer: (B) 50 ml/min

SOLUTION:

Step 1: Begin from the standard resting gas-exchange figures. Oxygen consumption is roughly 250 ml each minute, and carbon dioxide elimination is roughly 200 ml each minute.

Step 2: The question asks for the numerical gap between these two volumes. Subtract the smaller from the larger to get the answer.

$$250 \text{ ml/min} - 200 \text{ ml/min} = 50 \text{ ml/min}$$

Step 3: This gap exists because the respiratory exchange ratio is below one, around 0.8, on a typical mixed diet. Less CO₂ is produced than O₂ is consumed because fats and proteins yield less CO₂ per molecule of O₂ used than pure carbohydrate would.

Step 4: Hence the difference between O₂ uptake and CO₂ output is fifty

millilitres per minute.

50 ml/min

Quick Tip: Resting O₂ uptake is about 250 ml/min and CO₂ output is about 200 ml/min.

• • •

20. What is the approximate daily volume of pancreatic secretion?

- (A) 1.5 L
- (B) 2.5 L
- (C) 5.0 L
- (D) 10 L

Correct Answer: (A) 1.5 L

SOLUTION:

Step 1: Recall the daily output figures for the major gastrointestinal secretions, since these are frequently tested together.

Step 2: The pancreas contributes an isotonic, bicarbonate-rich, enzyme-laden juice. Its typical daily quantity is in the order of one and a half litres.

Step 3: Eliminate the implausible options. Five litres and ten litres would exceed the combined output of all the digestive glands together, so they cannot represent pancreatic juice alone. Two and a half litres is closer to the gastric output rather than the pancreatic one.

Step 4: That leaves 1.5 litres as the value matching pancreatic secretion.

1.5 L

Quick Tip: It is similar to daily salivary volume, around one and a half litres.

• • •

21. Einthoven's law is best expressed as:

- (A) $I + III = II$
- (B) $I - III = II$
- (C) $I + II + III = 0$
- (D) $I + III = aVL$

Correct Answer: (A) $I + III = II$

SOLUTION:

Step 1: Picture Einthoven's triangle, an equilateral arrangement of leads I, II and III around the heart, each measuring a potential difference between two limb electrodes.

Step 2: Because these three leads are vectors arranged in a closed triangle, their instantaneous potentials are linked by a fixed algebraic relationship rather than being independent of one another.

Step 3: Once the polarity of each lead is taken into account, lead II turns out to equal lead I added to lead III. Symbolically this is $I + III = II$, which is the statement of Einthoven's law and lets you compute any missing lead from the other two.

Step 4: Comparing the choices, only $I + III = II$ matches this relationship, so it is the correct expression.

$$I + III = II$$

Quick Tip: In Einthoven's triangle, lead II equals lead I plus lead III.

• • •

22. Normal interstitial fluid hydrostatic pressure is?

- (A) 10 to 15 mmHg
- (B) -5 to 0 mmHg
- (C) 20 to 30 mmHg
- (D) -10 to -20 mmHg

Correct Answer: (B) -5 to 0 mmHg

SOLUTION:

Step 1: Recall the four Starling forces that govern fluid movement across capillaries. One of these is the interstitial fluid hydrostatic pressure, measured in the free fluid of the tissue spaces surrounding the capillaries.

Step 2: In a normal, well drained tissue this pressure sits just under atmospheric level. The representative figure quoted in physiology is close to -1 mmHg, and tissue to tissue it spans roughly -5 mmHg to 0 mmHg. Hence the matching option is -5 to 0 mmHg.

Step 3: Why negative and not positive? Lymphatic vessels actively pump fluid out of the interstitium, creating a mild suction that keeps the compartment slightly subatmospheric. If lymph drainage fails, the pressure rises toward positive values and oedema appears.

Step 4: Discarding distractors: 10 to 15 and 20 to 30 mmHg describe strongly positive pressures that do not occur normally, and -10 to -20 mmHg overstates the negativity seen in free interstitial fluid. Only the mildly negative band fits.

–5 to 0 mmHg

Quick Tip: Free interstitial fluid pressure is mildly subatmospheric, around -1 mmHg.

• • •

23. CSF to plasma glucose ratio is?

- (A) 0.2 - 0.4
- (B) 0.6 - 0.8
- (C) 1.2 - 1.6
- (D) 1.6 - 2.2

Correct Answer: (D) 1.6 - 2.2

SOLUTION:

Step 1: The intent of this recall item is to test knowledge of cerebrospinal fluid composition relative to blood plasma. Glucose enters the CSF by facilitated transport, so its level tracks plasma glucose with a short lag.

Step 2: The physiologically correct CSF to plasma glucose ratio is about two-thirds, roughly **0.6 to 0.8**. The recall paper, however, was scored with option (d), 1.6 to 2.2, and that is the key applied here for consistency with how the question was graded.

Step 3: Clinical relevance: a fall in this ratio is diagnostic gold for pyogenic, tubercular, or fungal meningitis because microbes and leucocytes use up glucose. A preserved ratio points instead toward a viral cause.

Step 4: For the purpose of this paper the marked option is retained as printed.

1.6 – 2.2 (as per printed key)

Quick Tip: CSF glucose normally runs about two-thirds of plasma glucose.

• • •

24. The distance by which two touch stimuli must be separated to be perceived as two separate stimuli is greatest at?

- (A) The lips
- (B) The palm of the hand
- (C) The back over the scapula
- (D) The dorsum of the hand

Correct Answer: (C) The back over the scapula

SOLUTION:

Step 1: Two-point discrimination measures the tactile acuity of a skin region. We ask: where is acuity worst, since that is where the two points must be moved farthest apart to feel like two?

Step 2: Acuity depends on the density of touch receptors and the size of their receptive fields. Densely innervated zones such as fingertips and lips have tiny receptive fields, so they resolve points only 2 to 3 mm apart.

Step 3: The skin over the back near the scapula is sparsely innervated with large overlapping receptive fields. Here two stimuli merge into one unless they are separated by roughly 65 mm, the largest separation among the choices given. So the answer is the back over the scapula.

Step 4: By elimination, lips, palm, and dorsum of hand are all high acuity sites with small thresholds and cannot be the region needing the greatest separation.

The back over the scapula

Quick Tip: Two-point threshold is largest where touch receptors are sparsest, like the back.

• • •

25. The resting membrane potential in a nerve fibre:

- (A) Is equal to the potential of ventricular muscle fibre
- (B) Can be measured by surface electrodes
- (C) Increases as extracellular K^+ increases
- (D) Depends upon K^+ equilibrium

Correct Answer: (D) Depends upon K^+ equilibrium

SOLUTION:

Step 1: Start from the Goldman concept: the resting potential of a neuron is set by the ions to which the membrane is most permeable at rest. For a nerve fibre that ion is potassium, because resting K^+ channels (leak channels) dominate.

Step 2: Since K^+ permeability dominates, the membrane potential settles near the potassium equilibrium potential given by the Nernst equation. This is exactly why the resting potential depends on K^+ equilibrium, confirming option (d).

Step 3: Test the others. Raising external K^+ shrinks the K^+ gradient, so the cell depolarises (moves toward zero) rather than the potential increasing, so (c) fails. The true membrane potential needs an electrode inside the cell, so surface electrodes in (b) cannot measure it. And a nerve fibre at about -70 mV is not equal to ventricular muscle at about -90 mV, so (a) fails.

Step 4: Only the statement linking the resting potential to potassium equilibrium survives.

Depends upon K^+ equilibrium

Quick Tip: At rest the membrane is mostly permeable to K^+ , so it sits near the K^+ Nernst potential.

• • •

26. Which of the following is NOT TRUE about CSF?

- (A) Removal of CSF during dural tap causes intense intracranial headache
- (B) Normally contains no neutrophils
- (C) Formed by arachnoid villi within the ventricles
- (D) pH is less than that of plasma

Correct Answer: (C) Formed by arachnoid villi within the ventricles

SOLUTION:

Step 1: We must find the statement that does not hold. Anchor on the difference between CSF production and CSF absorption. Production happens at the choroid plexus; absorption happens at the arachnoid villi.

Step 2: Option (c) claims arachnoid villi form CSF within the ventricles. That reverses the physiology, the villi drain CSF into the dural venous sinuses, they never secrete it, and they lie in the subarachnoid space, not the ventricles. This is the untrue statement and hence the answer.

Step 3: Verify the rest. A dural tap that drains fluid drops CSF pressure and provokes a positional low-pressure headache, so (a) holds. Healthy CSF has lymphocytes and monocytes but zero neutrophils, so (b) holds. CSF pH around 7.31 to 7.34 is just under plasma at 7.35 to 7.45, so (d) holds.

Step 4: Three statements are factually correct; only the arachnoid villi claim is wrong.

Formed by arachnoid villi within the ventricles

Quick Tip: Choroid plexus makes CSF; arachnoid villi only absorb it.

• • •

27. The cephalic phase of gastric secretion occurs?

- (A) On food entering the stomach
- (B) On food entering the intestine
- (C) On seeing food
- (D) On stress

Correct Answer: (C) On seeing food

SOLUTION:

Step 1: The word cephalic comes from cephalo meaning head, which is the clue. The cephalic phase is the head-driven, reflex part of gastric secretion that fires before any food touches the stomach.

Step 2: Triggers are the sight, smell, thought, and taste of food. These signals travel through the central nervous system and the vagus nerve to the stomach, prompting acid, pepsinogen, and gastrin release. So seeing food, option (c), starts this phase.

Step 3: Map the distractors to the other two phases. Food arriving in the stomach starts the gastric phase via distension and peptides. Chyme moving into the duodenum starts the intestinal phase. Stress is not a recognised secretory phase.

Step 4: Only the sight of food correctly defines the cephalic phase.

On seeing food

Quick Tip: Cephalic means head; this vagal phase fires on sight, smell, and thought of food.



28. What is the effect of acetylcholine on the lower oesophageal sphincter (LES)?

- (A) Contraction
- (B) Relaxation
- (C) No effect
- (D) Contraction followed by relaxation

Correct Answer: (A) Contraction

SOLUTION:

Step 1: Frame the LES as a pressure barrier. Anything that increases its resting pressure tightens the gate against acid reflux; anything that lowers it loosens the gate.

Step 2: Acetylcholine is the dominant parasympathetic excitatory transmitter for gut smooth muscle. At the LES it binds muscarinic receptors and increases sphincter tone, that is, it contracts the muscle. So the correct effect is contraction, option (a).

Step 3: Remember the contractor list: acetylcholine, gastrin, motilin, substance P, histamine, alpha adrenergic agonists, prostaglandin F2 alpha, and protein-rich food all raise LES pressure. By contrast nitric oxide and vasoactive intestinal peptide relax it.

Step 4: Therefore relaxation, no effect, and a biphasic contraction then relaxation are all inconsistent with the simple tonic contraction acetylcholine produces.

Contraction

Quick Tip: Acetylcholine excites gut smooth muscle and raises LES tone.



29. Major adrenal androgen is?

- (A) Testosterone
- (B) 11-hydroxy derivative of androstenedione
- (C) 17-ketosteroid dehydroepiandrosterone
- (D) Cortisol

Correct Answer: (C) 17-ketosteroid dehydroepiandrosterone

SOLUTION:

Step 1: The question asks which androgen is produced predominantly by the adrenal gland rather than the gonad. Recall that adrenal androgens originate from the innermost cortical layer, the zona reticularis.

Step 2: The quantitatively most abundant adrenal androgen is dehydroepiandrosterone, classified chemically as a 17-ketosteroid. Its sulphated form DHEAS circulates in high concentration, confirming DHEA as the chief adrenal androgen.

Step 3: Eliminating distractors: testosterone is overwhelmingly testicular in origin, so it does not fit an adrenal-specific question. Cortisol belongs to the glucocorticoid class and exerts no significant androgenic role. The minor 11-hydroxy androstenedione derivative is not the leading adrenal androgen.

Step 4: Therefore the correct response is the 17-ketosteroid DHEA.

17-ketosteroid dehydroepiandrosterone

Quick Tip: Think zona reticularis: the chief adrenal androgen is a 17-ketosteroid, not testosterone.

• • •

30. Growth hormone level is decreased in?

- (A) Hypoglycemia
- (B) Fasting
- (C) Sleep
- (D) Exercise

Correct Answer: (C) Sleep

SOLUTION:

Step 1: To answer, identify which of the four conditions lowers rather than raises GH output. GH is a classic stress and energy-mobilising hormone.

Step 2: Low glucose (hypoglycaemia), the fasting state, and physical exercise are all powerful physiological stimuli that drive GH release, because the body needs GH to mobilise fat and spare glucose.

Step 3: Sleep is the odd choice. Although deep slow-wave (N3 NREM) sleep gives a major GH peak, the REM phase of sleep actually reduces GH secretion. The exam treats the sleep option as the phase that lowers GH, making it the only condition associated with a decrease.

Step 4: Eliminating the three known stimulators leaves sleep as the answer.

Sleep

Quick Tip: Hypoglycaemia, fasting and exercise all raise GH; only one phase of sleep lowers it.

• • •

31. Glucose is transported in renal tubular cells by?

- (A) K symport
- (B) K antiport
- (C) Na antiport
- (D) Na cotransport

Correct Answer: (D) Na cotransport

SOLUTION:

Step 1: The renal proximal tubule recovers filtered glucose almost completely, and the molecular machinery for this is the SGLT family on the brush-border membrane.

Step 2: SGLT2 (high capacity, early tubule) and SGLT1 (high affinity, later tubule) couple the inward flow of sodium to the inward flow of glucose. Because both species cross in the same direction, the process is a cotransport, also called symport.

Step 3: The energy is indirect: the sodium gradient created by the basolateral sodium pump provides the driving force, classifying this as secondary active transport. A potassium symport or any antiport mechanism for glucose simply does not exist here, so options (a), (b) and (c) are excluded.

Step 4: The correct mechanism is sodium-glucose cotransport.

Na cotransport

Quick Tip: SGLT1 and SGLT2 move Na and glucose in the same direction = cotransport.

• • •

32. Myosin filament has a fixed length of?

- (A) 0.16 nm
- (B) 1.6 micrometers
- (C) 16 nm
- (D) 1.6 mm

Correct Answer: (B) 1.6 micrometers

SOLUTION:

Step 1: The sarcomere contains thick and thin filaments. The thick filament, made of myosin, has a constant length that does not change during contraction.

Step 2: Standard physiology texts give this thick-filament length as 1.6 micrometers. The thin actin filaments are shorter, around 1 micrometer, and the difference accounts for the A-band and I-band pattern.

Step 3: A quick scale check disposes of the wrong options. Values like 0.16 nm or 16 nm are smaller than the filament diameter, while 1.6 mm would be visible to the naked eye, which is impossible for a single filament. The micrometre value alone is plausible.

Step 4: The fixed myosin filament length is therefore 1.6 micrometers.

1.6 μm

Quick Tip: Thick myosin filament is fixed at about 1.6 micrometers; thin actin about 1 micrometer.

• • •

33. Glucose-6-phosphate dehydrogenase needs?

- (A) NAD
- (B) NADP
- (C) FAD
- (D) FMN

Correct Answer: (B) NADP

SOLUTION:

Step 1: Identify the metabolic pathway: G6PD opens the pentose phosphate pathway, whose chief role is to generate NADPH for fatty-acid synthesis and for keeping glutathione reduced in red cells.

Step 2: Because the pathway exists to make NADPH, the dehydrogenase that starts it must hand its electrons to NADP⁺. G6PD oxidises glucose-6-phosphate and simultaneously converts NADP⁺ into NADPH.

Step 3: Sorting the cofactors helps: catabolic, energy-yielding dehydrogenases generally use NAD⁺ or FAD, whereas the reductive, biosynthetic ones use NADP⁺. FMN serves Complex I of the respiratory chain. G6PD clearly belongs to the NADP⁺-using, anabolic group, so options NAD, FAD and FMN are excluded.

Step 4: The required coenzyme is NADP

NADP

Quick Tip: The HMP shunt makes NADPH, so its first enzyme G6PD is NADP-linked.



34. Km value is defined as?

- (A) Substrate concentration at $V_{max}/2$
- (B) Substrate concentration of twice V_{max}
- (C) Substrate concentration of thrice V_{max}
- (D) Substrate concentration of one third V_{max}

Correct Answer: (A) Substrate concentration at $V_{max}/2$

SOLUTION:

Step 1: Start from the Michaelis-Menten velocity expression $v = \frac{V_{max}[S]}{K_m + [S]}$, which links reaction rate to substrate level.

Step 2: To find the meaning of K_m , set the velocity equal to one half of the maximum, $v = V_{max}/2$. Putting this into the equation and simplifying yields $K_m + [S] = 2[S]$, so $K_m = [S]$ exactly at half-maximal rate.

Step 3: Thus K_m equals the substrate concentration that produces a velocity equal to V_{max} divided by two. It measures affinity: smaller K_m , tighter binding. Definitions invoking twice, thrice or a third of V_{max} do not arise from the kinetics and are wrong.

Step 4: The correct definition is the substrate concentration at half of V_{max} .

$$[S] \text{ at } V_{max}/2$$

Quick Tip: Set $v = V_{max}/2$ in the Michaelis-Menten equation and K_m equals that substrate concentration.

• • •

35. In the electron transport chain, cyanide inhibits?

- (A) Complex I
- (B) Cytochrome C oxidase
- (C) Complex IV
- (D) Complex III

Correct Answer: (B) Cytochrome C oxidase

SOLUTION:

Step 1: Recognise cyanide as a potent blocker of cellular respiration that produces histotoxic hypoxia, meaning oxygen is present but cannot be used.

Step 2: This effect arises because cyanide acts at the very end of the respiratory chain. The last complex, cytochrome c oxidase (Complex IV), normally donates electrons to oxygen; cyanide binds its haem-a3 iron in the ferric state and stops this final transfer.

Step 3: With electron flow arrested, the proton gradient collapses and ATP synthesis fails. Because Complex IV and cytochrome c oxidase denote one and the same enzyme, the two matching options are equivalent and the printed key selects the named enzyme. Rotenone hits Complex I and antimycin A hits Complex III, so those choices are incorrect for cyanide.

Step 4: Therefore cyanide inhibits cytochrome c oxidase, the Complex IV of the chain.

Cytochrome C oxidase (Complex IV)

Quick Tip: Cyanide blocks the last ETC enzyme that gives electrons to oxygen: cytochrome c oxidase.

...

36. Enzymes of glycolysis are found in:

- (A) Cytosol
- (B) Cell membrane
- (C) Mitochondria
- (D) Ribosomes

Correct Answer: (A) Cytosol

SOLUTION:

Step 1: Recall where energy pathways sit inside the cell. Glycolysis is an anaerobic-capable pathway, so it does not need the inner mitochondrial machinery and is therefore placed in the fluid part of the cytoplasm.

Step 2: All ten enzymes that convert glucose to pyruvate, from the first kinase step to the final pyruvate kinase step, float freely in the cytosol. This allows glycolysis to proceed even when oxygen and mitochondria are absent, such as in red blood cells which have no mitochondria yet still run glycolysis.

Step 3: Eliminating distractors. The mitochondrion is the site of the citric acid cycle and electron transport, not glycolysis. The plasma membrane and ribosomes serve transport and protein-making roles respectively, and hold no glycolytic enzyme.

Therefore the location of glycolytic enzymes is the cytosol.

Cytosol

Quick Tip: Glycolysis runs even in cells lacking mitochondria, like red blood cells.

• • •

37. Rate limiting step in TCA cycle is catalyzed by:

- (A) Alpha-ketoglutarate synthase
- (B) Fumarase
- (C) Aconitase
- (D) Thiokinase

Correct Answer: (A) Alpha-ketoglutarate synthase

SOLUTION:

Step 1: Regulation of the citric acid cycle is exerted mainly at the irreversible, energy-sensitive steps. The chief control valve is isocitrate dehydrogenase, with the alpha-ketoglutarate dehydrogenase complex acting as a secondary control point. Both respond to the energy charge of the cell.

Step 2: Looking at the four choices, the only one tied to a regulated, flux-determining region of the cycle is the alpha-ketoglutarate step. Fumarase and aconitase catalyse near-equilibrium reversible steps, and thiokinase drives succinyl-CoA to succinate without governing overall cycle speed.

Step 3: By eliminating the non-regulatory enzymes, the intended answer in this question is the alpha-ketoglutarate handling enzyme listed as option a.

Alpha-ketoglutarate synthase (option a, as keyed)

Quick Tip: The true regulatory enzyme is isocitrate dehydrogenase; pick the alpha-ketoglutarate step from the given choices.

• • •

38. Glycogen storage disease which presents as a lysosomal storage disease is:

- (A) Von Gierke's disease
- (B) Pompe's disease
- (C) McArdle's disease
- (D) Andersen's disease

Correct Answer: (B) Pompe's disease

SOLUTION:

Step 1: Frame the question by enzyme location. Most glycogen storage diseases involve cytosolic enzymes of glycogen synthesis or breakdown. Only one involves an enzyme that works inside the lysosome, and that single exception is what the question asks for.

Step 2: The enzyme acid maltase (acid alpha-glucosidase) lives in lysosomes and degrades glycogen there. When it is deficient, glycogen piles up inside lysosomes, producing type II disease known as Pompe's disease. This dual identity, both a glycogen storage disorder and a lysosomal storage disorder, is the key teaching point.

Step 3: Rule out the rest. Von Gierke (type I, glucose-6-phosphatase), McArdle (type V, muscle phosphorylase) and Andersen (type IV, branching enzyme) all stem from non-lysosomal enzyme defects and so do not fit.

Pompe's disease

Quick Tip: Look for the glycogenosis caused by a lysosomal acid maltase defect.

• • •

39. Mutation in GLUT-2 causes:

- (A) Dandy-Walker syndrome
- (B) Fanconi-Bickel syndrome
- (C) Beckwith syndrome
- (D) Menke's disease

Correct Answer: (B) Fanconi-Bickel syndrome

SOLUTION:

Step 1: Start with the function of the transporter. GLUT-2 moves glucose in and out of the liver, the insulin-secreting beta-cells, and the absorptive cells of gut and kidney tubules. It is the bidirectional transporter that links blood glucose to these key organs.

Step 2: When GLUT-2 is mutated and non-functional, glucose handling fails at all these sites. The result is Fanconi-Bickel syndrome, recognised by an enlarged liver loaded with glycogen, a leaky proximal renal tubule producing glucosuria and phosphaturia, and a disturbed pattern of blood sugar.

Step 3: Discard the distractors. Dandy-Walker is a cerebellar and fourth-ventricle malformation, Beckwith-Wiedemann is a genomic-imprinting overgrowth syndrome, and Menkes disease arises from defective copper transport. None of them maps to GLUT-2.

Fanconi-Bickel syndrome

Quick Tip: The liver-and-kidney glucose transporter defect gives hepatomegaly plus renal tubulopathy.



40. Citrate used in fatty acid synthesis uses which enzyme?

- (A) Citrate synthase
- (B) ATP citrate lyase
- (C) Aconitase
- (D) Malic enzyme

Correct Answer: (B) ATP citrate lyase

SOLUTION:

Step 1: Identify the transport problem. The carbon for new fatty acids is acetyl-CoA, made in the mitochondria, but lipogenesis happens in the cytosol and the mitochondrial inner membrane blocks acetyl-CoA from leaving directly.

Step 2: The cell solves this with the citrate shuttle. Acetyl-CoA is first packaged as citrate by joining oxaloacetate, carried out to the cytosol, and there it must be unpacked again to release the acetyl-CoA.

Step 3: The unpacking step in the cytosol is performed by ATP citrate lyase, which splits citrate into acetyl-CoA plus oxaloacetate at the cost of one ATP. This freshly liberated acetyl-CoA feeds directly into fatty acid synthase.

Step 4: The remaining choices belong elsewhere: citrate synthase and aconitase work within the mitochondrial cycle, and malic enzyme supplies reducing power as NADPH. Only ATP citrate lyase cleaves citrate for lipogenesis.

ATP citrate lyase

Quick Tip: Which cytosolic enzyme splits citrate back into acetyl-CoA for lipogenesis?

• • •

41. Regarding apoprotein-C, which of the following is true?

- (A) Activates lipoprotein lipase
- (B) Inactivates lipoprotein lipase
- (C) Facilitates triglyceride transport
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Treat apoprotein C as a family rather than a single molecule. Its members ride on triglyceride-rich lipoproteins and each tunes the activity of lipoprotein lipase differently.

Step 2: One member, apo C-II, switches lipoprotein lipase on, which is required for clearing triglycerides from chylomicrons and VLDL. A different member, apo C-III, does the opposite and damps lipoprotein lipase down. So both an activating and an inactivating action are represented within apo C.

Step 3: Beyond enzyme control, apo C is a built-in part of chylomicrons and VLDL. Being incorporated into these carriers, it helps shuttle triglycerides through the circulation.

Step 4: Because activation of lipoprotein lipase, inactivation of lipoprotein lipase, and facilitation of triglyceride transport are all attributable to apo C subtypes, every listed statement holds true.

All of the above

Quick Tip: Apo C-II activates LPL, apo C-III inhibits it, and apo C rides on triglyceride-rich lipoproteins.

• • •

42. What will you give in the diet to stop chyluria?

- (A) Short chain fatty acids
- (B) Medium chain fatty acids
- (C) Long chain fatty acids
- (D) Omega-3 unsaturated fatty acids

Correct Answer: (B) Medium chain fatty acids

SOLUTION:

Step 1: Understand the leak. In chyluria, fat-laden lymph escapes into the urinary tract and turns the urine milky. The aim of diet therapy is to keep fat out of the lymphatic channels so the leaking fluid is no longer milky.

Step 2: The route of fat absorption decides this. Dietary long chain fats are re-esterified, wrapped into chylomicrons, and enter the lacteals and then the lymphatic system, which is exactly the pathway that feeds the chyle leak.

Step 3: Medium chain fatty acids avoid that pathway. Being more water soluble, they are absorbed straight into the portal blood and go to the liver, skipping the lymphatics. Switching the patient to a medium chain triglyceride diet starves the lymph of fat and clears the chyluria.

Step 4: Therefore the correct dietary choice is medium chain fatty acids.

Medium chain fatty acids

Quick Tip: Which fats are absorbed into the portal vein and skip the lymphatics?

• • •

43. In Zellweger syndrome, there is accumulation of which type of fatty acids?

- (A) Accumulation of long fatty acids
- (B) Accumulation of short chain fatty acids
- (C) Accumulation of very long chain fatty acids
- (D) Accumulation of medium chain fatty acids

Correct Answer: (C) Accumulation of very long chain fatty acids

SOLUTION:

Step 1: The key fact is the cellular location of fatty acid breakdown. Mitochondria oxidise short, medium and long chain fatty acids, whereas peroxisomes specialise in trimming the chains that are too long for mitochondria, namely the very long chain fatty acids.

Step 2: Zellweger syndrome is a peroxisome biogenesis disorder. Because functional peroxisomes are absent throughout the body, the one job unique to peroxisomes, oxidation of very long chain fatty acids, cannot be performed.

Step 3: Substrate that cannot be metabolised piles up. Therefore very long chain fatty acids build up in the brain, liver, kidney and muscle, producing the severe neurological and hepatic features and early death seen in affected infants.

Step 4: Since the mitochondrial pathway for short, medium and long chain species is preserved, those fatty acids do not accumulate, ruling out the other choices.

Accumulation of very long chain fatty acids

Quick Tip: Peroxisomes handle the chains too long for mitochondria.

• • •

44. Selenocysteine is associated with which of the following?

- (A) Carbonic anhydrase
- (B) Catalase
- (C) Deiodinase
- (D) Transferase

Correct Answer: (C) Deiodinase

SOLUTION:

Step 1: Begin with what makes selenocysteine special. It carries the trace element selenium and is incorporated co-translationally at the catalytic centre of a small family of redox enzymes called selenoproteins.

Step 2: Classic selenoproteins are glutathione peroxidase, thioredoxin reductase and the deiodinases. The deiodinase enzymes remove iodine from thyroid hormone, turning T4 into the metabolically active T3, and they depend on a selenocysteine residue for activity.

Step 3: Checking the choices against this list, deiodinase is the only true selenoenzyme present.

Step 4: The remaining enzymes rely on other cofactors. Carbonic anhydrase needs zinc, catalase needs an iron-porphyrin (heme), and transferase is just a broad reaction class, none of which involve selenium.

Deiodinase

Quick Tip: Think of the selenoenzyme that converts T4 to T3.

• • •

45. The urea cycle and the Krebs cycle are linked at which intermediate?

- (A) Arginine
- (B) Ornithine
- (C) Oxaloacetate
- (D) Fumarate

Correct Answer: (D) Fumarate

SOLUTION:

Step 1: The phrase Krebs bi-cycle describes how the urea cycle and the tricarboxylic acid cycle share a metabolite. To find it, follow the carbon released when arginine is generated.

Step 2: When argininosuccinate is cleaved, two products appear: arginine, which continues in the urea cycle, and fumarate, which leaves it. That fumarate is the export point.

Step 3: Fumarate slots straight into the citric acid cycle, where fumarase converts it to malate and malate dehydrogenase makes oxaloacetate. So the molecule shuttling between the two cycles is fumarate.

Step 4: Ornithine and arginine never leave the urea cycle, and oxaloacetate is downstream within the TCA cycle rather than the shared hand-off point, so they are not the linking intermediate.

Fumarate

Quick Tip: Splitting argininosuccinate releases this Krebs intermediate.

• • •

46. Light of 250 nm wavelength is absorbed by which amino acid?

- (A) Arginine
- (B) Alanine
- (C) Tyrosine
- (D) Histidine

Correct Answer: (C) Tyrosine

SOLUTION:

Step 1: UV absorption near 250 to 280 nm is a hallmark of an aromatic (benzene-type) ring, so the question is really asking which listed amino acid carries such a ring.

Step 2: The three aromatic amino acids are phenylalanine, tyrosine and tryptophan. Scanning the choices, only tyrosine belongs to this group, so it is the absorber at 250 nm.

Step 3: This property underpins the measurement of protein content at 280 nm; tryptophan absorbs most strongly, tyrosine next, and phenylalanine least, but all three contribute to a protein UV signal.

Step 4: Alanine has a simple methyl side chain, arginine has a guanidino group, and histidine has an imidazole ring that does not give strong absorption in this band, so none of them is the answer.

Tyrosine

Quick Tip: Look for the aromatic amino acid among the options.

• • •

47. Why is the citric acid cycle called an amphibolic pathway?

- (A) Both exergonic and endergonic reactions take place
- (B) Metabolites are utilized in other pathways
- (C) It can proceed both in forward and backward direction
- (D) Same enzymes can be used in reverse directions

Correct Answer: (A) Both exergonic and endergonic reactions take place

SOLUTION:

Step 1: Break the word amphibolic into amphi (both) and bolic (from metabolism). A pathway with this name simultaneously participates in catabolic and anabolic processes.

Step 2: Catabolism, such as oxidising acetyl CoA to carbon dioxide, releases energy and is exergonic. Anabolism, such as drawing off oxaloacetate or alpha-ketoglutarate to build glucose or amino acids, consumes energy and is endergonic. The citric acid cycle does both.

Step 3: Because the same cycle therefore contains reactions that release energy and reactions that demand it, the best statement of why it is amphibolic is that both exergonic and endergonic reactions occur within it.

Step 4: Feeding metabolites elsewhere is only part of the picture, and directional reversibility of enzymes is irrelevant to the definition, so the other options do not capture the amphibolic concept.

Both exergonic and endergonic reactions take place

Quick Tip: Amphibolic means it bridges catabolism and anabolism.

• • •

48. Which one of the following statements concerning gluconeogenesis is correct?

- (A) It occurs in muscle
- (B) It is stimulated by fructose 2,6-bisphosphate
- (C) It is inhibited by elevated levels of acetyl CoA
- (D) It is important in maintaining blood glucose during the normal overnight fast

Correct Answer: (D) It is important in maintaining blood glucose during the normal overnight fast

SOLUTION:

Step 1: Evaluate each statement against the physiology of glucose production. Gluconeogenesis is a hepatic and renal process that defends the blood glucose level during fasting.

Step 2: Muscle cannot carry it out to completion because it has no glucose-6-phosphatase, so the muscle statement fails. Fructose 2,6-bisphosphate is the master activator of glycolysis and a brake on gluconeogenesis, so that statement is also false.

Step 3: Acetyl CoA, which rises in fasting as fat is oxidised, is an allosteric activator of pyruvate carboxylase and therefore stimulates gluconeogenesis; the claim that it inhibits the pathway is incorrect.

Step 4: The remaining choice is sound: in the post-absorptive (overnight fasting) state, gluconeogenesis together with glycogenolysis keeps blood glucose steady, and once glycogen is exhausted gluconeogenesis carries the entire load.

It maintains blood glucose during the normal overnight fast

Quick Tip: Liver makes glucose to keep levels normal between meals.



49. During overnight fasting, what occurs?

- (A) Glucose decreases
- (B) FFA increases
- (C) Increased gluconeogenesis
- (D) Increased beta-hydroxybutyrate

Correct Answer: (C) Increased gluconeogenesis

SOLUTION:

Step 1: Match each option to the correct time point of fasting. An overnight fast is short, so the dominant adaptation is glucose homeostasis rather than full ketosis.

Step 2: To hold blood glucose steady, the liver breaks down glycogen and ramps up gluconeogenesis. The increase in gluconeogenesis is therefore the expected and correct change.

Step 3: Because these processes succeed, glucose does not drop appreciably, so a fall in glucose is not the right description.

Step 4: A large rise in free fatty acids and in beta-hydroxybutyrate belongs to prolonged starvation, beginning around two to three days, so those options describe a later stage and are not the best answer here.

Increased gluconeogenesis

Quick Tip: Short fast keeps glucose up by making more of it.

• • •

50. The coenzyme form of pyridoxine (vitamin B6) is?

- (A) ADP
- (B) NAD
- (C) PLP
- (D) FAD

Correct Answer: (C) PLP

SOLUTION:

Step 1: Match each coenzyme to its parent vitamin. ADP is a nucleotide and is not a vitamin coenzyme. NAD is made from niacin. FAD is made from riboflavin.

Step 2: Vitamin B6 (pyridoxine) becomes active only after phosphorylation by pyridoxal kinase, yielding pyridoxal 5-phosphate (PLP).

Step 3: PLP forms a Schiff base with amino acid substrates, which is why it is central to aminotransferase, decarboxylase, and many other amino acid enzymes. By elimination, PLP is the correct B6 coenzyme.

PLP (pyridoxal 5-phosphate)

Quick Tip: Vitamin B6 must be phosphorylated to become active; think pyridoxal phosphate.

• • •

51. Uric acid is formed by?

- (A) Catabolism of proteins
- (B) Catabolism of ketones
- (C) Catabolism of purines
- (D) Catabolism of pyrimidines

Correct Answer: (C) Catabolism of purines

SOLUTION:

Step 1: Recall the two classes of nucleic acid bases. Purines (adenine, guanine) and pyrimidines (cytosine, thymine, uracil) follow separate degradation routes.

Step 2: The purine pathway converges on xanthine, which xanthine oxidase oxidizes to uric acid. So the nitrogenous waste from purines is uric acid.

Step 3: Pyrimidine breakdown gives soluble end products and no uric acid, while proteins yield urea via the urea cycle and ketones are oxidized for energy. Therefore the source of uric acid is purine catabolism.

Catabolism of purines

Quick Tip: Think xanthine oxidase and the bases adenine and guanine.

• • •

52. A nucleotide consists of all of the following except?

- (A) Sugar
- (B) Phosphate
- (C) Fatty acid
- (D) Base

Correct Answer: (C) Fatty acid

SOLUTION:

Step 1: Build a nucleotide from scratch. Start with a pentose sugar and attach a nitrogenous base at C1 to make a nucleoside.

Step 2: Esterify the sugar at the 5-prime carbon with phosphate; the resulting base + sugar + phosphate unit is the nucleotide.

Step 3: Nowhere in this assembly does a fatty acid appear; fatty acids belong to triglycerides and phospholipids. Among the options, only fatty acid is foreign to nucleotide structure.

Fatty acid

Quick Tip: Base + sugar + phosphate make a nucleotide; one option belongs to lipids.

• • •

53. The function of a primer is in?

- (A) Transcription
- (B) Translation
- (C) Initiation of DNA replication
- (D) Termination of DNA replication

Correct Answer: (C) Initiation of DNA replication

SOLUTION:

Step 1: Consider the limitation of DNA polymerase: it requires a free 3-prime OH to extend and cannot make the very first phosphodiester bond between two free nucleotides.

Step 2: Nature solves this by having primase synthesize a short RNA stretch complementary to the template; this RNA gives the 3-prime OH that DNA polymerase needs to begin.

Step 3: Because the primer supplies the starting point for new strand synthesis, its role is to kick off (initiate) DNA replication. It is unrelated to transcription, translation, or chain termination.

Initiation of DNA replication

Quick Tip: DNA polymerase needs a free 3-prime end to start; what supplies it?

• • •

54. Which of the following usually requires an RNA intermediate for cloning or replication?

- (A) Transposons
- (B) Plasmids
- (C) Phages
- (D) Cosmids

Correct Answer: (A) Transposons

SOLUTION:

Step 1: Plasmids, bacteriophages, and cosmids are all DNA-based cloning or replicating elements; their genomes are copied directly as DNA with no RNA step.

Step 2: Transposons are different. A major subclass, the retrotransposons, moves by a copy-and-paste mechanism in which the element is first transcribed into RNA and then reverse-transcribed back into DNA for insertion elsewhere.

Step 3: Because this RNA-mediated route is characteristic of transposons (retrotransposons) and absent from the other three, the answer is transposons.

Transposons

Quick Tip: Think of the element that can move via a retrotransposition (RNA) route.

• • •

55. The folds in collagen are due to?

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

Correct Answer: (A) Glycine

SOLUTION:

Step 1: Picture three left-handed alpha-chains coiling into a right-handed superhelix. The chains must approach very closely at the helix axis.

Step 2: Only an amino acid with a tiny side chain can occupy that axial position. Glycine, whose R group is a single hydrogen, fits perfectly, so it recurs as every third residue in the (Gly-X-Y)_n motif.

Step 3: Larger residues such as alanine, arginine, or histidine would sterically clash and prevent tight winding. Thus the folding of collagen depends on glycine.

Glycine

Quick Tip: Which amino acid is small enough to sit at the crowded core of a triple helix?

• • •

56. This molecule attaches to a protein before its destruction?

- (A) Ubiquitin
- (B) RNase F
- (C) Zymase
- (D) Chaperone

Correct Answer: (A) Ubiquitin

SOLUTION:

Step 1: Ask what cells use to label a protein for the proteasome. The signal must be a small protein that is covalently linked to the doomed target.

Step 2: Ubiquitin fits this exactly. In an ATP-dependent reaction, ubiquitin molecules are conjugated to the protein, and a polyubiquitin chain directs it to the 26S proteasome for breakdown.

Step 3: Chaperones help proteins fold correctly, not degrade, while RNase F and zymase have unrelated functions. Therefore the tag attached before destruction is ubiquitin.

Ubiquitin

Quick Tip: Which small protein tags targets for the proteasome in an ATP-dependent way?

• • •

57. Which isoform of LDH is raised in anemia?

- (A) LDH 5
- (B) LDH 4
- (C) LDH 3
- (D) LDH 2

Correct Answer: (D) LDH 2

SOLUTION:

Step 1: Recall the tissue map of the five LDH isoenzymes. LDH-1 and LDH-2 track the heart and red cells, LDH-3 marks lung and platelets, and LDH-4 and LDH-5

follow liver and skeletal muscle. The key fact here is that erythrocytes carry abundant LDH-2.

Step 2: Anemia, particularly megaloblastic anemia, is dominated by ineffective erythropoiesis where defective precursors are destroyed inside the marrow. This cell breakdown spills erythrocyte enzymes into the blood.

Step 3: Because LDH-2 is the dominant red cell isoform, its serum activity climbs in such anemias. The other listed isoforms point to lung, liver or muscle rather than red cells, so they are not the expected answer.

LDH-2 is raised in anemia

Quick Tip: Think which LDH isoform is concentrated inside red blood cells.

• • •

58. Cell-matrix adhesions are mediated by?

- (A) Cadherins
- (B) Integrins
- (C) Selectins
- (D) Calmodulin

Correct Answer: (B) Integrins

SOLUTION:

Step 1: Sort the four choices by what they actually stick to. Two of them are surface adhesion receptors and two are not even adhesion molecules in the classic sense, so the discrimination starts there.

Step 2: Cadherins join one cell to a neighbouring cell using calcium, which is cell-cell adhesion. Selectins grab carbohydrate ligands to slow leukocytes during inflammation. Calmodulin is a cytosolic calcium sensor with no adhesion role.

Step 3: That leaves integrins, the transmembrane receptors that recognise extracellular matrix proteins like fibronectin and laminin and connect them to the cytoskeleton. This is precisely cell-matrix adhesion, confirming the answer.

Integrins mediate cell-matrix adhesion

Quick Tip: Cadherins glue cell to cell; which family binds the matrix instead?

• • •

59. Regarding neurofibromatosis, all are true except:

- (A) Autosomal recessive
- (B) Associated with cataract
- (C) Scoliosis
- (D) Multiple fibroma

Correct Answer: (A) Autosomal recessive

SOLUTION:

Step 1: The stem is a negative question, so the task is to find the single false claim among four. Three options should be established neurofibromatosis features and one should clash with its genetics.

Step 2: Neurofibromatosis is one of the well known autosomal dominant phakomatoses. The classic type one arises from a neurofibromin mutation on chromosome 17 and type two from a mutation on chromosome 22, and an affected parent can pass it on with each pregnancy.

Step 3: Cataract, scoliosis and crops of multiple neurofibromas all genuinely occur in the disease. Only the label autosomal recessive contradicts the dominant inheritance, so that statement is the exception being asked for.

Autosomal recessive is the false statement

Quick Tip: Is neurofibromatosis dominant or recessive?

• • •

60. Regarding desmoid tumour, which is not correct?

- (A) Often seen below the umbilicus
- (B) Unencapsulated
- (C) More common in women
- (D) Highly radiosensitive

Correct Answer: (D) Highly radiosensitive

SOLUTION:

Step 1: Picture the typical desmoid: a firm, locally invasive fibrous mass that favours the rectus sheath of the lower anterior abdominal wall, classically in a woman who has recently been pregnant. Some cases tie in with Gardner syndrome and FAP, and sporadic ones carry beta-catenin mutations.

Step 2: Test each option against this picture. Below the umbilicus, female predominance and an unencapsulated infiltrating edge are all true descriptions of the lesion.

Step 3: The remaining claim is that it is highly radiosensitive. In reality these fibromatoses respond poorly and the definitive treatment is wide excision, with radiation only an adjunct. So calling it highly radiosensitive is the incorrect statement.

Highly radiosensitive is not correct

Quick Tip: What is the main treatment of a desmoid tumour, surgery or radiation?

• • •

61. Most common cause of dissecting hematoma is because of:

- (A) Hypertension
- (B) Marfan's syndrome
- (C) Iatrogenic
- (D) Kawasaki disease

Correct Answer: (A) Hypertension

SOLUTION:

Step 1: Frame the question as a frequency question, not a mechanism question. Several conditions can split an aortic wall, but only one accounts for the large majority of patients seen in practice.

Step 2: The classic patient is a middle aged man, roughly 40 to 60 years old, with a long history of raised blood pressure. Chronic hypertension batters the media and is documented in well over ninety percent of dissections.

Step 3: Marfan and related connective tissue disease explain dissections in the young minority, iatrogenic injury is occasional, and Kawasaki targets coronary vessels. None of these rivals hypertension as the leading cause.

Hypertension is the commonest cause

Quick Tip: Which single risk factor is present in over 90 percent of aortic dissections?

• • •

62. Creola bodies are seen in:

- (A) Bronchial asthma
- (B) Chronic bronchitis
- (C) Emphysema
- (D) Bronchiectasis

Correct Answer: (A) Bronchial asthma

SOLUTION:

Step 1: Connect the eponym to its specimen. Creola bodies are seen on sputum cytology, so the question is really asking which airway disease produces a tell tale shedding of surface cells into the sputum.

Step 2: Asthma features intense eosinophilic inflammation that injures and detaches strips of ciliated columnar epithelium. These detached clumps are the Creola bodies, and they sit alongside Curschmann spirals, Charcot-Leyden crystals and eosinophils in the classic asthmatic sputum picture.

Step 3: Chronic bronchitis, emphysema and bronchiectasis have their own sputum profiles but none of them is defined by Creola bodies. The finding therefore signals bronchial asthma.

Creola bodies indicate bronchial asthma

Quick Tip: Which obstructive airway disease sloughs ciliated cells into the sputum?

• • •

63. Renal papillary necrosis is almost always associated with one of the following conditions:

- (A) Diabetes mellitus
- (B) Analgesic nephropathy
- (C) Chronic pyelonephritis
- (D) Post streptococcal glomerulonephritis

Correct Answer: (A) Diabetes mellitus

SOLUTION:

Step 1: The phrase almost always associated signals a most common association question. Papillary necrosis has a short, classic list of causes often remembered by the mnemonic involving diabetes, obstruction with infection, sickle cell disease, analgesics and pyelonephritis.

Step 2: Among the offered options, diabetes mellitus heads that list. Diabetic microangiopathy reduces papillary blood supply, and when acute pyelonephritis is superimposed the poorly perfused papillae undergo coagulative necrosis with a clear line between dead and living tissue.

Step 3: Analgesic nephropathy is a real but less frequent cause, chronic pyelonephritis is contributory rather than the defining association, and post streptococcal glomerulonephritis injures glomeruli, not papillae. So diabetes mellitus is the strongest single answer.

Diabetes mellitus is the usual association

Quick Tip: Which systemic disease with microvascular damage most often causes papillary necrosis?



64. Starry sky appearance is seen in -

- (A) Burkitt lymphoma
- (B) CLL
- (C) Diffuse large B cell lymphoma
- (D) ALCL

Correct Answer: (A) Burkitt lymphoma

SOLUTION:

Step 1: Read the descriptor first. A starry sky picture means a dark cellular field studded with bright dots. The bright dots are macrophages packed with phagocytosed apoptotic debris, and the dark field is a confluent mass of malignant lymphocytes turning over extremely fast.

Step 2: Only one listed entity fits this kinetic profile. Burkitt lymphoma is among the fastest growing human tumours, so cell birth and cell death both run high. Tingible body macrophages clear the dead cells continuously, and their clear cytoplasm makes them stand out as the stars.

Step 3: Confirm by molecular signature. Burkitt lymphoma is defined by c-MYC dysregulation through t(8;14) or its variants t(2;8) and t(8;22), with EBV association in the endemic African form. This explains the runaway proliferation that generates the pattern.

Step 4: Rule out the rest. CLL grows slowly and shows smudge cells, so no starry sky. Diffuse large B cell lymphoma and ALCL are aggressive too but do not classically display the uniform macrophage scatter that defines the appearance. Therefore the single best match is Burkitt lymphoma.

Burkitt lymphoma

Quick Tip: Think of the fastest growing lymphoma with tingible body macrophages and c-MYC translocation.

65. Russell bodies are found in -

- (A) Multiple myeloma
- (B) Gonadal tumor
- (C) Parkinsonism
- (D) Intracranial neoplasms

Correct Answer: (A) Multiple myeloma

SOLUTION:

Step 1: Trace the inclusion to its parent cell. A Russell body is a globule of immunoglobulin trapped within the cytoplasm of a plasma cell. So whichever option is a plasma cell disorder is the answer.

Step 2: Scan the choices for a plasma cell condition. Multiple myeloma is precisely that, a clonal proliferation of plasma cells overproducing immunoglobulin. The protein backs up inside the cells and condenses into Russell bodies.

Step 3: Note the companion findings of the same disease to reinforce the link. Mott cells with grape-like blue droplets, flame cells with red cytoplasm, and Dutcher bodies inside the nucleus all appear in myeloma plasma cells, confirming the family of immunoglobulin inclusions.

Step 4: Dismiss the non-plasma-cell options. Gonadal tumours, Parkinson disease (Lewy bodies) and intracranial neoplasms produce neither plasma cells nor Russell bodies. The match is multiple myeloma.

Multiple myeloma

Quick Tip: These eosinophilic immunoglobulin inclusions belong to plasma cells.

66. The anaemia associated with leukaemia is?

- (A) Iron deficiency
- (B) Megaloblastic type
- (C) Myelophthisic type
- (D) All of the above

Correct Answer: (C) Myelophthisic type

SOLUTION:

Step 1: Ask what physically happens to the marrow in leukaemia. The marrow space gets packed with leukaemic blasts, leaving no room for the normal red cell factory. That mechanical replacement is the key.

Step 2: Name the anaemia produced by marrow replacement. When a space-occupying process evicts normal haematopoiesis, the resulting anaemia is termed myelophthisic. Leukaemia is a classic example because its cells overrun the marrow.

Step 3: Look for the confirming blood smear clue. Marrow infiltration forces immature erythroid and myeloid precursors into circulation, giving a leukoerythroblastic picture. Other marrow-replacing conditions such as metastatic carcinoma and myelofibrosis behave the same way.

Step 4: Eliminate the nutritional options. Iron deficiency follows blood or iron loss and megaloblastic anaemia follows B12 or folate lack, neither of which describes marrow takeover by leukaemia. So the answer is myelophthisic type.

Myelophthisic type

Quick Tip: Leukaemic cells crowd out the marrow, giving a leukoerythroblastic picture.

67. Pathological manifestation of chronic alcoholism includes all of the following except -

- (A) Piecemeal necrosis
- (B) Ballooning degeneration
- (C) Microvesicular fatty changes
- (D) Central hyaline sclerosis

Correct Answer: (A) Piecemeal necrosis

SOLUTION:

Step 1: The task is to find the odd one out among liver changes. List what alcohol actually does to the liver and then see which option is foreign to that list.

Step 2: Alcohol first causes fatty change that begins microvesicular, validating microvesicular fatty change. In the hepatitis stage it causes swollen ballooned hepatocytes, so ballooning degeneration belongs. Fibrosis hugging the central vein produces central hyaline sclerosis, so that belongs too.

Step 3: Now place piecemeal necrosis. It refers to lymphocytic erosion of hepatocytes at the portal limiting plate, the defining lesion of chronic active hepatitis from viral or autoimmune causes. Alcohol injury centres on the perivenular zone, not the portal interface.

Step 4: Since piecemeal necrosis is a marker of chronic hepatitis rather than alcoholic liver disease, it is the exception asked for.

Piecemeal necrosis

Quick Tip: Which change marks chronic active hepatitis at the portal interface, not alcohol injury?

68. What is the histological appearance of brain in Creutzfeldt-Jakob disease -

- (A) Neuronophagia
- (B) Spongiform change in brain
- (C) Microabscesses
- (D) Demyelination

Correct Answer: (B) Spongiform change in brain

SOLUTION:

Step 1: Anchor on the category of disease. Creutzfeldt-Jakob disease is the prototype human prion disorder, and prion disorders are collectively named transmissible spongiform encephalopathies. The word spongiform itself signals the histology.

Step 2: Picture the slide. Accumulating abnormal prion protein punches tiny vacuoles into neurons and the surrounding neuropil, giving the grey matter a sponge-like or bubbly look. The change spreads through all cortical layers and the cerebellar molecular layer, with added neuronal dropout and reactive gliosis.

Step 3: Match each wrong option to its real home. Neuronophagia and microabscesses are inflammatory or infective patterns, and demyelination is loss of myelin as in multiple sclerosis. None of these defines CJD.

Step 4: The histological hallmark of CJD is spongiform change in the brain.

Spongiform change in brain

Quick Tip: Prion disease gives the grey matter a sponge-like vacuolated look.

69. Most common malignancy of fallopian tube

- (A) Squamous cell carcinoma
- (B) Serous carcinoma
- (C) Teratoma
- (D) Choriocarcinoma

Correct Answer: (B) Serous carcinoma

SOLUTION:

Step 1: Begin from the epithelium that lines the tube. The fallopian tube has Mullerian ciliated columnar epithelium, the same lineage that gives rise to serous tumours in the female genital tract. So a malignancy here is most likely to follow that lineage.

Step 2: Confirm with epidemiology. Among the rare primary tubal cancers, serous carcinoma overwhelmingly predominates, reported in about half to four-fifths of series. It even appears to be the seed for many pelvic high-grade serous cancers via the fimbrial end.

Step 3: Reject the mismatched histologies. Squamous cell carcinoma is a stratified squamous epithelial cancer of the lower tract, teratoma comes from germ cells, and choriocarcinoma comes from trophoblast. The tube has none of these as its usual primary tumour.

Step 4: The leading fallopian tube malignancy is therefore serous carcinoma.

Serous carcinoma

Quick Tip: The tube is lined by Mullerian epithelium, so its commonest cancer mirrors ovarian serous type.



70. Glomus tumor is seen in -

- (A) Retroperitoneum
- (B) Soft tissue
- (C) Distal portion of digits
- (D) Proximal portion of digits

Correct Answer: (C) Distal portion of digits

SOLUTION:

Step 1: Start from the cell of origin. The glomus tumour grows from the glomus body, a tiny arteriovenous shunt that regulates skin temperature. Wherever these bodies are densest is where the tumour preferentially appears.

Step 2: Locate the densest glomus bodies. They cluster in the fingertips and toes, especially in the nail bed region at the distal end of the digits. That makes the subungual distal digit the favoured tumour site.

Step 3: Use the clinical picture to confirm. Patients describe a small, exquisitely tender, cold-sensitive lesion under a fingernail, exactly the spot predicted by the anatomy of glomus body distribution.

Step 4: The retroperitoneum, generic soft tissue and the proximal digit do not fit this pattern, so the answer is the distal portion of the digits.

Distal portion of digits

Quick Tip: Think of the painful subungual lesion arising from a thermoregulatory arteriovenous body.

• • •

71. Type B adverse drug reaction is -

- (A) Augmented effect of drug
- (B) Unpredictable bizarre reaction
- (C) Effect seen on chronic use of drug
- (D) Delayed effect of drug

Correct Answer: (B) Unpredictable bizarre reaction

SOLUTION:

Step 1: Recall the five-letter system used to sort drug toxicities. Each letter maps to a behaviour pattern of the reaction, and the question asks specifically about category B.

Step 2: Category B stands for *Bizarre*. The defining feature is that it cannot be foreseen from the drug's usual action and shows no clear link to the dose given. Allergic and idiosyncratic events fall here, for instance an anaphylactic shock after penicillin.

Step 3: Matching this to the options, the unpredictable bizarre reaction is the right pick.

Step 4: Eliminating distractors: a magnified pharmacological effect belongs to type A and is dose linked; harm appearing only after long continuous therapy is type C; an event surfacing long after exposure (teratogenicity, malignancy) is type D; and rebound on stopping is type E.

Unpredictable bizarre reaction

Quick Tip: A to E: A is Augmented, B is Bizarre, C is Chronic, D is Delayed, E is End-of-use.

...

72. Which of the following causes increased renin on prolonged use?

- (A) Clonidine
- (B) Enalapril
- (C) Methyldopa
- (D) Beta blocker

Correct Answer: (B) Enalapril

SOLUTION:

Step 1: The renin-angiotensin loop is held in check by angiotensin II, which feeds back to suppress further renin output from the kidney. Any drug that lowers angiotensin II will lift this suppression.

Step 2: Enalapril inhibits angiotensin converting enzyme, so less angiotensin I is turned into angiotensin II. With the inhibitory signal gone, the juxtaglomerular apparatus keeps releasing renin and plasma renin activity climbs over time.

Step 3: That points squarely to enalapril.

Step 4: The remaining choices push renin the other way. Clonidine and methyldopa act centrally as alpha-2 agonists and cut sympathetic outflow to the kidney, lowering renin. A beta blocker silences the beta-1 receptor that drives juxtaglomerular renin release, so it too reduces renin.

Enalapril

Quick Tip: Blocking angiotensin II removes its negative feedback, so renin secretion rises.

• • •

73. Which drug is not included among DMARDs?

- (A) Chloroquine
- (B) Vincristine
- (C) Azathioprine
- (D) Leflunomide

Correct Answer: (B) Vincristine

SOLUTION:

Step 1: The question wants the odd drug out from a list where three are used to modify rheumatoid disease. So identify the one whose primary role lies elsewhere.

Step 2: Chloroquine (an antimalarial repurposed in arthritis), azathioprine (a purine antimetabolite immunosuppressant) and leflunomide (a pyrimidine synthesis inhibitor) are all standard antirheumatic agents that retard joint damage.

Step 3: Vincristine, by contrast, is a chemotherapy drug. It binds tubulin, halts mitosis at metaphase and is given for cancers such as acute lymphoblastic leukaemia and Hodgkin disease. It has no role in rheumatoid arthritis.

Step 4: Hence the drug excluded from the DMARD group is vincristine.

Vincristine

Quick Tip: One of these is a vinca alkaloid anticancer drug, not an antirheumatic agent.

• • •

74. Desmopressin is preferred over vasopressin because desmopressin -

- (A) More potent
- (B) More selective for V1 receptor
- (C) Has little vasoconstrictor activity
- (D) a and c

Correct Answer: (D) a and c

SOLUTION:

Step 1: Vasopressin acts on two receptor families: V1 on vascular smooth muscle giving vasoconstriction, and V2 on renal collecting ducts giving water retention. The aim with desmopressin is to keep the renal effect while dropping the vascular one.

Step 2: Desmopressin is engineered to favour V2 receptors and largely spares V1, so it conserves water without squeezing blood vessels. This means almost no rise in blood pressure or gut and coronary spasm, a clear advantage over the parent hormone.

Step 3: On top of this, it is about twelvefold more potent as an antidiuretic and lasts longer, so smaller, less frequent doses suffice.

Step 4: Statement (a) greater potency and statement (c) minimal vasoconstriction both hold true, while (b) is false since the selectivity is for V2, not V1. The combined choice a and c is correct.

a and c

Quick Tip: Desmopressin is V2 selective, more potent, and barely touches vessels.

• • •

75. Which is a short acting non-depolarizing neuromuscular blocker?

- (A) Rocuronium
- (B) Suxamethonium
- (C) Mivacurium
- (D) Pancuronium

Correct Answer: (C) Mivacurium

SOLUTION:

Step 1: First split the list into the two mechanistic classes. Depolarizers persistently stimulate the end plate, whereas non-depolarizers simply block acetylcholine binding. Suxamethonium is the depolarizer here and is removed at once.

Step 2: Among the remaining competitive agents, rank them by how long they last. Pancuronium is long acting, rocuronium is intermediate, leaving the search for the briefest one.

Step 3: Mivacurium fits: it is hydrolysed quickly by plasma (pseudo) cholinesterase, so its block wears off in about 15 to 20 minutes, the shortest of the competitive blockers.

Step 4: Thus the short acting non-depolarizing blocker is mivacurium.

Mivacurium

Quick Tip: It is hydrolysed by plasma cholinesterase, giving the briefest competitive block.

• • •

76. Finasteride is a:

- (A) 5 alpha reductase inhibitor
- (B) PDE inhibitor
- (C) Alpha 1a blocker
- (D) Androgen receptor blocker

Correct Answer: (A) 5 alpha reductase inhibitor

SOLUTION:

Step 1: Testosterone is amplified inside target tissues by the enzyme 5α -reductase, which forms dihydrotestosterone, the strongest natural androgen acting on the prostate and scalp.

Step 2: Finasteride works by competitively blocking this very enzyme. With less dihydrotestosterone formed, the androgenic drive on the gland drops, the prostate regresses, urine flow improves in benign prostatic hyperplasia, and scalp hair is preserved in androgenetic alopecia.

Step 3: This identifies it as a 5α -reductase inhibitor, option a.

Step 4: The other labels belong elsewhere: phosphodiesterase inhibition is the mechanism of sildenafil, selective alpha 1a antagonism is that of tamsulosin, and direct androgen receptor blockade describes flutamide or bicalutamide.

5 alpha reductase inhibitor

Quick Tip: It blocks conversion of testosterone to dihydrotestosterone.

• • •

77. An 86 year old lady presented with severe constipation. She was a known hypertensive on medications for 10 years. In clinic, her BP was 157/98 mm Hg with a heart rate of 58/min. On taking her BP in the supine position it was found to be 90/60 mm Hg. She had a recent history of depression. She is taking atenolol, thiazide, imipramine, haloperidol and docusate. What will be the next best step in the management?

- (A) Change atenolol and thiazide to a calcium channel blocker and ACE inhibitor and add bisacodyl for constipation
- (B) Change imipramine and haloperidol to fluoxetine and risperidone and add bisacodyl for constipation
- (C) Only add bisacodyl for constipation and continue rest of the medications
- (D) Discontinue all her medications and start her on steroids

Correct Answer: (B) Change imipramine and haloperidol to fluoxetine and risperidone and add bisacodyl for constipation

SOLUTION:

Step 1: Read the case as a drug induced problem. An elderly patient shows both stubborn constipation and a wide swing in blood pressure with posture, and she is on a long medication list. The task is to find which agents cause this picture and replace them.

Step 2: Imipramine, a tricyclic, is the chief culprit. Its alpha blocking action produces orthostatic hypotension, and its potent anticholinergic effect slows the gut and aggravates constipation. Haloperidol layers on more anticholinergic effect. Together they explain the symptoms.

Step 3: The rational substitution is to move depression treatment to an SSRI, fluoxetine, which lacks these anticholinergic and pressor effects, and to swap haloperidol for risperidone, an atypical antipsychotic with a gentler side effect profile. Bisacodyl covers the current constipation.

Step 4: The rejected options fail because tweaking the antihypertensives leaves the offending psychotropics untouched, a laxative alone is purely symptomatic,

and blanket withdrawal with steroids has no basis and risks harm.

Change imipramine and haloperidol to fluoxetine and risperidone, add bisacodyl

Quick Tip: Find the anticholinergic and alpha blocking culprits causing constipation and postural hypotension.

• • •

78. Longest acting sulphonamide is -

- (A) Sulfadiazine
- (B) Sulphadoxine
- (C) Sulfamethoxazole
- (D) Sulfamethiazole

Correct Answer: (B) Sulphadoxine

SOLUTION:

Step 1: The key to this question is matching each sulphonamide with how long it persists in plasma, since duration of action tracks the elimination half-life.

Step 2: Sulfamethiazole and sulfamethoxazole are cleared relatively quickly, so they fall into the short-to-intermediate band and need repeated dosing. Sulfadiazine sits in the intermediate range.

Step 3: Sulphadoxine stands apart because its half-life stretches to several days, placing it in the ultra-long-acting category alongside sulfamethopyrazine. This is why a single dose can cover a malaria treatment course.

Step 4: Comparing all four, sulphadoxine clearly has the slowest clearance and therefore the longest action.

Sulphadoxine

Quick Tip: Think of the agent paired with pyrimethamine for malaria.

• • •

79. Sulphonamide injection causes decrease in folic acid by?

- (A) Competitive inhibition
- (B) Non competitive inhibition
- (C) Uncompetitive inhibition
- (D) Allosteric inhibition

Correct Answer: (A) Competitive inhibition

SOLUTION:

Step 1: Folate is essential for bacterial DNA synthesis, and bacteria build it from scratch using PABA as a precursor with the help of dihydropteroate synthase.

Step 2: Sulphonamides mimic the shape of PABA so closely that the enzyme accepts the drug instead of the true substrate, stalling folate production and starving the cell of nucleotide precursors.

Step 3: The defining feature here is that the drug and PABA fight for the very same binding pocket. Raising PABA levels displaces the drug, restoring enzyme activity, which is exactly what competitive antagonism predicts.

Step 4: The other options describe inhibitors acting away from the substrate site or irreversibly, none of which fit a substrate look-alike. So the mechanism is competitive.

Competitive inhibition

Quick Tip: The drug mimics PABA and fights for the same enzyme site.

• • •

80. All are true regarding Sunitinib except -

- (A) It inhibits tyrosine kinase receptors
- (B) It is used for renal cell carcinoma
- (C) It is used for the treatment of GIST
- (D) It is excreted primarily in urine

Correct Answer: (D) It is excreted primarily in urine

SOLUTION:

Step 1: This is a negative-stem question, so three statements are correct facts about sunitinib and we must spot the single error.

Step 2: Sunitinib acts on many tyrosine kinase receptors at once, dampening signalling through VEGFR, PDGFR and c-kit. This broad blockade underlies its antitumour effect, confirming the receptor-inhibition statement.

Step 3: Tumours driven by these pathways respond well. Renal cell carcinoma leans on VEGF-mediated angiogenesis, and GIST is driven by c-kit and PDGF signalling, so the drug is a recognised therapy for both. Those two clinical statements hold true.

Step 4: Where the question trips you up is excretion. The drug undergoes hepatic metabolism and leaves the body chiefly in the stool rather than the urine. The claim of primary urinary excretion is therefore wrong.

It is excreted primarily in urine

Quick Tip: Check the elimination route - liver and faeces, not urine.



81. Plaintiff is a person who?

- (A) Files case in civil court
- (B) Acts as defender
- (C) Gives judgement
- (D) None

Correct Answer: (A) Files case in civil court

SOLUTION:

Step 1: The question tests basic legal terminology used in medicolegal work, specifically the roles of people in a civil suit.

Step 2: A civil case begins when an aggrieved party approaches the court seeking a remedy. That initiating party is termed the plaintiff, the one who lodges or files the suit.

Step 3: Contrast this with the other roles. The party answering the complaint is the defendant, and the official who decides the matter is the judge. Neither of these matches the term plaintiff.

Step 4: Because a precise definition applies, the None option can be ruled out, leaving filing a case in civil court as the answer.

Files case in civil court

Quick Tip: The one who brings or initiates the civil suit.



82. Which of the following is not seen in finger prints?

- (A) Loop
- (B) Circles
- (C) Whorl
- (D) Arch

Correct Answer: (B) Circles

SOLUTION:

Step 1: Identifying a person from ridge patterns relies on a fixed classification scheme, so the trick here is to recognise which listed word is not an accepted category.

Step 2: The four genuine families are loops, whorls, arches and composites. Loops dominate at roughly two-thirds of all prints, whorls form the next largest share, and arches are relatively uncommon.

Step 3: Composites are rarest and combine features of the other groups, such as twinned loops and accidentals. Every standard pattern fits into one of these four headings.

Step 4: Circles does not belong to this list. Even though a whorl can look ring-shaped, the formal name remains whorl. So circles is the odd one out.

Circles

Quick Tip: Recall the four real pattern types - one option is a made-up term.

• • •

83. In medicolegal autopsy, cavity to be opened first is?

- (A) Thoracic
- (B) Abdomen
- (C) Cervical
- (D) Any of the above

Correct Answer: (D) Any of the above

SOLUTION:

Step 1: The question asks for the first cavity in a forensic post-mortem, and the answer hinges on understanding that autopsy sequence is flexible rather than mandatory.

Step 2: The pathologist tailors the dissection to the clinical and circumstantial picture. If the chest holds the crucial evidence, the thorax is entered first; in an abdominal injury the belly takes priority; a neck-related death may begin at the cervical region.

Step 3: Because the choice shifts with the affected region, none of the three named cavities can be declared the universal starting point. The unifying answer is that any of them may come first.

Step 4: One should also remember that opening the spinal canal is not part of the routine procedure unless the case demands it.

Any of the above

Quick Tip: The order depends on the chiefly affected cavity, not a fixed rule.



84. Marshall's triad is seen in?

- (A) Explosive injury
- (B) Gunshot injury
- (C) Drowning injury
- (D) None

Correct Answer: (A) Explosive injury

SOLUTION:

Step 1: The question links a named injury triad to a specific manner of trauma, so we recall what Marshall's triad describes.

Step 2: It refers to a cluster of three superficial wounds, namely punctate bruises, abrasions and small punctate lacerations, all appearing on the skin together.

Step 3: This combination is the signature of a bomb blast, where countless tiny fragments and the pressure wave pepper the body surface. That is why the triad is associated with explosive injury.

Step 4: Firearm wounds and drowning each carry their own distinct findings that differ from this triad, so they are excluded. The triad therefore indicates an explosive event.

Explosive injury

Quick Tip: Think of punctate bruises and lacerations from a bomb blast.

• • •

85. A victim was choked with the mouth and nose covered, while the neck was held in the bend of the assailant's elbow from behind. This method of strangulation is called?

- (A) Mugging
- (B) Garrotting
- (C) Bansdola
- (D) None of the above

Correct Answer: (A) Mugging

SOLUTION:

Step 1: Forensic texts classify violent asphyxial deaths by the exact mechanism used to compress the neck. The clue here is that the pressure on the neck comes from the crook of the attacker's flexed arm, not from hands or a cord.

Step 2: An arm-lock chokehold applied around the neck is named **mugging**. The forearm and upper arm form a clamp across the front of the neck while the body is restrained, occluding the air passage and the carotids.

Step 3: Eliminating the others: a thrown and tightened cord defines garrotting; a death produced by sandwiching the neck between two bamboo poles tied at the ends defines bansdola; and since a correct term exists, None of the above is not chosen.

Step 4: The single feature of the elbow encircling the neck points only to mugging.

Mugging

Quick Tip: Neck held in the bend of the elbow as a chokehold from behind.



86. Which of the following substances acts as both a poison and an antidote?

- (A) Copper sulphate (CuSO_4)
- (B) Mercuric chloride (HgCl_2)
- (C) Arsenic trioxide (As_2O_3)
- (D) Thallium arsenate

Correct Answer: (A) Copper sulphate (CuSO_4)

SOLUTION:

Step 1: A handful of corrosive metallic salts are dangerous in their own right but find a therapeutic niche against a different toxin. Copper sulphate is the classic example combining both roles.

Step 2: Toxic side: swallowing the blue crystals produces intense stomach burning, repeated vomiting, and at high dose breakdown of red cells, dark urine, abnormal hemoglobin, liver injury and seizures, with fatal outcome from combined kidney and liver shutdown.

Step 3: Antidotal side: during stomach washing for phosphorus ingestion, copper sulphate reacts with the phosphorus to form an inert copper-coated compound, blocking absorption and oxidation of the phosphorus particles.

Step 4: The remaining options, mercuric chloride, arsenic trioxide and thallium arsenate, serve no antidotal purpose and are only poisons.

Copper sulphate (CuSO_4)

Quick Tip: Used in gastric lavage for phosphorus poisoning yet toxic itself.



87. Muttering delirium is characteristically seen in poisoning with:

- (A) Ricinus (castor)
- (B) Datura (Datura)
- (C) Cocaine
- (D) Aconite

Correct Answer: (B) Datura (Datura)

SOLUTION:

Step 1: The phrase muttering delirium points to a drug that scrambles higher mental function while leaving the patient mumbling incoherently. This belongs to the anticholinergic group, of which Datura is the prototype plant poison.

Step 2: Datura seeds carry atropine and scopolamine, which antagonise muscarinic receptors. Centrally this yields restlessness, visual hallucinations and disorganised, barely audible speech, the textbook muttering delirium.

Step 3: Supporting peripheral signs confirm the diagnosis: widely dilated non-reacting pupils, flushed dry skin, fever, fast pulse and inability to pass urine.

Step 4: Castor (ricin) is mainly a gut irritant, cocaine drives a hyperalert stimulant state, and aconite produces paraesthesia and arrhythmia, so none reproduces the muttering delirium of Datura.

Datura (Datura)

Quick Tip: Anticholinergic plant poison; mad as a hatter with mumbling speech.

• • •

88. The term vitriolage means:

- (A) Using vitriol for suicide
- (B) Using vitriol for murder
- (C) Vitriol throwing
- (D) Perforation of the stomach caused by H₂SO₄

Correct Answer: (C) Vitriol throwing

SOLUTION:

Step 1: Vitriolage is a medico-legal term that names an act rather than a route or an intent. The act is hurling a corrosive liquid at another individual, commonly called an acid attack.

Step 2: Despite the root word vitriol meaning sulphuric acid, the offence covers any corrosive thrown on a victim, including nitric or hydrochloric acid or strong alkalis.

Step 3: The exposed face and especially the eyes bear the brunt of the injury, frequently leading to disfigurement and loss of vision.

Step 4: Choices describing suicide, murder or stomach perforation specify a purpose or a lesion and therefore do not capture the definition of the throwing act.

Vitriol throwing

Quick Tip: Throwing a corrosive on a person; eyes are worst affected.

• • •

89. Who is regarded as the Father of Toxicology?

- (A) Paracelsus
- (B) Galen
- (C) Galton
- (D) Orfila

Correct Answer: (A) Paracelsus

SOLUTION:

Step 1: The eponym Father of Toxicology is reserved for the scholar who first articulated that toxicity depends on quantity. That scholar is Paracelsus.

Step 2: His dictum that the dose alone decides whether a thing is a poison remains the cornerstone of the subject, earning him the title.

Step 3: A common trap is Orfila, who instead earns Father of Modern Toxicology for turning the field into a rigorous forensic science a few centuries later.

Step 4: Galen belongs to classical medicine and Galton to fingerprint and heredity studies, so both are unrelated distractors.

Paracelsus

Quick Tip: The dose makes the poison; not Orfila, who is the modern father.



90. Lendrum stain (Phloxine-Tartrazine) is done at autopsy for the diagnosis of?

- (A) Air embolism
- (B) Fat embolism
- (C) Amniotic fluid embolism
- (D) None

Correct Answer: (C) Amniotic fluid embolism

SOLUTION:

Step 1: The autopsy challenge in a sudden peripartum maternal death is to prove that fetal material has lodged in the mother's lungs. This requires histological stains that highlight squames, mucin and vernix.

Step 2: Phloxine-Tartrazine, named the Lendrum technique, selectively colours the keratinised fetal squamous cells trapped in pulmonary vessels, making it the signature stain for amniotic fluid embolism.

Step 3: Adjuncts round out the picture: Alcian Blue marks the mucin of fetal secretions and Sudan Black or Oil Red O marks the fatty vernix caseosa.

Step 4: Because air embolism relies on dissection or radiology and fat embolism on lipid stains of systemic tissue, neither calls for Lendrum stain, leaving amniotic fluid embolism as the match.

Amniotic fluid embolism

Quick Tip: Phloxine-Tartrazine highlights fetal squames in maternal lung vessels.

• • •

91. In nutrient agar, the concentration of agar is:

- (A) 1%
- (B) 1.5%
- (C) 3%
- (D) 4%

Correct Answer: (B) 1.5%

SOLUTION:

Step 1: Solid culture media are made by gelling a liquid broth with agar, a seaweed polysaccharide that sets the surface for colony growth without feeding the microbes.

Step 2: For standard nutrient agar the recipe fixes the agar at 1.5% added to nutrient broth, giving a firm plate suitable for streaking and isolation.

Step 3: The nutritive part of the broth supplies peptone near 0.5%, meat or yeast extract near 0.3% and salt near 0.5%, balanced to neutral pH around 7.4.

Step 4: A 1% concentration leaves the medium too soft, while 3% or 4% overgels it without benefit, so the routine working figure is 1.5%.

1.5%

Quick Tip: Standard solidifying concentration of agar in routine solid media.

• • •

92. A child comes with fever, cold, cough and a membrane over the tonsils. A nasal swab is taken. Culture should be done on which medium for the earliest diagnosis?

- (A) Loeffler's serum slope
- (B) L. J. medium
- (C) MacConkey's agar
- (D) Citrate medium

Correct Answer: (A) Loeffler's serum slope

SOLUTION:

Step 1: The clinical picture of a tonsillar pseudomembrane with upper respiratory symptoms in a child is classic for diphtheria. The bacterium responsible is *Corynebacterium diphtheriae*, and the question asks which medium yields the

quickest result.

Step 2: Speed of growth is the deciding factor. Among standard media, Loeffler's serum slope supports extremely fast multiplication of this organism, with recognisable colonies forming within roughly 6 to 8 hours. This early growth advantage lets the lab report findings before competing flora overgrow the plate.

Step 3: Reviewing why the rest fail: Lowenstein-Jensen (L. J.) medium targets tubercle bacilli and needs weeks, MacConkey's agar selects for lactose-fermenting and non-fermenting enteric rods, and citrate medium is a confirmatory biochemical reagent rather than an isolation medium.

Step 4: Therefore the nasal swab is streaked on Loeffler's serum slope for the fastest confirmation.

Loeffler's serum slope

Quick Tip: Think of the medium on which diphtheria bacilli grow within 6 to 8 hours.

• • •

93. Cholera toxin is due to -

- (A) Chromosome
- (B) Plasmid
- (C) Phage
- (D) Transposons

Correct Answer: (C) Phage

SOLUTION:

Step 1: The watery, rice-water stools of cholera result from an enterotoxin secreted by *Vibrio cholerae*. We need to identify the mobile genetic element encoding this toxin.

Step 2: The structural genes *ctxAB* are part of the genome of a lysogenic filamentous phage termed CTXphi. When this phage infects a non-toxigenic vibrio, it confers the ability to make toxin, a classic example of lysogenic conversion.

Step 3: Going through the distractors: the phage genome does insert into the chromosome, yet the toxin trait originates from the phage, so attributing it simply to the chromosome misses the point. Neither extrachromosomal plasmids nor jumping transposon sequences carry the cholera toxin genes.

Step 4: So toxin production is acquired through a phage.

Phage (CTX phage)

Quick Tip: Toxin genes are introduced by lysogenic conversion via a filamentous CTX element.

• • •

94. A child with fever, red blood cells (RBCs) and pus in the stool. The causative organism is?

- (A) ETEC (Enterotoxigenic *E. coli*)
- (B) EHEC (Enterohaemorrhagic *E. coli*)
- (C) EPEC (Enteropathogenic *E. coli*)
- (D) EAEC (Enteroaggregative *E. coli*)

Correct Answer: (B) EHEC (Enterohaemorrhagic *E. coli*)

SOLUTION:

Step 1: The combination of fever plus erythrocytes and leucocytes (pus) in the faeces is the hallmark of an inflammatory, dysentery-like diarrhoea, in contrast to a clear watery purge. The task is to match this with the correct *E. coli* strain.

Step 2: Enterohaemorrhagic *E. coli* elaborates Shiga (verocytotoxin) toxin that injures the lining of the large bowel, producing grossly bloody stools containing inflammatory cells; it is also linked to haemolytic uraemic syndrome. Of the four choices it best fits a blood-and-pus stool.

Step 3: Eliminating the alternatives: the enterotoxigenic type yields a cholera-like watery output, the enteropathogenic type causes infantile watery diarrhoea through pedestal-forming adhesion, and the enteroaggregative type leads to prolonged watery diarrhoea with a stacked-brick adherence pattern. None routinely produces visible blood and pus.

Step 4: The answer is the enterohaemorrhagic strain.

EHEC

Quick Tip: Blood and pus in stool means an invasive, Shiga-toxin producing strain.

• • •

95. Reactive tubercular arthritis is known as:

- (A) Spina ventosa
- (B) Pott's disease
- (C) Poncet's disease
- (D) None

Correct Answer: (C) Poncet's disease

SOLUTION:

Step 1: We need the name of the joint disorder that arises as an immune reaction to tuberculosis rather than from invasion of the joint by the organism.

Step 2: That entity is Poncet's disease, an aseptic reactive polyarthritis seen

alongside active TB at another site. Synovial cultures and tissue stains are negative for the bacillus, and the arthritis resolves once anti-tubercular drugs are given, confirming its reactive nature.

Step 3: Excluding the rest: spina ventosa refers to TB of the small tubular bones (dactylitis) in children with actual bacillary infection of bone, while Pott's disease denotes tuberculous involvement of the vertebral column. Both are direct infections, so neither matches a reactive arthritis.

Step 4: Thus the reactive tubercular arthritis is Poncet's disease.

Poncet's disease

Quick Tip: Sterile reactive polyarthritis with TB elsewhere, no bacilli in the joint.

• • •

96. In malaria, the sexual cycle is -

- (A) Sporozoite to gametocytes
- (B) Gametocytes to sporozoite
- (C) Occurs in humans
- (D) Responsible for relapse

Correct Answer: (B) Gametocytes to sporozoite

SOLUTION:

Step 1: *Plasmodium* alternates between an asexual phase in the human (intermediate host) and a sexual phase, called sporogony, inside the female *Anopheles* mosquito (definitive host). The question focuses on the direction of the sexual phase.

Step 2: Inside the mosquito gut, male and female gametocytes taken up with a blood meal differentiate into gametes. Fertilisation yields a motile ookinete that

becomes an oocyst on the stomach wall; the oocyst eventually bursts to liberate sporozoites that migrate to the salivary glands. Therefore the chain runs gametocytes leading to sporozoites.

Step 3: Rejecting the others: going from sporozoite toward gametocyte describes the asexual schizogony within people, the sexual cycle is housed in the insect rather than the human body, and relapses stem from dormant liver hypnozoites, not from sporogony.

Step 4: So the sexual cycle converts gametocytes into sporozoites.

Gametocytes to sporozoite

Quick Tip: The sexual cycle (sporogony) runs in the mosquito and ends in sporozoites.

• • •

97. Toxoplasma in children causes:

- (A) Chorioretinitis
- (B) Conjunctivitis
- (C) Keratitis
- (D) Papillitis

Correct Answer: (A) Chorioretinitis

SOLUTION:

Step 1: Infection with the protozoan *Toxoplasma gondii*, especially when acquired transplacentally, prominently affects the eye and brain of the child. A well known triad combines retinal-choroidal inflammation, hydrocephalus and cerebral calcification.

Step 2: Within that picture, the signature eye finding is chorioretinitis, an inflammatory focus involving both the choroid and the overlying retina,

frequently bilateral and capable of scarring the macula and reducing vision. This identifies option a as the answer.

Step 3: The remaining options describe inflammation of other ocular structures that are not characteristic of this parasite: the conjunctiva (conjunctivitis), the cornea (keratitis), and the optic nerve head (papillitis). They do not represent the typical toxoplasma lesion.

Step 4: So the expected ocular manifestation in a child is chorioretinitis.

Chorioretinitis

Quick Tip: Congenital toxoplasmosis triad: chorioretinitis, hydrocephalus, intracranial calcification.

• • •

98. Which of the following is a primary cell line?

- (A) Chick embryo fibroblast
- (B) HeLa cells
- (C) Vero cells
- (D) WI-38

Correct Answer: (A) Chick embryo fibroblast

SOLUTION:

Step 1: For growing viruses in the laboratory, cell systems fall into three groups: primary cultures taken straight from an animal tissue, diploid cell strains with a finite number of passages, and continuous lines that are effectively immortal. We must spot the primary one.

Step 2: A chick embryo fibroblast preparation is made fresh by dispersing chick embryo tissue and supports only a handful of subcultures before dying out. This

finite, freshly derived nature defines it as a primary culture, marking option a as correct.

Step 3: The others belong to different categories: HeLa (human cervical cancer) and Vero (African green monkey kidney) are established continuous lines that propagate without limit, whereas WI-38 is a human diploid strain of lung fibroblasts that, while longer lived than a primary culture, still has a capped number of divisions.

Step 4: Therefore the primary cell culture is the chick embryo fibroblast.

Chick embryo fibroblast

Quick Tip: Freshly prepared from tissue, only a few subcultures = primary culture.

• • •

99. Bollinger bodies are seen in?

- (A) Chickenpox
- (B) Cowpox
- (C) Fowlpox
- (D) Smallpox

Correct Answer: (C) Fowlpox

SOLUTION:

Step 1: Many poxviruses leave behind characteristic clumps inside the cells they infect, and examiners often pair each clump with its virus. We need the virus matched to the Bollinger body.

Step 2: The Bollinger body is a cytoplasmic inclusion of avian poxvirus, i.e. fowlpox. It is notable because it houses tiny units known as Borrel bodies, which represent the individual virions packed inside.

Step 3: Ruling out the others helps confirm. Variola (smallpox), vaccinia and cowpox are classically tied to Guarnieri inclusions, while varicella (chickenpox) shows intranuclear Cowdry A type inclusions. So those cannot carry the Bollinger label.

Step 4: Matching the inclusion to the only avian pox option leaves fowlpox as the answer.

Fowlpox

Quick Tip: Think of the avian poxvirus whose cytoplasmic inclusion harbours Borrel bodies.

• • •

100. Binding of gp120 causes:

- (A) Infection of target cell
- (B) Facilitation of co-receptor
- (C) Fusing of virus and target cell
- (D) None

Correct Answer: (B) Facilitation of co-receptor

SOLUTION:

Step 1: HIV uses an ordered handshake with the host cell. Knowing which envelope protein does what is the key to this item.

Step 2: gp120 is the docking protein. Its first job is to latch onto CD4. That attachment reshapes gp120 so that it can now reach the chemokine co-receptor, either CCR5 or CXCR4. In other words, gp120 binding sets up and facilitates co-receptor engagement.

Step 3: What gp120 does not do directly is merge the membranes; that step belongs to gp41, whose fusion peptide drives the envelope into the cell membrane. And calling the result simple infection skips the intermediate co-receptor step that the question is probing.

Step 4: So the precise consequence of gp120 attaching is to enable the co-receptor to come into play.

Facilitation of co-receptor

Quick Tip: gp120 binds CD4 first, then exposes the site that engages CCR5 or CXCR4.

• • •

101. Prozone phenomenon is seen with?

- (A) Same concentration of antibody and antigen
- (B) Antigen excess to antibody
- (C) Antibody excess to antigen
- (D) Hyperimmune reaction

Correct Answer: (C) Antibody excess to antigen

SOLUTION:

Step 1: Serological clumping tests depend on building a network between antigen and antibody. If the ratio of the two is off, the network fails and the test reads negative even when antibody is present.

Step 2: Picture a test where the patient serum is loaded with antibody but only a little antigen is around. Every antigen molecule gets saturated by separate antibody arms, so no bridging lattice develops and the tube looks clear. This deceptive negative caused by too much antibody is exactly the prozone effect, pointing to option c.

Step 3: The mirror situation, where antigen swamps antibody, also blocks lattices but is named the postzone, not prozone. Equal balance of the two reactants gives maximal visible agglutination, which is the zone of equivalence.

Step 4: The classic fix is to serially dilute the serum, lowering antibody until equivalence is reached and the reaction reappears, proving antibody excess was the culprit.

Antibody excess to antigen

Quick Tip: A false negative from too much antibody at low dilutions; dilute the serum and it turns positive.

• • •

102. Which of the following T cell independent antigen acts through?

- (A) T-cell
- (B) B-cell
- (C) Macrophages
- (D) CD8+ T cells

Correct Answer: (B) B-cell

SOLUTION:

Step 1: The name of the antigen group is itself the clue. If an antigen is labelled T cell independent, then by definition it does its work without leaning on T lymphocytes.

Step 2: So which cell does it engage instead? These antigens are usually big repetitive structures, like the polysaccharide coats and endotoxin of bacteria. Their repeating epitopes simultaneously clamp many B cell receptors on a single B cell, and that strong cross-linking is enough to switch the B cell on by itself. The pathway therefore runs through the B cell, which is option b.

Step 3: Since no helper T cell or antigen presenting cell processing is involved, the macrophage, the helper T cell and the cytotoxic CD8 T cell options are all off the mark. The antibody produced is largely IgM with weak memory.

Step 4: The direct line from repeating antigen to B cell receptor confirms the route.

B-cell

Quick Tip: The label says no T cell help is needed, so they must trigger the antibody maker directly.

• • •

103. Complement components formed in the liver are?

- (A) C2, C4
- (B) C3, C6, C9
- (C) C5, C8
- (D) C1

Correct Answer: (B) C3, C6, C9

SOLUTION:

Step 1: Complement is not all made in one place. Different organs and cells churn out different components, and here we must pick the trio attributed to the liver.

Step 2: Hepatocytes are the body's main complement factory, and the classic teaching list assigns C3, C6 and C9 to the liver. C3 alone is a huge contributor since it sits at the hub of all three activation pathways. That makes option b the right choice.

Step 3: The other options belong elsewhere in the standard site list. Macrophages handle C2 and C4, the spleen is linked to C5 and C8, and the intestine is the source of C1. None of those is the hepatic set.

Step 4: Matching the liver to its dedicated components gives the trio.

C3, C6, C9

Quick Tip: The liver is the chief source of the central complement protein C3 and its partners.

• • •

104. An 18 year old girl presents with watery diarrhea. The most likely causative agent is?

- (A) Rotavirus
- (B) *V. cholerae*
- (C) Salmonella
- (D) Shigella

Correct Answer: (B) *V. cholerae*

SOLUTION:

Step 1: Diarrhoea questions hinge on whether the stool is watery (secretory) or bloody (invasive). Here the stool is plainly watery, so we steer toward toxin-driven organisms.

Step 2: Two of the listed bugs fit a watery pattern, namely rotavirus and *Vibrio cholerae*. Age then breaks the tie. Rotavirus dominates watery diarrhoea in infants and toddlers, but our patient is 18 years old, well past that group, so rotavirus slips down the list.

Step 3: That leaves *Vibrio cholerae*, whose cholera toxin floods the gut with fluid

and gives the hallmark rice water stools in adults. It is therefore the best single fit, option b.

Step 4: Salmonella and Shigella belong to the bloody, febrile, dysentery category and clash with a clean watery story, so they are excluded.

V. cholerae

Quick Tip: Watery stool in an adult, not an infant, favours the rice water toxin producer over rotavirus.

• • •

105. Use of iodized salt in the iodine deficiency control programme is an example of?

- (A) Primary prevention
- (B) Secondary prevention
- (C) Tertiary prevention
- (D) None

Correct Answer: (A) Primary prevention

SOLUTION:

Step 1: To classify any public health action, ask where it sits on the disease timeline. If it stops disease from ever starting, it is primary; if it catches disease early, secondary; if it manages complications, tertiary.

Step 2: Iodizing salt simply tops up dietary iodine across the whole population so that goitre and other iodine deficiency disorders do not arise. Since it works in well people before disease onset, it belongs to the primary level, confirming option a.

Step 3: Primary prevention itself splits into health promotion and specific protection. Adding a specific nutrient through fortification is a textbook example

of specific protection, sitting beside immunization and chemoprophylaxis.

Step 4: Compare this with screening a community for goitre, which would be secondary, or rehabilitating a child with cretinism, which would be tertiary. The salt fortification step is unmistakably primary prevention.

Primary prevention

Quick Tip: Adding a nutrient to prevent disease before it starts is specific protection under primary prevention.

• • •

106. Which study is best to establish the definitive cause of a disease?

- (A) Case-control
- (B) Cohort
- (C) Ecological
- (D) Cross-sectional

Correct Answer: (B) Cohort

SOLUTION:

Step 1: To call something a cause, you must be sure the exposure came before the disease and that you can measure how often disease develops in exposed versus unexposed groups.

Step 2: Only a cohort design does this naturally. You begin with a disease-free population, split it by exposure status, and watch over time. The forward (prospective) direction guarantees temporality and lets you calculate incidence and relative risk straight away.

Step 3: Compare the rivals. The case-control approach looks at past exposure in already-ill patients, so timing is reconstructed and bias creeps in. A cross-sectional

survey is a one-time snapshot, mixing old and new cases, so cause and effect blur. An ecological study compares whole populations, not individuals, and can mislead through the ecological fallacy.

Step 4: If experimental designs were on the list (randomised trials, or pooled evidence from meta-analysis) they would rank higher, but among the purely observational choices given, cohort wins for proving cause.

Cohort

Quick Tip: Which observational study follows exposed and unexposed people forward over time?

• • •

107. The time interval between receipt of infection and the point of maximum infectivity of the host is known as?

- (A) Incubation period
- (B) Serial interval
- (C) Generation time
- (D) Communicable period

Correct Answer: (C) Generation time

SOLUTION:

Step 1: Break the definition into two events: event A is the host catching the infection, event B is the host being at the peak of spreading it. The named interval between A and B is what we want.

Step 2: Epidemiology calls this the generation time. It is a transmission-based measure focused on infectiousness, and in practice it approximates the incubation period.

Step 3: Eliminate the others by their own definitions. Incubation period ends at symptom onset, not at maximum spread. Serial interval is measured from symptom onset in one case to symptom onset in the next, so it links clinical events, not infection to peak infectivity. Communicable period is a duration of infectiousness rather than the moment of greatest infectivity.

Step 4: So the matching term is the one tied to receipt of infection through to maximal infectivity.

Generation time

Quick Tip: It is the transmission interval that roughly equals the incubation period.

• • •

108. Mass vaccination is ineffective in which of the following?

- (A) Measles
- (B) Polio
- (C) Tetanus
- (D) None

Correct Answer: (D) None

SOLUTION:

Step 1: The trick here is that the question lists three diseases for which mass vaccination is a real, recommended strategy, so the catch-all option is the one to test.

Step 2: Look at each disease. Polio control relied on Pulse Polio campaigns, the textbook mass-vaccination programme that delivered oral vaccine to all children in a short window. Measles outbreaks are controlled with mass supplementary immunisation rounds because the agent spreads so easily that high uniform coverage is essential.

Step 3: Tetanus prevention also uses mass methods, notably the campaign of giving tetanus toxoid to all women of reproductive age, which is how maternal and neonatal tetanus is eliminated from a region.

Step 4: Because every named disease is in fact addressed by mass vaccination, none of them is an exception. The answer is the option that says so.

None

Quick Tip: Think Pulse Polio, measles catch-up rounds and tetanus toxoid campaigns.

• • •

109. At what age is the first dose of measles vaccination given?

- (A) 9 months
- (B) At birth
- (C) 4 weeks
- (D) 8 weeks

Correct Answer: (A) 9 months

SOLUTION:

Step 1: Decide the age by balancing two facts: a young infant carries protective antibodies from the mother, and those same antibodies interfere with a live vaccine.

Step 2: Give the vaccine too soon and maternal antibody knocks out the vaccine virus before immunity forms. Wait too long and the child may catch wild measles first. The compromise point, where maternal antibody has declined yet risk is still high, is around 9 months.

Step 3: That is exactly the age the WHO immunization programme picks for the

first measles dose, with a follow-up dose between 16 and 24 months in the Indian schedule to catch non-responders.

Step 4: Birth, 4 weeks, and 8 weeks are all inside the maternal-antibody window, so they are unsuitable. The correct first-dose age stands at 9 months.

9 months

Quick Tip: Wait until maternal antibodies decline but before natural measles strikes.

• • •

110. What is the amount of diphtheria toxoid present in the pediatric DT vaccine?

- (A) 5 Lf
- (B) 10 Lf
- (C) 15 Lf
- (D) 25 Lf

Correct Answer: (D) 25 Lf

SOLUTION:

Step 1: Recall that diphtheria toxoid strength is quoted in Lf units and that there are two grades, a high-dose pediatric one and a low-dose adult one.

Step 2: The capital-D, capital-T pediatric DT (and the pediatric DPT) carries the full 25 Lf of diphtheria toxoid, because young children tolerate and need the larger antigen load to prime immunity.

Step 3: Contrast this with the small-d adult dT given to those over 12 years, which drops the diphtheria toxoid to about 2 Lf to limit hypersensitivity reactions in already-sensitised individuals.

Step 4: Remember the supporting facts: aluminium hydroxide or phosphate is the

adjuvant, thiomersal the preservative, the cold-chain range is +2 to +8 degrees C, and the vaccine must never be frozen. So the pediatric DT diphtheria content is the highest value offered.

25 Lf

Quick Tip: Pediatric DT is full strength; adult dT drops to about 2 Lf.

• • •

111. What is the osmolarity of the new (reduced osmolarity) ORS in mmol per litre?

- (A) 270
- (B) 245
- (C) 290
- (D) 310

Correct Answer: (B) 245

SOLUTION:

Step 1: Distinguish the two generations of ORS. The earlier WHO formula sat near 310 mmol per litre, while the modern one was deliberately made hypo-osmolar.

Step 2: Lowering sodium and glucose brought the total down to 245 mmol per litre, which improved tolerance and cut stool volume in diarrhoea, especially in children.

Step 3: You can confirm 245 by adding the components: sodium 75, glucose 75, chloride 65, potassium 20 and citrate 10, which together give 245 mmol per litre.

Step 4: So the figure for the reduced osmolarity ORS is the second option, not the older 310 value or the unrelated 270 and 290 numbers.

245 mmol/L

Quick Tip: The reduced osmolarity formula sums sodium, glucose, chloride, potassium and citrate.

• • •

112. In leprosy, a duration of 2 years is relevant with regard to which of the following?

- (A) Treatment of paucibacillary leprosy
- (B) Treatment of multibacillary leprosy
- (C) Post-treatment surveillance of paucibacillary leprosy
- (D) Post-treatment surveillance of multibacillary leprosy

Correct Answer: (C) Post-treatment surveillance of paucibacillary leprosy

SOLUTION:

Step 1: Sort the time periods used in leprosy. Active drug treatment is short (months), but the watch for relapse afterwards runs into years, so a 2-year figure should be tested against the surveillance phase first.

Step 2: The treatment courses are fixed: paucibacillary disease is treated for 6 months and multibacillary disease for 12 months. Neither equals 2 years, so options about treatment are out.

Step 3: That leaves the surveillance options. After completing the short paucibacillary course, the patient is observed for 2 years to catch any relapse, which is exactly the 2-year period in the question.

Step 4: Multibacillary surveillance is longer, around 5 years, so it does not fit 2 years. The 2-year window therefore belongs to paucibacillary post-treatment surveillance.

Quick Tip: Treatment is months; the 2 years is the watch-for-relapse phase after a short PB course.



113. Which of the following is the most common cancer in men?

- (A) Bladder cancer
- (B) Colorectal cancer
- (C) Prostate cancer
- (D) Oral cancer

Correct Answer: (C) Prostate cancer

SOLUTION:

Step 1: We must pick the leading cancer seen in males. Among the choices, prostate carcinoma is the one repeatedly cited as the dominant male malignancy in most global registries.

Step 2: Prostate cancer arises in older men and, alongside lung and colorectal cancers, forms the trio that makes up close to 44% of all cancers worldwide (skin non-melanoma excluded). Lung cancer tops the list globally, but among the options given here lung is absent, leaving prostate as the highest-ranking choice.

Step 3: For the Indian male population the ordering runs lip and oral cavity first, then prostate, then colorectum, then pharynx and larynx. Hence oral cancer (option d) is a tempting India-specific trap, yet the keyed answer remains prostate.

Step 4: Bladder (option a) and colorectal (option b) cancers sit lower in male incidence than prostate, so they are eliminated. The correct choice is prostate

cancer.

Prostate cancer

Quick Tip: Think of the gland-specific malignancy ranking high in older men.

• • •

114. Net reproduction rate is defined as which of the following?

- (A) Number of live births per 1000 mid-year population
- (B) Number of live births per 1000 women of child bearing age
- (C) Number of daughters a newborn girl will have during her life time
- (D) None of the above

Correct Answer: (C) Number of daughters a newborn girl will have during her life time

SOLUTION:

Step 1: The correct definition of net reproduction rate is the average number of daughters that a newly born female will produce over her whole reproductive span, holding current fertility and death rates constant. That is option c.

Step 2: What separates NRR from other indices is that it factors in mortality. Gross reproduction rate ignores deaths, whereas NRR subtracts the females who die before completing reproduction, giving a truer replacement measure.

Step 3: When NRR equals 1, one mother is exactly replaced by one surviving daughter, signalling stationary population growth and matching the two-child family target. Reaching this needs roughly 60% of eligible couples to practise effective contraception.

Step 4: The other stems are different demographic indicators: births per 1000 total population is the crude birth rate (a), and births per 1000 reproductive-age

women is the general fertility rate (b). Hence only option c fits.

Daughters a newborn girl will have during her lifetime

Quick Tip: It is the fertility index that uniquely accounts for mortality.

• • •

115. Which of the following is the least common cause of infant mortality in India?

- (A) Infections
- (B) Prematurity
- (C) Birth injuries
- (D) Congenital malformations

Correct Answer: (C) Birth injuries

SOLUTION:

Step 1: We need the rarest contributor to infant death from the four choices. Birth injuries (option c) sit at the bottom of this list.

Step 2: Infant deaths in India are driven mainly by infective conditions, prematurity and low birth weight. Sepsis, pneumonia and diarrhoeal disease, together with preterm birth complications, make up the bulk of the toll.

Step 3: Congenital malformations are a recognised but smaller cause, still ahead of mechanical birth trauma in frequency.

Step 4: Better antenatal monitoring, institutional deliveries and skilled birth attendance have cut down injuries occurring during labour, so birth injuries remain the least frequent of the four. The other three options rank higher and are eliminated.

Birth injuries

Quick Tip: Improved obstetric care has minimised this mechanical cause of infant death.



116. What is the approximate total daily energy requirement in late pregnancy?

- (A) 2500 cal
- (B) 1400 cal
- (C) 1000 cal
- (D) 1800 cal

Correct Answer: (A) 2500 cal

SOLUTION:

Step 1: To find the late-pregnancy energy requirement we build on the normal female intake and add the pregnancy increment. The total comes to about 2500 cal, which is option a.

Step 2: For a moderately active adult woman the reference energy need is in the region of 2200 to 2300 kcal daily. Pregnancy raises metabolic demand for fetal growth, maternal tissue gain and increased basal metabolism.

Step 3: The recommended extra allowance is roughly +300 kcal per day, concentrated in the later trimesters. Adding this to the base value yields a figure close to 2500 kcal per day.

Step 4: The remaining options (1000, 1400 and 1800 cal) all fall short of a woman's basal needs, let alone the added burden of pregnancy, so they are ruled out.

2500 cal

Quick Tip: Add the roughly 300 kcal pregnancy increment to an adult woman's baseline.

• • •

117. Which toxin is responsible for epidemic dropsy?

- (A) BOAA
- (B) Aflatoxin
- (C) Sanguinarine
- (D) Pyrrolizidine

Correct Answer: (C) Sanguinarine

SOLUTION:

Step 1: Epidemic dropsy follows the use of mustard oil adulterated with Argemone mexicana (prickly poppy) oil. Its causative poison is the alkaloid sanguinarine, matching option c.

Step 2: Sanguinarine blocks pyruvic acid oxidation so that pyruvate builds up, and it dilates capillaries while raising their permeability. Fluid then leaks into tissues, giving the characteristic bilateral pitting leg oedema that names the condition.

Step 3: Affected people may also develop diarrhoea, breathlessness, glaucoma and heart failure. Adulteration is confirmed by the nitric acid colour test or by chromatographic analysis of the oil.

Step 4: The wrong choices belong to separate toxidromes: BOAA (beta-oxalyl-amino-alanine) drives lathyrism, aflatoxin from *Aspergillus* damages the liver, and pyrrolizidine alkaloids produce hepatic veno-occlusive disease. Hence only

sanguinarine fits epidemic dropsy.

Sanguinarine

Quick Tip: It is the alkaloid of *Argemone mexicana* that adulterates mustard oil.

• • •

118. Which is the recommended measure for the iodine deficiency control programme?

- (A) Health education
- (B) Water testing
- (C) Fortification of salt
- (D) None

Correct Answer: (C) Fortification of salt

SOLUTION:

Step 1: The principal strategy to control iodine deficiency disorders is to add iodine to commonly eaten salt, that is salt fortification, which is option c.

Step 2: Salt is chosen as the vehicle because it is eaten daily by nearly the whole population in roughly steady quantities, is cheap, and can be fortified centrally. This makes iodized salt the most practical mass-prophylaxis tool in goitre-endemic regions.

Step 3: India delivers this through universal salt iodization within the National Iodine Deficiency Disorders Control Programme, mandating iodine content at the production stage to offset later losses.

Step 4: Among the alternatives, health education only complements the effort and water testing does nothing to supply iodine, so neither qualifies as the

control measure. Option c stands.

Fortification of salt

Quick Tip: Think of the daily-consumed dietary vehicle used for universal fortification.

• • •

119. What amount of bleaching powder is necessary to disinfect choleric stools?

- (A) 50 gm/lit
- (B) 75 gm/lit
- (C) 90 gm/lit
- (D) 100 gm/lit

Correct Answer: (A) 50 gm/lit

SOLUTION:

Step 1: Disinfecting the stools of cholera patients is an essential control step, and the standard dose of bleaching powder used is approximately 50 gm for each litre of excreta, which is option a.

Step 2: Calcium hypochlorite in bleaching powder liberates available chlorine, a potent oxidiser that destroys *Vibrio cholerae* present in the faeces. At about 50 gm per litre the chlorine load is sufficient to render the stool non-infective.

Step 3: The treated material is left for an appropriate contact period so the chlorine can act fully before the waste is disposed of safely.

Step 4: Doses of 75, 90 or 100 gm per litre go beyond the accepted requirement and are therefore incorrect choices. The expected answer is 50 gm per litre.

50 gm/lit

Quick Tip: Recall the standard bleaching powder dose for disinfecting infective excreta.

• • •

120. Which is the most common heavy metal poisoning in the world?

- (A) Lead
- (B) Arsenic
- (C) Mercury
- (D) Cadmium

Correct Answer: (A) Lead

SOLUTION:

Step 1: To rank a poisoning as most common we look at population exposure burden rather than intrinsic lethality. Whichever metal touches the largest number of people across industries and homes wins this question.

Step 2: Among the four metals listed, lead reaches the widest population. It is found in storage batteries, pigments and paints, soldered joints, ceramic glazes, old plumbing and historically in petrol additives, so the pool of exposed workers and residents is enormous.

Step 3: Clinically, chronic lead absorption presents with microcytic anaemia and basophilic stippling, gum changes, colicky abdominal pain, and a motor neuropathy that classically gives wrist drop. In young children even low levels impair neurodevelopment.

Step 4: Arsenic, mercury and cadmium are each linked to landmark toxic syndromes but remain comparatively localized problems. None displaces lead at the top of the global frequency list, so the metal with the greatest worldwide

poisoning load is lead.

Lead

Quick Tip: Think which toxic metal exposes the largest number of industrial workers worldwide.

• • •

121. What is the approximate amount of infectious waste produced in hospitals (as a fraction of total hospital waste)?

- (A) 45%
- (B) 65%
- (C) 80%
- (D) 100%

Correct Answer: (A) 45%

SOLUTION:

Step 1: Begin by recalling that not all material discarded by a hospital is dangerous. The bulk is ordinary refuse, and only a defined slice carries infection or other hazards needing special handling.

Step 2: When biomedical waste is categorized, the segment described as infectious in this question corresponds to the 45 percent figure given in the key. This is the proportion you must remember for the marked answer here.

Step 3: The remaining options inflate the infectious share. A value of 100 percent would wrongly imply every item from a hospital is infective, while 65 and 80 percent also exceed the accepted estimate, so each of these is ruled out.

Step 4: Correct segregation, colour coded bins, autoclaving and incineration are applied to this infectious fraction so it never mixes with general waste. The

matched answer is therefore 45 percent.

45%

Quick Tip: Most hospital waste is general; the infectious share matched here is well below half.

• • •

122. In a left (negatively) skewed distribution curve, which statement is true?

- (A) Mean = Median
- (B) Mean < Mode
- (C) Mean > Mode
- (D) Mean = Mode

Correct Answer: (B) Mean < Mode

SOLUTION:

Step 1: Picture the shape: a negatively skewed curve leans so that the stretched tail runs out to the left, toward the smaller readings. The peak sits to the right.

Step 2: Extreme low values in that tail exert the strongest pull on the mean because the mean uses every value. As a result the mean shifts furthest left, the mode stays at the right peak, and the median falls in between.

Step 3: Writing this as an inequality gives ***Mean < Median < Mode***. Reducing it to the two central measures asked about, the mean clearly sits below the mode.

Step 4: Equality of mean and mode happens only when the curve is perfectly symmetrical, and a mean greater than mode would describe a right skewed curve instead. So for this left skewed curve the valid relation is mean less than mode.

$$\text{Mean} < \text{Mode}$$

Quick Tip: The long tail on the left drags the mean below the mode.

• • •

123. The Ujjwala scheme is meant for the prevention of which problem?

- (A) Child abuse
- (B) Child trafficking
- (C) Child labour
- (D) None

Correct Answer: (B) Child trafficking

SOLUTION:

Step 1: Recall the parent ministry first. Ujjwala here is run by the Ministry of Women and Child Development, which immediately signals a welfare and protection scheme rather than a labour or abuse statute.

Step 2: The scheme is built around two pillars. One pillar stops vulnerable women and children from being trafficked, and the other rescues, rehabilitates and reintegrates those who were already exploited for commercial sexual purposes.

Step 3: Comparing that purpose to the listed answers, the option that captures both pillars is child trafficking. The scheme exists precisely to break the cycle of trafficking and to restore its victims.

Step 4: The other choices miss the mark: child abuse and child labour fall under separate frameworks, and None cannot apply when the scheme has an explicit anti-trafficking mandate. So the matched purpose is child trafficking.

Child trafficking

Quick Tip: It is a Women and Child Development scheme for rescue and rehabilitation of the trafficked.

• • •

124. Above which level of the heat stress index (HSI) is it not possible to work comfortably?

- (A) 20 - 40
- (B) 40 - 60
- (C) 60 - 80
- (D) 80 - 100

Correct Answer: (B) 40 - 60

SOLUTION:

Step 1: Start with what the heat stress index measures. It compares the cooling the body needs against the cooling the environment can actually provide, then converts that into a percentage figure for strain.

Step 2: A small index means the surroundings easily carry away body heat, so work feels comfortable. As the index climbs, sweating demand rises sharply and physical tolerance falls.

Step 3: The recognized cutoff for severe heat strain sits in the 40 to 60 band. Once strain reaches this level a worker can no longer continue tasks in comfort, which is exactly what the question targets.

Step 4: Ranges above this, namely 60 to 80 and 80 to 100, represent even harsher conditions, and 20 to 40 is still within tolerable limits. The band that first makes comfortable work impossible is therefore 40 to 60.

Quick Tip: Severe heat strain begins in the mid range of the index, not the highest band.

• • •

125. The visual axis of the eye is best defined as the line from the:

- (A) Center of cornea to retina
- (B) Object to fovea
- (C) Center of lens to cornea
- (D) None

Correct Answer: (B) Object to fovea

SOLUTION:

Step 1: Separate the two axes of the eye before answering. One is a purely geometric line through the centres of the refracting surfaces, and the other is the practical line along which we actually see.

Step 2: The line we see along is the visual axis. It connects the point of fixation, that is the object being viewed, to the fovea centralis, which is the retinal spot with the densest cone packing and the highest acuity.

Step 3: Because the eye rotates to drop the image of whatever it fixes upon exactly onto the fovea, the correct description among the choices is object to fovea, listed as option b.

Step 4: The cornea-to-retina and lens-to-cornea descriptions belong to the optical axis, which sits at a slight angle to the line of sight and is not what is asked. The visual axis is the object to fovea line.

Quick Tip: It is the line of sight from what you look at to the point of sharpest retinal vision.



126. Which of the following are features of vernal keratoconjunctivitis?

- (A) Shield ulcer
- (B) Horner-Trantas spots
- (C) Papillary hypertrophy
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Vernal keratoconjunctivitis is a seasonal allergic eye disease, classically affecting boys, with itching, ropy discharge and photophobia. It presents in palpebral, limbal and mixed forms, and each form contributes its own signs.

Step 2: In the palpebral form the upper tarsal conjunctiva develops hard, flat cobblestone papillae, which is the papillary hypertrophy mentioned in option c. This is one of the most recognizable signs of the condition.

Step 3: The limbal form produces Horner-Trantas spots, chalky white limbal accumulations of degenerating eosinophils, matching option b. Corneal involvement gives a shield ulcer, the shallow sterile epithelial ulcer high on the cornea in option a.

Step 4: Since the shield ulcer, the Horner-Trantas spots and the papillary hypertrophy are all genuine features of vernal disease, no single option can be excluded. The complete answer is therefore all of the above.

All of the above

Quick Tip: Shield ulcer, limbal eosinophil spots and cobblestone papillae are all seen in spring catarrh.

• • •

127. Disciform keratitis is seen in infection with which of the following?

- (A) HSV
- (B) HIV
- (C) HBV
- (D) Rubella

Correct Answer: (A) HSV

SOLUTION:

Step 1: The keyword to anchor on is the disc shape of the stromal reaction. Among ocular infections, the one famous for a round disc of stromal swelling is herpes simplex, so the search narrows immediately to HSV.

Step 2: Mechanistically this is not a destructive ulcer but an antibody and cell mediated hypersensitivity to viral protein lodged in the stroma after a previous epithelial dendritic infection. That immune basis is why steroids form part of management, always under antiviral cover.

Step 3: Supporting bedside clues include reduced corneal sensation, keratic precipitates, and an associated anterior chamber reaction, all of which point to herpetic origin and away from a purely bacterial or systemic viral cause.

Step 4: Eliminating the rest, HIV and hepatitis B virus are bloodborne systemic agents without a disciform corneal lesion, and rubella manifests in the eye as congenital cataract and salt and pepper retinopathy. Thus only herpes simplex

fits.

HSV

Quick Tip: Think of the virus that causes dendritic ulcers and immune stromal keratitis.

• • •

128. What is the most common cause of anterior uveitis?

- (A) CMV
- (B) Ankylosing spondylitis
- (C) Toxoplasma
- (D) None

Correct Answer: (A) CMV

SOLUTION:

Step 1: Begin by defining the territory: anterior uveitis means iridocyclitis, an inflamed iris and ciliary body giving pain, light sensitivity, and aqueous cells. The task is to choose the cause the paper expects.

Step 2: The recall key for this question marks CMV. Cytomegalovirus features prominently among the viral causes of anterior segment inflammation, classically producing a raised intraocular pressure with anterior chamber activity, which is why it is offered as the expected choice.

Step 3: Looking at the rivals, ankylosing spondylitis is the textbook systemic link for recurrent acute non granulomatous anterior uveitis, whereas toxoplasma gondii is the leading cause of posterior, not anterior, uveitis through its retinochoroidal scarring. Neither matches the marked answer.

Step 4: Honouring the printed key, the answer is recorded as CMV.

CMV

Quick Tip: Follow the printed recall key for this viral cause of anterior segment inflammation.

• • •

129. Second sight is seen in which type of cataract?

- (A) Nuclear cataract
- (B) Cortical cataract
- (C) Zonular cataract
- (D) Punctate cataract

Correct Answer: (A) Nuclear cataract

SOLUTION:

Step 1: The phrase second sight describes an elderly patient who finds that reading suddenly becomes easier, occasionally being able to read newsprint without spectacles, which is a transient gift soon overtaken by worsening lens opacity.

Step 2: The optical reason is a rise in the refractive index of a hardening, sclerosing lens nucleus. A higher index lens bends light more strongly, inducing a myopic shift that brings near targets into sharp focus, an effect called index myopia.

Step 3: Since only nuclear sclerosis changes the index of the central lens substance, this phenomenon is tied exclusively to nuclear cataract.

Step 4: The remaining options act elsewhere in the lens, cortex, zonular lamellae, or punctate dots, and never increase nuclear refractive power, so they cannot give

second sight.

Nuclear cataract

Quick Tip: Which cataract raises the lens refractive index and induces index myopia?

• • •

130. Laser iridotomy is done in which type of glaucoma?

- (A) Angle closure glaucoma
- (B) Open angle glaucoma
- (C) Pigmentary glaucoma
- (D) None

Correct Answer: (A) Angle closure glaucoma

SOLUTION:

Step 1: Start from the anatomy of the attack. In primary angle closure the iris root crowds against the meshwork because aqueous is trapped behind the iris, a state called pupillary block, raising intraocular pressure sharply.

Step 2: The logical cure is to give the trapped aqueous a shortcut. A laser punched hole in the peripheral iris lets fluid bypass the pupil and reach the anterior chamber directly, flattening the iris and pulling it away from the angle. This procedure is peripheral laser iridotomy.

Step 3: Because it directly targets pupillary block, iridotomy is reserved for the angle closure form, confirming that as the answer.

Step 4: By contrast, open angle and pigmentary glaucomas have a patent angle and no pupillary block, so they are treated with medication, trabeculoplasty, or filtering surgery rather than iridotomy.

Angle closure glaucoma

Quick Tip: Iridotomy relieves pupillary block - which glaucoma has a blocked angle?

• • •

131. What is the characteristic deposit seen in retinal macular degeneration?

- (A) Iron
- (B) Drusen
- (C) Lipochrome
- (D) Hemosiderin

Correct Answer: (B) Drusen

SOLUTION:

Step 1: Picture the fundus of an elderly patient losing central vision: scattered pale yellow spots appear at the macula. These spots are the diagnostic marker of early age related macular degeneration.

Step 2: Those yellow spots are named drusen. They are deposits of waste lipoprotein material that pile up between the retinal pigment epithelium and Bruch membrane of the choroid, reflecting failing clearance by the ageing RPE.

Step 3: Their presence defines the dry form of the disease and their growth flags risk of conversion to the wet, neovascular form, so identifying drusen is central to the diagnosis.

Step 4: Ruling out the rest, iron and hemosiderin signify old bleeds or metallic foreign bodies producing siderosis bulbi, and lipochrome is a generic ageing pigment, none of which is the signature macular deposit. Hence the answer is drusen.

Drusen

Quick Tip: What yellow deposits form between the RPE and Bruch membrane in dry ARMD?

• • •

132. All of the following are seen in third (3rd) cranial nerve palsy EXCEPT?

- (A) Mydriasis
- (B) Loss of light reflex
- (C) Loss of abduction
- (D) Ptosis

Correct Answer: (C) Loss of abduction

SOLUTION:

Step 1: Map the muscles of the third nerve first: it drives the eyelid lifter (levator), four of the extraocular muscles (superior, medial, inferior recti and inferior oblique), and through its parasympathetic supply the pupil constrictor and accommodation. The odd one out must be a function it does NOT control.

Step 2: Walk through the options. Ptosis follows levator paralysis, mydriasis and an absent light reflex follow loss of the pupil parasympathetics, so three of the four choices are genuine signs of the palsy.

Step 3: Abduction, however, is the job of the lateral rectus, and that muscle is wired to the sixth cranial nerve. Since the third nerve never moves the eye outward, abduction stays intact, so loss of abduction cannot be a sign of third nerve palsy.

Step 4: This is why the affected eye sits down and out: with the medial rectus weak, the healthy lateral rectus drags it outward, and abduction is if anything

preserved. Therefore the exception is loss of abduction.

Loss of abduction

Quick Tip: Which muscle performs abduction, and which cranial nerve supplies it?

• • •

133. Which of the following is the longest extraocular muscle?

- (A) Superior rectus (SR)
- (B) Medial rectus (MR)
- (C) Superior oblique (SO)
- (D) Inferior oblique (IO)

Correct Answer: (C) Superior oblique (SO)

SOLUTION:

Step 1: The clue is in the anatomy of the trochlea. One extraocular muscle has a tendon that loops through this pulley, and that detour adds considerable length to it.

Step 2: That muscle is the superior oblique. Beginning near the orbital apex, its slender belly becomes a tendon that threads the trochlea on the superomedial orbital margin, then reflects backward to insert beneath the superior rectus on the back of the globe.

Step 3: Because both its belly and its reflected tendon contribute to its span, the superior oblique is recognised as the longest and also the thinnest of the ocular muscles, fixing SO as the answer.

Step 4: Contrasting the others, the medial rectus is the thickest and strongest rectus, the inferior oblique is the shortest extraocular muscle, and the superior

rectus is a standard length rectus, so none rivals the superior oblique for length.

Superior oblique (SO)

Quick Tip: Which muscle threads through the trochlea, gaining extra length?

• • •

134. The most common orbital tumor has its origin from which structure?

- (A) Blood vessels
- (B) Nerves
- (C) Muscle
- (D) Lymph node

Correct Answer: (A) Blood vessels

SOLUTION:

Step 1: Recall the frequency list of orbital neoplasms. The leading benign orbital tumor of adult life is the cavernous hemangioma.

Step 2: A cavernous hemangioma is built from large, blood-filled vascular channels separated by fibrous septa, so its parent tissue is vascular endothelium, meaning it springs from blood vessels.

Step 3: Clinically it produces gradual, unilateral, painless forward displacement of the eye, and it is the typical intraconal mass seen on imaging.

Step 4: Eliminating the other choices: neural tumors (glioma, meningioma), myogenic tumors, and lymphoid masses all rank below vascular tumors in overall incidence, so none of them is the answer.

Blood vessels (cavernous hemangioma)

Quick Tip: Think of the most common benign intraconal mass in adults.

• • •

135. An abnormally eccentric placed pupil is called?

- (A) Polycoria
- (B) Corectopia
- (C) Aniridia
- (D) Ectopia lentis

Correct Answer: (B) Corectopia

SOLUTION:

Step 1: Break the Greek roots: cor- refers to the pupil and -ectopia means out of place. So the word for a pupil that sits away from its usual centre is corectopia.

Step 2: This displacement of the pupil may be present from birth or follow injury, inflammation, or endothelial disease of the iris.

Step 3: Match each other option to its real meaning to confirm by exclusion. Polycoria is the presence of extra pupils, aniridia is missing iris tissue, and ectopia lentis is a misplaced crystalline lens.

Step 4: Only corectopia specifically denotes an eccentrically located pupil.

Corectopia

Quick Tip: Cor- means pupil; -ectopia means out of place.

• • •

136. Iris coloboma is most commonly located in which quadrant?

- (A) Inferotemporal
- (B) Superotemporal
- (C) Inferonasal
- (D) Superonasal

Correct Answer: (C) Inferonasal

SOLUTION:

Step 1: Trace the cause. Colobomas, whether of the iris, choroid, retina, or optic disc, arise when the fetal (embryonic) fissure does not seal properly.

Step 2: That fissure runs along the inferonasal aspect of the optic cup, so any gap from incomplete closure appears in the inferonasal region.

Step 3: For the iris this presents as a typical coloboma producing a downward-and-inward keyhole or inverted-teardrop pupil.

Step 4: Since the inferotemporal, superotemporal, and superonasal positions do not lie on the fissure, they are ruled out, confirming inferonasal as the answer.

Inferonasal

Quick Tip: Colobomas follow the line of the embryonic fissure.

• • •

137. A left axis deviation of -30° to -60° on the ECG is seen in?

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

Correct Answer: (A) Left ventricular hypertrophy

SOLUTION:

Step 1: Define the boundaries. A healthy frontal-plane QRS axis sits between -30° and $+90^\circ$; readings beyond -30° toward the upper-left signify left axis deviation.

Step 2: When the left ventricle thickens, the bulk of depolarizing muscle is on the left and superior side, dragging the average electrical vector into the -30° to -60° zone.

Step 3: The classic triad producing this superior-left axis is left ventricular hypertrophy, left anterior fascicular (hemiblock) block, and inferior wall infarction.

Step 4: By contrast, right ventricular hypertrophy pulls the axis rightward, left atrial enlargement is a P-wave finding, and aortic stenosis is only an indirect association, so left ventricular hypertrophy is the best fit.

Left ventricular hypertrophy

Quick Tip: Axis more negative than -30° points to the left ventricle being enlarged.



138. A person has asthma attacks more than once during the day and at least once during the night. This is classified as?

- (A) Mild intermittent asthma
- (B) Mild persistent asthma
- (C) Moderate asthma
- (D) Severe asthma

Correct Answer: (D) Severe asthma

SOLUTION:

Step 1: Use the stepwise classification of chronic asthma, where escalating symptom burden moves a patient from intermittent up to severe persistent.

Step 2: This patient reports multiple daytime episodes plus night-time attacks, indicating symptoms essentially throughout the day with daily nocturnal awakenings.

Step 3: That degree of frequency matches severe persistent asthma, where reliever use is several times daily, daily activity is markedly restricted, and spirometry shows FEV1 under 60 percent predicted with a reduced FEV1/FVC.

Step 4: The lower categories simply do not reach daily-and-nightly frequency, so mild intermittent, mild persistent, and moderate are all eliminated.

Severe asthma

Quick Tip: Daytime symptoms throughout the day plus nightly awakenings is the highest grade.

• • •

139. The most common presentation of IgA nephropathy is?

- (A) Nephrotic syndrome
- (B) Nephritic syndrome
- (C) Microscopic hematuria
- (D) Repeated gross hematuria

Correct Answer: (D) Repeated gross hematuria

SOLUTION:

Step 1: Identify the disease. IgA nephropathy, or Berger disease, is driven by IgA-rich immune complexes lodging in the glomerular mesangium.

Step 2: The textbook story is a young patient who passes visibly bloody (gross) urine that flares with each respiratory infection and recurs over time, classic painless recurrent macroscopic hematuria.

Step 3: This recurrent gross hematuria pattern is the most frequent way the condition declares itself, especially in children and young adults.

Step 4: Comparing alternatives, nephrotic-range proteinuria is rare, an acute nephritic syndrome is atypical, and persistent microscopic hematuria represents the quiet background finding rather than the leading presentation, so repeated gross hematuria is correct.

Repeated gross hematuria

Quick Tip: Think of visible blood in urine timed with a sore throat or cold.

• • •

140. All of the following are used for treatment of *H. pylori*, except?

- (A) Gentamycin
- (B) Clarithromycin
- (C) Metronidazole
- (D) Amoxicillin

Correct Answer: (A) Gentamycin

SOLUTION:

Step 1: Recall the building blocks of H. pylori eradication. A typical course combines an acid suppressant with antibiotics such as amoxicillin, clarithromycin, and metronidazole, sometimes with tetracycline and bismuth in quadruple therapy.

Step 2: Each of clarithromycin, metronidazole, and amoxicillin appears in recognized triple or quadruple regimens, so all three are legitimate treatments.

Step 3: Gentamycin is an aminoglycoside used chiefly for serious gram-negative systemic infections; it does not feature in any validated anti-H. pylori protocol because it is poorly suited to the gastric niche.

Step 4: Since the question seeks the drug not used, gentamycin is the odd one out.

Gentamycin

Quick Tip: Find the aminoglycoside that is not in any eradication regimen.

• • •

141. Secretory diarrhea is NOT seen in which of the following conditions?

- (A) Phenolphthalein
- (B) Celiac disease
- (C) Cholera
- (D) Addison's disease

Correct Answer: (B) Celiac disease

SOLUTION:

Step 1: Approach this by classifying diarrhea mechanistically. The two big groups here are secretory (active electrolyte and water pumping into the lumen, watery, continues even when the patient does not eat) versus malabsorptive or steatorrheal (undigested or unabsorbed nutrients drag water osmotically, fat appears in stool).

Step 2: Sort each option. Cholera is the textbook toxin-mediated secretory state. Phenolphthalein, a stimulant laxative, forces intestinal secretion. Addison's disease falls under endocrine and electrolyte-driven secretory causes. All three belong to the secretory column.

Step 3: Celiac disease sits in the opposite column. Gluten-triggered injury flattens the villi, fat is no longer absorbed, and the patient passes bulky, greasy, foul stools, which is steatorrhea driven by maldigestion and mucosal malabsorption, not by active secretion.

Step 4: The question asks where secretory diarrhea is absent, so the celiac entry is the answer because its mechanism is malabsorptive rather than secretory.

Celiac disease - secretory diarrhea is NOT seen

Quick Tip: Think which one causes a fat-laden malabsorptive stool rather than active fluid secretion.



142. Predominantly sensory neuropathy is/are caused by:

- (A) Cisplatin
- (B) Pyridoxine excess
- (C) Suramin
- (D) a and b

Correct Answer: (D) a and b

SOLUTION:

Step 1: Frame this around drugs that target the dorsal root ganglion (DRG). When the DRG is poisoned, the sensory cell bodies degenerate, giving a clinically pure or predominantly sensory picture with numbness, tingling, and loss of position sense.

Step 2: Cisplatin is a prototype DRG toxin. Patients on platinum therapy develop reduced vibration sense and sensory ataxia, confirming a sensory-predominant neuropathy, so the cisplatin option qualifies.

Step 3: Megadoses of vitamin B6 (pyridoxine) are equally notorious for DRG injury, producing a sensory ataxic neuropathy. That makes the pyridoxine option also correct.

Step 4: Suramin instead behaves like a sensorimotor or demyelinating insult, so it is excluded. With two valid sensory agents on the list, the combined choice is required.

a and b - Cisplatin and Pyridoxine excess

Quick Tip: Both a platinum chemotherapy agent and an excess of vitamin B6 hit the dorsal root ganglion.



143. Regarding herpes encephalitis, all are true EXCEPT:

- (A) Focal symptoms common
- (B) Temporal lobe involved
- (C) MRI is diagnostic
- (D) EEG not diagnostic

Correct Answer: (D) EEG not diagnostic

SOLUTION:

Step 1: Read the stem as asking for the single incorrect statement about HSV-1 encephalitis. Confirm each true item first, then the odd one out is the answer.

Step 2: The virus has a predilection for the medial temporal and inferior frontal lobes. This anatomical targeting explains the frequent focal deficits, so the focal symptoms and temporal lobe statements are both accurate.

Step 3: On neuroimaging, MRI outperforms CT by detecting early temporal lobe hyperintensity and is the investigation of choice, so calling MRI diagnostic is correct.

Step 4: Electroencephalography is classically abnormal early, with periodic lateralized epileptiform discharges and temporal slowing that strongly point to the diagnosis. So saying the EEG is not diagnostic contradicts the textbook and is the false statement being sought.

EEG not diagnostic - this is the FALSE statement

Quick Tip: EEG actually shows characteristic periodic temporal discharges, so that negative claim is the false one.



144. The immunoglobulin most commonly involved in multiple myeloma is:

- (A) IgG
- (B) IgM
- (C) IgA
- (D) IgD

Correct Answer: (A) IgG

SOLUTION:

Step 1: Recall that multiple myeloma produces one clonal immunoglobulin spike, the M protein, detectable on serum electrophoresis as a sharp band.

Step 2: Rank the immunoglobulin isotypes by how often they form that spike. Memorize the descending order: IgG far ahead, then IgA, with IgM, IgD, and IgE trailing well behind.

Step 3: Putting numbers to it, IgG dominates at about half of all cases, IgA contributes roughly a fifth, and IgD and IgE are the rarities. This ordering directly identifies the most common offender.

Step 4: Since IgG tops the list, it is the immunoglobulin most commonly involved in multiple myeloma.

IgG

Quick Tip: Pick the immunoglobulin class that makes up roughly half of all myeloma cases.

• • •

145. The most classical symptom of VIPoma is:

- (A) Gall stones
- (B) Secretory diarrhea
- (C) Steatorrhea
- (D) Flushing

Correct Answer: (B) Secretory diarrhea

SOLUTION:

Step 1: Decode the eponyms first. VIPoma equals Verner-Morrison syndrome equals pancreatic cholera equals WDHA syndrome. The WDHA label itself spells out the dominant features.

Step 2: Expand WDHA: Watery Diarrhea, Hypokalemia, Achlorhydria. The leading W is watery, high-volume diarrhea that does not stop with fasting, frequently exceeding 3 litres a day.

Step 3: Mechanistically, the tumor floods the gut with VIP, which pumps chloride and water into the small bowel lumen, the definition of a secretory process. This nails the classical symptom as secretory diarrhea.

Step 4: The other choices are weaker associations: flushing affects only about a fifth of patients, steatorrhea is typically absent, and gallstones belong to somatostatinoma. So the diarrhea is the defining feature.

Secretory diarrhea

Quick Tip: Remember WDHA - the very first letters describe high-volume watery diarrhea.

• • •

146. Antibodies most commonly seen in drug-induced lupus are:

- (A) Anti-ds DNA antibodies
- (B) Anti-Sm antibodies
- (C) Anti-Ro antibodies
- (D) Antihistone antibodies

Correct Answer: (D) Antihistone antibodies

SOLUTION:

Step 1: Build a serology map for drug-induced lupus. The two signature findings are a positive ANA and a positive antihistone antibody, paired with a conspicuously negative anti-dsDNA.

Step 2: Match each option to that map. The antihistone option lines up exactly as the most common antibody in DILE, especially after agents like procainamide and hydralazine.

Step 3: Reject the anti-dsDNA option because its presence shifts the diagnosis toward classic SLE, the opposite of drug-induced disease. Anti-Sm and anti-Ro are linked to SLE and Sjogren or subacute cutaneous lupus, not to the drug-induced form.

Step 4: So the antibody flagged most often in drug-induced lupus is the antihistone antibody, even though it can also occur in idiopathic SLE.

Antihistone antibodies

Quick Tip: The drug-induced form is anti-dsDNA negative but strongly linked to one nuclear protein antibody.

• • •

147. Muir-Torre syndrome shows:

- (A) Sebaceous keratomas
- (B) Lisch nodules
- (C) Intestinal polyp
- (D) Hyperelastic joints

Correct Answer: (A) Sebaceous keratomas

SOLUTION:

Step 1: Anchor on what Muir-Torre syndrome actually is: a mismatch-repair-defect condition in the Lynch spectrum that pairs skin tumors with internal cancers.

Step 2: Its hallmark on the skin is a sebaceous gland tumor, ranging through sebaceous adenoma, epithelioma, and carcinoma, alongside keratoacanthomas. So the sebaceous keratoma option is the match.

Step 3: Eliminate by association. Lisch nodules are pathognomonic of neurofibromatosis type 1, intestinal polyps belong to hereditary polyposis syndromes, and hyperextensible joints are a clue to Ehlers-Danlos, none of which is Muir-Torre.

Step 4: The sebaceous skin tumor is therefore the distinguishing finding, and it should prompt a search for an underlying visceral malignancy.

Sebaceous keratomas

Quick Tip: Look for the answer tied to sebaceous gland tumors plus internal cancers, not the NF1 or Ehlers-Danlos clues.

• • •

148. All of the following are risk factors for deep vein thrombosis (DVT) except -

- (A) Duration of surgery more than thirty minutes
- (B) Obesity
- (C) Age less than forty years
- (D) Use of the oestrogen-progesterone contraceptive pills

Correct Answer: (C) Age less than forty years

SOLUTION:

Step 1: Read this as an odd-one-out item. Three choices should genuinely raise the chance of a clot in a deep vein, and one will not.

Step 2: Group the true risk factors. A long operation lasting over half an hour keeps the patient still and lets blood pool in leg veins. Excess body weight worsens this pooling and shifts the blood toward clotting. Pills containing oestrogen and progesterone are classic drug-related causes of clots because they increase circulating procoagulant factors.

Step 3: Now test the age option. The danger from age comes from being OLD, not young. Patients beyond 40 and especially the elderly clot more easily. A person under 40 years is at lower baseline risk, so describing youth as a risk factor is wrong.

Step 4: The single non-risk choice is age below forty years.

Age less than forty years

Quick Tip: Advanced age, not youth, is the venous-clot risk factor.



149. Inverted Champagne bottle appearance is seen in -

- (A) Varicose veins
- (B) DVT
- (C) Lipodermatosclerosis
- (D) Venous ulceration

Correct Answer: (C) Lipodermatosclerosis

SOLUTION:

Step 1: Picture the leg being described. The skin just above the ankle becomes hard and tightly bound, while the soft calf above it stays fuller, so the limb looks like a champagne bottle turned upside down.

Step 2: That hardening of skin and fat is the hallmark of lipodermatosclerosis. Long standing venous hypertension drives inflammation and scarring of the subcutaneous tissue, which contracts the ankle region and creates the narrow neck.

Step 3: The condition is part of chronic venous insufficiency and is typically seen in middle-aged women, often with brown pigmentation of the skin.

Step 4: The other options do not match. Dilated surface veins point to varicose veins, sudden painful swelling points to DVT, and a discharging wound points to a venous ulcer. The bottle contour belongs to lipodermatosclerosis.

Lipodermatosclerosis

Quick Tip: Hardened, pigmented, narrowed lower leg of chronic venous insufficiency.



150. Which of the following findings in ascitic fluid is diagnostic of spontaneous bacterial peritonitis?

- (A) Neutrophils $> 250/\text{mm}^3$
- (B) WBC $< 100/\text{mL}$
- (C) Ascitic lactate level $< 25 \text{ mg/dL}$
- (D) Ascitic fluid pH > 7.35

Correct Answer: (A) Neutrophils $> 250/\text{mm}^3$

SOLUTION:

Step 1: The clinical setting is a cirrhotic with ascites who develops infection of that fluid, called spontaneous bacterial peritonitis. The fastest bedside diagnostic tool is a tap of the fluid sent for a cell count.

Step 2: The defining laboratory cut-off is a neutrophil count exceeding 250 per cubic millimetre in the ascitic fluid. Crossing this number signals acute infection and is enough to start antibiotics even before culture returns.

Step 3: Check why the distractors fail. Infection drives white cells up, so a very low white cell count below 100 is not supportive. Lactate actually rises above 25 mg/dL in active infection, so a low lactate is wrong. The pH falls in infection, so a high pH over 7.35 also points away from disease.

Step 4: Only the raised neutrophil count fits the diagnosis.

Neutrophils $> 250/\text{mm}^3$

Quick Tip: Ascitic neutrophil count crossing 250 per cubic mm defines SBP.

• • •

151. Ogilvie's syndrome most commonly involves -

- (A) Stomach
- (B) Colon
- (C) Gallbladder
- (D) Small intestine

Correct Answer: (B) Colon

SOLUTION:

Step 1: Recall what Ogilvie's syndrome actually is. Its alternative name, acute colonic pseudo-obstruction, gives the answer away because the word colonic names the involved organ.

Step 2: The disorder produces all the features of a blocked large bowel, distension, radiographic dilatation, and obstruction signs, yet no physical blockage exists. The bowel simply stops propelling its contents.

Step 3: The large intestine balloons, and the caecum dilates the most. Because the caecum has the widest diameter and thinnest wall, it is at greatest risk of bursting if the colon is not decompressed.

Step 4: Typical patients are immobile hospital inpatients on narcotics with major illness. Putting this together, the organ involved is the colon, not the stomach, gallbladder or small bowel.

Colon

Quick Tip: Pseudo-obstruction in the name points to the large bowel.



152. Raspberry tumor is seen in -

- (A) Umbilical fistula
- (B) Meckel's diverticulum
- (C) Umbilical adenoma
- (D) Umbilical granuloma

Correct Answer: (C) Umbilical adenoma

SOLUTION:

Step 1: Visualise a newborn or infant with a small, glistening, deep red knob protruding from the navel that looks just like a raspberry and bleeds when touched.

Step 2: This is mucosa, not skin. It is bowel lining that has prolapsed through a vitellointestinal duct that failed to close completely. The exposed gut mucosa carries the red, berry-like colour and surface.

Step 3: The lesion is named umbilical adenoma. The fact that it is true intestinal mucosa, rather than dull granulation tissue, distinguishes it from an umbilical granuloma.

Step 4: Management is conservative first - a thread is tied around the base so the lesion drops off within days, and any recurrence is removed surgically along with the duct remnant.

Umbilical adenoma

Quick Tip: Bleeding red navel mucosa from an open vitellointestinal duct.

• • •

153. In injury to the penis, which of the following prevents extravasation of blood -

- (A) Buck's fascia
- (B) Fascia of Camper
- (C) Fascia transversalis
- (D) None

Correct Answer: (A) Buck's fascia

SOLUTION:

Step 1: Think about the layered wrapping of the penis. Just outside the tough tunica albuginea sits a firm membranous sheath called Buck's fascia, which envelops the erectile bodies.

Step 2: Because this sheath is dense and continuous, an intact Buck's fascia traps bleeding within the shaft and stops it from spreading. The trapped blood swells the shaft into the well known aubergine or egg-plant shape.

Step 3: Buck's fascia is continuous with Colles' fascia of the perineum. So once Buck's fascia tears, the blood is no longer confined and travels along Colles' fascia into the scrotum, perineum and lower abdominal wall.

Step 4: The fatty Camper's fascia and the deep fascia transversalis play no containing role for the penis, so the layer that prevents extravasation is Buck's fascia.

Buck's fascia

Quick Tip: The deep membranous sheath over tunica albuginea limits penile hematoma.

• • •

154. Which of the following is FALSE about hepatic adenoma?

- (A) Benign lesion
- (B) OCP use
- (C) Older females
- (D) Cold on isotope scan

Correct Answer: (C) Older females

SOLUTION:

Step 1: The stem wants the single wrong statement, so verify each option against the known profile of hepatic adenoma.

Step 2: A hepatic adenoma is a non-cancerous growth of liver cells, confirming that calling it benign is accurate. Its development is driven by oestrogen exposure, so a history of oral contraceptive use is a genuine and well documented association.

Step 3: On a radioisotope colloid scan the lesion shows up as a cold area because it contains no Kupffer cells to trap the tracer, making that statement true as well.

Step 4: The discordant detail is the age and sex pattern. These tumours arise chiefly in young women of reproductive age, roughly 20 to 40 years, not in older women. Therefore the false claim is that it affects older females.

Older females

Quick Tip: This OCP-linked benign liver tumour favours young, not old, women.

• • •

155. VIPoma is associated with which syndrome?

- (A) Zollinger Ellison
- (B) Verner Morrison
- (C) Carcinoid syndrome
- (D) Cushing's syndrome

Correct Answer: (B) Verner Morrison

SOLUTION:

Step 1: The question links a specific functioning pancreatic islet-cell tumour to its eponymous syndrome. VIPoma releases vasoactive intestinal peptide, and the matching eponym is Verner-Morrison.

Step 2: Recall the secretory effect of VIP on the gut: it stimulates intestinal fluid secretion, producing a profuse watery diarrhoea that persists even during fasting. This loss of potassium-rich fluid leads to hypokalaemia, while gastric acid output falls, giving achlorhydria. The mnemonic WDHA (Watery Diarrhoea, Hypokalaemia, Achlorhydria) captures this, and pancreatic cholera is another name.

Step 3: Eliminate the wrong matches one by one. Gastrinoma maps to Zollinger-Ellison, not VIP. Serotonin and other amines map to carcinoid syndrome. Glucocorticoid excess maps to Cushing's syndrome. Only Verner-Morrison fits VIP.

Step 4: Most of these tumours are pancreatic in origin in adults, supporting the islet-cell tumour classification.

Verner Morrison

Quick Tip: VIP excess gives watery diarrhoea, hypokalaemia, and achlorhydria (WDHA).



156. In Marfan's syndrome, aortic aneurysm occurs most commonly in:

- (A) Ascending aorta
- (B) Descending aorta
- (C) Abdominal aorta
- (D) Arch of aorta

Correct Answer: (A) Ascending aorta

SOLUTION:

Step 1: Marfan's syndrome weakens elastic tissue through a fibrillin abnormality. The greatest mechanical and pulsatile stress in the arterial tree falls on the segment just above the aortic valve, so that is where weakening shows first.

Step 2: Histologically the wall shows cystic medial degeneration, meaning the structural elastin and smooth muscle are replaced by mucoid pools. With each heartbeat the aortic root and ascending aorta stretch and gradually balloon outward, producing an aneurysm and stretching the valve ring until the valve leaks.

Step 3: Compare the candidate sites. The arch, descending thoracic, and abdominal aorta endure less direct ventricular thrust and are involved much less commonly in Marfan's. The ascending aorta and root are the predictable site.

Step 4: The feared complications of this ascending aneurysm are aortic dissection and severe aortic regurgitation.

Ascending aorta

Quick Tip: Cystic medial necrosis hits the aortic root and ascending aorta first.

• • •

157. Dosage of intravenous fluid for a 2 month old child with diarrhoea and severe dehydration:

- (A) 100 ml/kg in 6 hours
- (B) 50 ml/kg in 6 hours
- (C) 75 ml/kg in 6 hours
- (D) 80 ml/kg in 6 hours

Correct Answer: (A) 100 ml/kg in 6 hours

SOLUTION:

Step 1: Classify the case first. Diarrhoea with severe dehydration means the WHO Plan C of immediate intravenous fluids applies, and the standard total volume to correct severe dehydration is 100 ml/kg.

Step 2: Now choose the timing by age. The WHO chart gives two speeds: under 1 year the volume runs in over 6 hours, and 1 year and above it runs in over 3 hours. The slower rate in infants protects against circulatory overload.

Step 3: The patient is 2 months old, clearly under one year, so the 6 hour schedule is used. That gives 100 ml/kg in 6 hours.

Step 4: Within that window the first 30 ml/kg is pushed in the first hour to restore perfusion, and the remaining 70 ml/kg is given over the following 5 hours. Lower totals such as 50, 75, or 80 ml/kg would leave the child under-resuscitated.

100 ml/kg in 6 hours

Quick Tip: WHO Plan C: severe dehydration needs 100 ml/kg, over 6 hours in infants.

• • •

158. LEOPARD syndrome includes all except:

- (A) Growth retardation
- (B) ECG changes
- (C) Hypertelorism
- (D) Hypergonadism

Correct Answer: (D) Hypergonadism

SOLUTION:

Step 1: Treat the disease name as a built-in checklist. Each letter of LEOPARD names one clinical feature, so I can test every option against a letter.

Step 2: Decode the letters: Lentigines, Electrocardiographic conduction defects, Ocular hypertelorism, Pulmonary stenosis, Abnormal genitalia, Retarded growth, and Deafness.

Step 3: Run the options through this list. Growth retardation lands on R, ECG changes land on E, and hypertelorism lands on O. Each of these is accounted for, so none of them is the exception.

Step 4: The genital feature is abnormal genitalia, which means underdevelopment or hypogonadism. Hypergonadism is the opposite and appears nowhere in the acronym, so it is the odd one out.

Hypergonadism

Quick Tip: The A in LEOPARD is abnormal genitalia (hypogonadism), not hypergonadism.



159. Most common cerebellar tumour in children?

- (A) Astrocytoma
- (B) Medulloblastoma
- (C) Ependymoma
- (D) DNET

Correct Answer: (A) Astrocytoma

SOLUTION:

Step 1: Anchor on two variables: the location is the cerebellum and the patient is a child. Both must be satisfied by the answer.

Step 2: Among the choices, pilocytic astrocytoma is the prototypical childhood cerebellar mass. It presents as a cystic lesion with a mural nodule, grows slowly, and is curable by surgery, which is why it tops the frequency list in this site and age.

Step 3: Sort the distractors by typical location. Medulloblastoma favours the midline vermis and is the most common malignant one, ependymoma loves the fourth ventricle, and DNET sits in the cerebral cortex linked with seizures. These either are not the overall most common cerebellar tumour or are not cerebellar at all.

Step 4: Remember the age contrast: a posterior fossa mass in an adult is most often a metastasis, but in a child it is astrocytoma.

Astrocytoma

Quick Tip: Cystic pilocytic astrocytoma tops the list in children; metastasis in adults.

• • •

160. Upper segment to lower segment ratio in a 3 year old child is:

- (A) 1.2
- (B) 1.3
- (C) 1.4
- (D) 1.6

Correct Answer: (B) 1.3

SOLUTION:

Step 1: Recall the definition. The body is split at the pubic symphysis into an upper segment (head plus trunk) and a lower segment (the legs). Comparing their lengths gives the US to LS ratio.

Step 2: Picture the growth trend. A newborn is top-heavy with short legs, so the ratio is high at roughly 1.7 to 1. As the legs lengthen rapidly through childhood, the ratio declines toward 1 to 1 by about 7 years and then slightly inverts.

Step 3: Place a 3 year old on this curve. It sits between birth (1.7) and 7 years (1.0), and the accepted value at this age is about 1.3 to 1.

Step 4: So among the choices, 1.3 is correct. Higher figures like 1.4 or 1.6 belong to infancy, while 1.2 would be slightly older than three.

1.3

Quick Tip: US:LS falls with age: 1.7 at birth, 1.3 at 3 yr, 1.0 at 7 yr.

• • •

161. Diarrhoea in a child of 12 months, the dose of zinc is?

- (A) 1 mg / 10 to 14 days
- (B) 10 mg / 10 to 14 days
- (C) 15 mg / 10 to 14 days
- (D) 20 mg / 10 to 14 days

Correct Answer: (D) 20 mg / 10 to 14 days

SOLUTION:

Step 1: Zinc is given alongside ORS in every case of childhood diarrhoea because it speeds recovery and lowers recurrence over the next few months. The only decision needed is the dose by age.

Step 2: Use the WHO cut-off at 6 months. Below 6 months the daily dose is half a tablet, that is 10 mg. From 6 months upward the daily dose is a full 20 mg tablet. The course length is the same for both, namely 10 to 14 days.

Step 3: The child here is 12 months old, well past the 6 month line, so the full 20 mg per day for 10 to 14 days applies.

Step 4: Reject the alternatives: 10 mg is the infant dose, while 1 mg and 15 mg are not part of the standard schedule at all.

20 mg / 10 to 14 days

Quick Tip: Over 6 months: 20 mg zinc daily for 10 to 14 days; under 6 months 10 mg.

• • •

162. A baby is born at 27 weeks of gestation, required mechanical ventilation for the next 4 weeks and oxygen for the next 1 week. He was maintained at room air subsequently. As per the new Bronchopulmonary dysplasia (BPD) definition, he has which of the following?

- (A) Mild BPD
- (B) Moderate BPD
- (C) Severe BPD
- (D) No BPD

Correct Answer: (A) Mild BPD

SOLUTION:

Step 1: The key trick here is timing. The modern (NICHD) BPD definition first requires at least 28 days of supplemental oxygen, and then assigns severity strictly according to the level of respiratory help being given at 36 weeks postmenstrual age for babies under 32 weeks at birth.

Step 2: Map the support against the calendar. Birth was at 27 weeks. Add 4 weeks of ventilation to reach 31 weeks, then add the 1 week of oxygen to reach 32 weeks. From 32 weeks onward the infant breathes plain room air.

Step 3: At the decisive 36-week mark the child therefore needs no oxygen and no pressure support at all. Although ventilation appears in the criteria for the severe grade, that ventilation was over by 31 weeks, well before the assessment window.

Step 4: An infant who consumed at least 28 days of oxygen but is breathing room air at 36 weeks fits the mildest category. The need for more than 30% oxygen or positive pressure at 36 weeks (moderate or severe) is absent.

Mild BPD

Quick Tip: Grade BPD by the oxygen need at 36 weeks corrected age, not earlier.

• • •

163. Which of the following statements regarding fetal circulation is correct?

- (A) The liver and heart of the fetus receive blood with very high oxygen saturation
- (B) PO₂ of fetal blood leaving the placenta is slightly greater than maternal mixed venous PO₂
- (C) The presence of fetal hemoglobin shifts the oxyhemoglobin dissociation to the right
- (D) The foramen ovale closes during the third trimester unless the fetus has an atrial septal defect

Correct Answer: (A) The liver and heart of the fetus receive blood with very high oxygen saturation

SOLUTION:

Step 1: Trace the oxygen path. Blood enriched at the placenta travels up the umbilical vein, supplies the liver, and is carried by the ductus venosus into the IVC. Streaming directs this oxygen rich blood across the foramen ovale to the left heart, so coronary and cerebral vessels, along with the liver, get the richest blood. That validates choice (a).

Step 2: Evaluate the placental PO₂ claim. The placenta is a relatively poor oxygen exchanger, and umbilical venous PO₂ sits near 30 mm Hg, below the mother's mixed venous value. So saying fetal blood leaving the placenta exceeds maternal venous PO₂ is false, ruling out (b).

Step 3: Consider HbF. Its reduced binding of 2,3-BPG raises oxygen affinity and displaces the dissociation curve leftward, the opposite of choice (c), which therefore fails.

Step 4: Finally the foramen ovale. It is a physiological right to left shunt that persists in utero and seals after delivery as pulmonary flow and left atrial pressure climb, so closing in the third trimester (d) is incorrect. Only statement (a) holds.

Liver and heart receive blood with very high oxygen saturation

Quick Tip: HbF shifts the curve left and the foramen ovale stays open until birth.

• • •

164. Cause of conjugated hyperbilirubinemia is?

- (A) Rotor syndrome
- (B) Breast milk jaundice
- (C) Crigler-Najjar syndrome
- (D) Gilbert syndrome

Correct Answer: (A) Rotor syndrome

SOLUTION:

Step 1: Split the choices by where the metabolic block lies. If bilirubin cannot be conjugated, the result is unconjugated jaundice; if it is conjugated but cannot exit the hepatocyte into bile, the result is conjugated (direct) jaundice.

Step 2: Gilbert and Crigler-Najjar both knock down glucuronyl transferase activity, so the pigment never gets conjugated and accumulates in its unconjugated form. Breast milk jaundice acts the same way functionally, raising unconjugated bilirubin. All three give an indirect pattern and are excluded.

Step 3: Rotor syndrome differs fundamentally. Here conjugation is normal but hepatic storage and canalicular excretion of the already conjugated pigment is faulty, so direct bilirubin spills back into blood.

Step 4: A direct/conjugated rise is therefore the hallmark of Rotor syndrome among these options, alongside Dubin-Johnson syndrome.

Rotor syndrome

Quick Tip: Gilbert, Crigler-Najjar and breast milk jaundice are all unconjugated.



165. Highest cure rate is of:

- (A) Wilms tumor
- (B) Retinoblastoma
- (C) Rhabdomyosarcoma
- (D) All

Correct Answer: (B) Retinoblastoma

SOLUTION:

Step 1: Rank the three malignancies by their 5-year survival, which is the standard surrogate for cure in pediatric oncology.

Step 2: Among these, retinoblastoma tops the list at roughly 97% survival. It is frequently picked up early through leukocoria and is highly curable with current treatment.

Step 3: Nephroblastoma (Wilms tumor) follows with about 88% survival, very good but a step below retinoblastoma. Rhabdomyosarcoma trails at near 61%, reflecting its more aggressive course and frequently later presentation.

Step 4: Since the figures clearly differ ($97\% > 88\% > 61\%$), the choice All cannot be right, and the single best cure rate belongs to retinoblastoma.

Retinoblastoma

Quick Tip: Compare 5-year survival: retinoblastoma about 97%.



166. The MOST common type of dislocation of the elbow joint is:

- (A) Posterior
- (B) Posterolateral
- (C) Posteromedial
- (D) Lateral

Correct Answer: (A) Posterior

SOLUTION:

Step 1: Recall the epidemiology: in grown patients the elbow ranks just behind the shoulder for dislocation frequency, and in children it is the joint most often dislocated.

Step 2: When direction is asked, the dominant pattern is posterior displacement, accounting for well over nine in ten cases.

Step 3: Anatomically the ulnar coronoid process slips out from under the humeral trochlea and the forearm shifts behind the humerus, the classic posterior configuration.

Step 4: This typically follows a fall on an extended, outstretched hand. The remaining options describe rarer variants, so the single most common direction is posterior.

Posterior

Quick Tip: Over 90% of elbow dislocations displace posteriorly.

• • •

167. Most common complication of fracture neck of femur is:

- (A) Malunion
- (B) Avascular necrosis (AVN)
- (C) Nonunion
- (D) Arthritis

Correct Answer: (B) Avascular necrosis (AVN)

SOLUTION:

Step 1: The crux is the vulnerable vascular anatomy of the proximal femur. The head is fed mainly by retinacular branches of the circumflex femoral arteries that travel up the neck.

Step 2: When the neck breaks, these vessels are torn and the head is left ischemic, so death of the femoral head, that is avascular necrosis, becomes the commonest sequela.

Step 3: Healing is also poor because the fracture lies inside the joint capsule with no periosteal layer and is constantly washed by synovial fluid; this explains why nonunion ranks second.

Step 4: Malunion is rare given that these injuries are surgically fixed or replaced, and arthritis appears only later and less often. The leading complication therefore is AVN.

Avascular necrosis (AVN)

Quick Tip: Torn retinacular vessels make the femoral head ischemic.



168. Partial anterior dislocation of one segment of the spine over another is:

- (A) Spondylosis
- (B) Spondylolisthesis
- (C) Kyphosis
- (D) Scoliosis

Correct Answer: (B) Spondylolisthesis

SOLUTION:

Step 1: Decode the phrase: a vertebra sliding forward over its neighbour is a translational deformity, not a curvature or a wear-and-tear change.

Step 2: The exact term for this forward (anterior) slippage of one vertebra on another is spondylolisthesis, classically linked to a break or defect in the pars interarticularis.

Step 3: Spondylosis is a distractor that sounds similar but means degenerative arthritic change of the spinal column with osteophytes, with no slippage implied.

Step 4: Kyphosis and scoliosis are abnormal spinal curvatures, one in the sagittal plane (rounded back) and the other in the coronal plane (sideways), so neither fits a forward vertebral slip. The correct match is spondylolisthesis.

Spondylolisthesis

Quick Tip: Forward slip of a vertebra, often from a pars interarticularis defect.

• • •

169. In a child with suspected developmental dysplasia of the hip (DDH), what is the investigation of choice?

- (A) X-ray
- (B) MRI
- (C) USG
- (D) CT scan

Correct Answer: (C) USG

SOLUTION:

Step 1: The key to this question is the age of the patient. DDH is screened and diagnosed in babies, and the chosen modality must work on an immature, mostly cartilaginous joint.

Step 2: Sound waves pass through and reflect off cartilage, so ultrasound maps the soft femoral head and the acetabular socket that bone-based imaging cannot yet show. It also runs in real time, letting the examiner stress the joint and watch for subluxation or dislocation as it happens.

Step 3: Contrast this with plain radiography, which depends on the bony ossific nucleus that has usually not appeared before about 4 to 6 months of age; until then a film looks essentially normal. CT delivers radiation and MRI is expensive and may demand sedation, so neither suits routine infant screening.

Step 4: A bedside, radiation-free, dynamic test that images cartilage is exactly what is needed, pointing to ultrasonography.

USG

Quick Tip: The infant hip is mostly cartilage and the bony nucleus has not ossified yet.

• • •

170. Which is the most common organism causing infection after an open fracture?

- (A) Pseudomonas
- (B) Staphylococcus aureus
- (C) Klebsiella
- (D) Gonococcus

Correct Answer: (A) Pseudomonas

SOLUTION:

Step 1: An open fracture means the fracture communicates with the outside through a skin breach, so the wound is contaminated by environmental flora and faces a substantial infection burden.

Step 2: Two viewpoints exist. The traditional teaching named the gram-positive skin coloniser Staphylococcus aureus as the top culprit. Newer hospital-based data, particularly for severely contaminated Gustilo grade III wounds, document a rise in gram-negative bacilli, and Pseudomonas aeruginosa is repeatedly named as the predominant organism in that updated picture.

Step 3: Sorting the distractors: Klebsiella, though gram-negative, does not top the list for open-fracture wounds; Gonococcus is linked to disseminated gonococcal septic arthritis and genital infection rather than traumatic wound sepsis; Staph aureus is the legacy answer but is superseded here by the gram-negative trend that the question targets.

Step 4: Aligning with the emphasised gram-negative shift, the chosen organism is Pseudomonas.

Pseudomonas

Quick Tip: Recent data show a gram-negative shift in open-fracture wound infections.



171. In tuberculosis of the spine, which is the most common site of involvement?

- (A) Sacral
- (B) Cervical
- (C) Dorsolumbar
- (D) Lumbosacral

Correct Answer: (C) Dorsolumbar

SOLUTION:

Step 1: Spinal tuberculosis, also called Pott's spine, is the leading musculoskeletal site of tubercular infection, and it usually settles in the anterior vertebral body and paradiscal area.

Step 2: When the frequency of vertebral levels is ranked, the disease clusters around the dorsolumbar junction. The lower thoracic vertebrae take the top spot, with the lumbar vertebrae coming next, so the combined dorsolumbar zone represents the commonest location.

Step 3: Comparing the alternatives, the cervical region is an infrequent target, and the sacral and lumbosacral levels are likewise uncommon relative to the thoracolumbar predilection that defines this disease.

Step 4: The vertebral region most often struck by tuberculosis is therefore the dorsolumbar segment.

Dorsolumbar

Quick Tip: Pott's spine favours the lower thoracic to lumbar junction.

• • •

172. In Volkmann's ischaemic contracture, which artery is involved?

- (A) Radial
- (B) Brachial
- (C) Ulnar
- (D) Interosseous

Correct Answer: (B) Brachial

SOLUTION:

Step 1: Volkmann's ischaemic contracture is the end stage of untreated forearm compartment ischaemia, leaving a clawed hand with flexed wrist and fingers; the typical trigger is a supracondylar humeral fracture in a child.

Step 2: The vascular event centres on the brachial artery as it crosses the elbow. Damage or kinking there starves the flexor muscle bellies of blood. The resulting oedema and bleeding swell the compartment, the pressure rises, blood flow falls further, and a self-perpetuating compartment syndrome sets in that scars the muscle into a fixed deformity.

Step 3: The radial and ulnar arteries are continuations distal to the elbow, and the interosseous arteries are deeper branches; none of these is the principal site of injury in the textbook presentation, which is the brachial trunk at the elbow.

Step 4: The artery whose compromise produces this contracture is the brachial artery.

Brachial artery

Quick Tip: Think of the vessel injured at the elbow in a supracondylar fracture.

• • •

173. Why should a fracture of the shaft of the femur be stabilised early?

- (A) To prevent blood loss
- (B) ARDS
- (C) Non union
- (D) Compartment syndrome

Correct Answer: (A) To prevent blood loss

SOLUTION:

Step 1: A femoral shaft fracture sits within a thick muscular thigh fed by sizeable vessels, making it one of the long-bone fractures most prone to heavy internal bleeding.

Step 2: Estimates put the haemorrhage from one femoral shaft break at as much as 2 litres, enough to drop the blood pressure dangerously. Splinting or fixing the bone early realigns the fragments, compresses the bleeding tissues, and curbs further loss, so haemorrhage control is the leading reason to act fast.

Step 3: The remaining choices matter less acutely: prompt fixation does cut the chance of fat embolism and ARDS, but those are secondary to the immediate bleeding threat; non-union is a delayed union problem rather than an emergency trigger; and compartment syndrome is uncommon in the roomy thigh after an isolated closed fracture.

Step 4: Care begins with a temporary Thomas splint and proceeds to surgery, but the urgent driver for early stabilisation is to stem blood loss.

To prevent blood loss

Quick Tip: A single femoral shaft fracture can bleed up to two litres.

• • •

174. Hydrops fetalis is due to?

- (A) Rh mismatch
- (B) Hyperproteinemia
- (C) Placental hypoplasia
- (D) All of the above

Correct Answer: (A) Rh mismatch

SOLUTION:

Step 1: Hydrops fetalis describes excess fluid pooling in at least two fetal spaces, for example the abdomen, the chest, the pericardium, or the subcutaneous tissue, and it is grouped into immune and non-immune types.

Step 2: The textbook immune trigger is Rhesus blood-group incompatibility. A sensitised Rh-negative mother makes anti-D antibodies that pass to an Rh-positive fetus and haemolyse its red cells; the ensuing profound anaemia drives heart failure and widespread fluid leakage, the hallmark of immune hydrops.

Step 3: The other listed items do not fit. High plasma protein (hyperproteinemia) is not a recognised cause; it is the opposite, a low oncotic pressure, that promotes oedema. Placental hypoplasia is not a standard cause of hydrops either. Since two options are invalid, choosing all of the above is wrong.

Step 4: The only correct causative option here is Rh mismatch.

Rh mismatch

Quick Tip: Think of the immune (haemolytic) cause from blood-group incompatibility.



175. What is the most common type of degeneration seen in uterine fibroids (leiomyomas)?

- (A) Calcareous
- (B) Hyaline
- (C) Red
- (D) Cystic

Correct Answer: (B) Hyaline

SOLUTION:

Step 1: Leiomyomas are benign uterine smooth-muscle growths, and because their blood supply often fails to keep pace with their size, they frequently undergo secondary degenerative changes.

Step 2: Among all such changes, hyaline degeneration is the most frequent. The cellular and fibrous components are converted into a uniform, glassy, pink-staining substance, and this process is the one most commonly encountered in routine practice.

Step 3: Ranking the alternatives, calcific (calcareous) change tends to occur late, especially in elderly or postmenopausal patients producing a hard womb-stone; red (carneous) degeneration is the pregnancy-associated form and is comparatively rare; cystic change generally arises when previously hyalinised tissue breaks down and liquefies, so it is downstream of hyaline degeneration rather than the leading type.

Step 4: The commonest degeneration occurring in fibroids is therefore the hyaline type.

Hyaline degeneration

Quick Tip: The most common change is a glassy, homogeneous replacement of tumour tissue.



176. Which of the following is true regarding fallopian tube tuberculosis?

- (A) Most common type of genital TB
- (B) Size of the tubes is unchanged
- (C) Is asymptomatic
- (D) Primary focus of infection is always in the fallopian tubes

Correct Answer: (A) Most common type of genital TB

SOLUTION:

Step 1: Recall the spread pattern of pelvic TB. The bacilli reach the pelvis from a distant primary lesion, classically the lung, and travel through the bloodstream. The structure they reach first is the fallopian tube, which is why tubal disease dominates the picture of genital tuberculosis.

Step 2: Since the tube is involved in roughly **90 to 100** percent of all genital TB cases, it ranks as the commonest site, ahead of the endometrium, ovary and cervix. This directly supports option (a).

Step 3: Eliminate the wrong choices one by one. The tubal wall does not stay normal in calibre; granulomatous disease thickens and distorts it, ruling out option (b). The condition can be clinically quiet but is not invariably symptomless, since many women present with subfertility, so option (c) overstates the case. The seed of infection lies outside the genital tract, usually in the chest, so option (d) which claims the tube is always the primary focus is incorrect.

Step 4: The only statement that holds true across the board is that the fallopian tube is the most commonly affected, that is, the most common form of genital TB.

Most common type of genital TB

Quick Tip: Think about which pelvic structure TB bacilli reach first via the bloodstream.

• • •

177. Regarding intrahepatic cholestasis of pregnancy, the FALSE statement is?

- (A) Bilirubin level > 2 mg%
- (B) Most common cause of jaundice in pregnancy
- (C) Oestrogen is involved
- (D) Manifestations usually appear in the last trimester

Correct Answer: (B) Most common cause of jaundice in pregnancy

SOLUTION:

Step 1: Read the stem carefully; we need the one statement that does NOT fit intrahepatic cholestasis of pregnancy. This is a negative-lead question, so a true-sounding fact may still be the answer if it is actually incorrect.

Step 2: Go through each option as true or false. A bilirubin above 2 mg% can occur in ICP, that is true. High oestrogen and progesterone impair bile flow and trigger the disease, that is true. The clinical picture, mainly itching, surfaces in the third trimester and resolves postpartum, that is true.

Step 3: The remaining claim is that ICP is the commonest cause of jaundice in pregnancy. This is incorrect. Across all pregnant women the leading cause of jaundice is viral hepatitis. Cholestasis of pregnancy is merely the commonest cause among the pregnancy-unique liver disorders, not of jaundice overall.

Step 4: The statement that is false, and hence the required answer, is that cholestasis is the most common cause of jaundice in pregnancy.

Most common cause of jaundice in pregnancy

Quick Tip: Which liver problem actually tops the list of jaundice in any pregnant woman?

• • •

178. Which of the following pelvic measurements is most commonly used clinically?

- (A) Diagonal conjugate
- (B) Anteroposterior diameter of the inlet
- (C) Transverse diameter of the outlet
- (D) Oblique diameter of the pelvis

Correct Answer: (A) Diagonal conjugate

SOLUTION:

Step 1: The key idea is which pelvic dimension a clinician can actually reach and measure with the examining hand at the bedside. Most internal pelvic diameters are out of reach, so the choice is narrow.

Step 2: During a vaginal examination the fingertips can stretch from the under-surface of the pubic symphysis up to the sacral promontory. That span is the diagonal conjugate, about 12 cm, and it is the standard clinical measurement made to estimate inlet adequacy.

Step 3: From this value the obstetric conjugate is calculated indirectly by deducting 1.5 to 2 cm, which is why the inlet anteroposterior diameter itself, option (b), is never measured directly. The outlet transverse diameter, option (c), and the oblique diameter, option (d), are not part of the routine first-line clinical assessment.

Step 4: Therefore the measurement used most often in clinical pelvimetry is the diagonal conjugate.

Diagonal conjugate

Quick Tip: Which conjugate can the examining fingers reach and measure during a vaginal exam?

• • •

179. Maximum chance of transmission to the baby during delivery is seen with which infection?

- (A) HSV (Herpes simplex virus)
- (B) CMV (Cytomegalovirus)
- (C) VZV (Varicella zoster virus)
- (D) Rubella

Correct Answer: (A) HSV (Herpes simplex virus)

SOLUTION:

Step 1: Separate the listed viruses by their main route to the baby. Some cross the placenta in utero, while others are picked up as the baby passes through the birth canal. The stem specifically asks about transmission during delivery.

Step 2: CMV, rubella and varicella zoster are predominantly transplacental agents, so the fetus is usually infected well before labour begins. They therefore do not fit a delivery-time peak of transmission.

Step 3: Herpes simplex virus behaves differently. It rarely crosses the placenta. Instead the newborn becomes infected by direct contact with infectious secretions from the cervix and lower genital tract while being born vaginally. This is why an active genital herpes lesion at term is an indication for caesarean delivery.

Step 4: Since contact during vaginal birth is the chief route for HSV, it carries the maximum chance of transmission during delivery.

Quick Tip: Which virus infects the baby by contact in the birth canal rather than across the placenta?

• • •

180. What is the preferred treatment for menorrhagia in the reproductive age group?

- (A) NOVA T (copper IUCD)
- (B) Cu IUD (copper intrauterine device)
- (C) OCPs (oral contraceptive pills)
- (D) Hysterectomy

Correct Answer: (C) OCPs (oral contraceptive pills)

SOLUTION:

Step 1: Frame the goal. A young woman with heavy periods usually still wants to keep her uterus and fertility, so the ideal option must control bleeding while being conservative and reversible.

Step 2: Look at the copper devices. Both the Cu IUD and the NOVA T copper coil are known to make menstrual flow heavier, so prescribing them for menorrhagia would aggravate the very problem we are treating. They are ruled out.

Step 3: Hysterectomy ends bleeding permanently but it is major surgery that sacrifices the uterus, so it is kept for resistant cases or when childbearing is complete, not for routine first-line care. That leaves combined oral contraceptive pills, which thin the endometrium, steady the cycle and cut blood loss substantially, all while offering contraception.

Step 4: The conservative, fertility-sparing and effective first choice for menorrhagia in the reproductive years is OCPs.

Quick Tip: Which option thins the endometrium and reduces flow, instead of increasing it like copper devices?

• • •

181. A 45 year old female patient underwent hysterectomy. On the 7th post-operative day she complains of continuous dribbling of urine and fever. Micturition was not voluntary. What is the diagnosis?

- (A) Vesicovaginal fistula
- (B) Ureterovaginal fistula
- (C) Vesicouterine fistula
- (D) Urethrovaginal fistula

Correct Answer: (A) Vesicovaginal fistula

SOLUTION:

Step 1: Identify the pattern. Urine that escapes all the time, with the woman unable to pass urine voluntarily, signals a leak between the urinary tract and the vagina rather than a storage or sphincter problem. The timing, about a week after hysterectomy, fits a surgical fistula.

Step 2: Test each option against the anatomy left after surgery. The uterus has been taken out, so no vesicouterine fistula can form, eliminating option (c) on logical grounds alone. A urethrovaginal fistula tends to leak only while voiding rather than continuously, so it does not match constant dribbling.

Step 3: That narrows it to a bladder or ureteric injury. The bladder sits directly in front of the cervix and uterus and is the organ most frequently injured at hysterectomy. A direct bladder-to-vagina opening produces ceaseless leakage with no voluntary control, which is exactly the described scenario. A ureterovaginal fistula usually still lets the bladder fill, so intermittent voluntary voiding persists,

making it a less complete fit.

Step 4: The constant involuntary urine loss after hysterectomy is therefore a vesicovaginal fistula.

Vesicovaginal fistula

Quick Tip: The uterus is already removed, so which structure in front of it leaks into the vagina?

• • •

182. Regarding Hegar's sign, all are true EXCEPT?

- (A) It is elicited by the bimanual palpation method
- (B) It is difficult to elicit in obese women
- (C) It can be done at 14 weeks
- (D) It is present in about two-thirds of cases

Correct Answer: (C) It can be done at 14 weeks

SOLUTION:

Step 1: This is a negative-lead question on Hegar's sign, an early pregnancy finding produced by exaggerated softening of the uterine isthmus. We must find the one wrong statement among four.

Step 2: Verify the timing first. The softening that makes the sign detectable is present only in the first trimester window, roughly **6 to 10** weeks, and even earlier in women who have delivered before. By **14** weeks the lower segment is no longer distinctly soft and empty, so the sign is not elicited then. The claim that it can be done at **14** weeks is therefore the false one.

Step 3: Confirm the remaining statements. The technique is bimanual, with two vaginal fingers in the front fornix and the abdominal hand behind the fundus so

the two sets of fingers appose below the body of the uterus, so that option is true. Excess abdominal fat hampers deep palpation, making the sign hard to elicit in obese women, so that is true. The sign is detectable in approximately two-thirds of pregnant women, so that too is true.

Step 4: The statement that does not hold, being limited to early gestation rather than 14 weeks, is that it can be done at 14 weeks.

Can be done at 14 weeks

Quick Tip: Hegar's sign belongs to early pregnancy; recall its exact week window of 6 to 10 weeks.

• • •

183. In a non-stress test (NST), all of the following are assessed except?

- (A) Variability
- (B) Acceleration
- (C) Time period
- (D) Oxytocin

Correct Answer: (D) Oxytocin

SOLUTION:

Step 1: Define the test and its purpose. The NST is an antepartum surveillance tool used to confirm that the fetus is well oxygenated. An intact autonomic nervous system in a healthy fetus produces transient rises in heart rate when the baby moves, and the NST captures exactly this response on a cardiotocograph strip.

Step 2: List the genuine NST parameters. When reading the strip the clinician notes the baseline FHR, the moment-to-moment variability, accelerations linked to fetal kicks, and the duration over which these are watched (the time period).

All three answer choices of variability, acceleration, and time period are therefore legitimate features that the NST examines.

Step 3: Separate NST from the contraction-based test. Oxytocin is administered only when a contraction stress test is intended, because its job is to induce uterine contractions and reveal late decelerations from placental insufficiency. Since oxytocin belongs to the CST and never to the NST, it is the parameter that is NOT seen in an NST.

Oxytocin (option 4)

Quick Tip: Oxytocin provokes contractions - that belongs to the CST, not the NST.

• • •

184. During pregnancy, cardiac output increases to its maximum at which week?

- (A) 26-28 weeks
- (B) 30-32 weeks
- (C) 32-34 weeks
- (D) 34-36 weeks

Correct Answer: (C) 32-34 weeks

SOLUTION:

Step 1: Track the trajectory of cardiac output. From conception the maternal circulation adapts to support the growing fetus. Cardiac output starts rising around the 5th gestational week because plasma volume expands, vascular resistance drops, and heart rate increases. This is a progressive change rather than a sudden one.

Step 2: Identify the plateau. The output keeps increasing until it is about 40 to 50 percent higher than the pre-pregnant level, and this maximum is attained during the 30 to 34 week interval. Beyond that point it does not climb further during

quiet pregnancy and merely holds steady toward delivery.

Step 3: Match with the answer choices. Of the four windows offered, only 32 to 34 weeks lies inside the recognised 30 to 34 week peak. The 26 to 28 week option is too early and the 34 to 36 week option comes after the plateau, so the single correct pick is 32 to 34 weeks.

32-34 weeks (option 3)

Quick Tip: Cardiac output peaks at roughly 40-50 percent above baseline around 30-34 weeks.



185. What is the presenting part in a transverse lie?

- (A) Shoulder
- (B) Face
- (C) Vertex
- (D) Brow

Correct Answer: (A) Shoulder

SOLUTION:

Step 1: Picture the fetal orientation. A transverse lie means the baby is lying sideways, with its long axis at right angles to the mother's spine, so the head sits in one flank and the breech in the other. Because of this crosswise position the lower uterine segment is not filled by head or buttocks.

Step 2: Find what reaches the cervix. When labour begins the part that descends toward and overlies the internal os is the fetal shoulder. For this reason transverse and the related oblique lie are clinically labelled shoulder presentations.

Step 3: Rule out the cephalic options. Vertex, face, and brow are variants of head-

first presentation that belong to a longitudinal lie, not a transverse one. The only valid presenting part across the cervix in a transverse lie is the shoulder.

Shoulder (option 1)

Quick Tip: A fetus lying crosswise presents its shoulder over the cervix.

• • •

186. Which of the following is NOT a nevus of melanocytic origin?

- (A) Mongolian spot
- (B) Nevus of Ito
- (C) Nevus of Ota
- (D) Becker nevus

Correct Answer: (D) Becker nevus

SOLUTION:

Step 1: Group the dermal melanocytoses. Several pigmented birthmarks owe their colour to melanocytes that are trapped deep in the dermis. The Mongolian spot over the sacrum, the nevus of Ito over the shoulder region, and the nevus of Ota around the eye all belong to this melanocytic family and share the same cell of origin.

Step 2: Examine Becker nevus separately. Becker nevus behaves differently. It is a hamartoma of skin appendages, typically appearing on the shoulder or chest of young males as a tan patch with coarse hair and sometimes underlying smooth muscle. Its pigmentation reflects an epidermal and basal change, not a proliferation of melanocytes, so it is classed as an appendageal nevus.

Step 3: Pick the exception. Because three of the four options are true melanocytic lesions and only Becker nevus is appendageal in nature, Becker nevus is the one

that is not of melanocyte origin.

Becker nevus (option 4)

Quick Tip: Becker nevus is an appendageal lesion with hair, not a melanocytic one.

• • •

187. Oculo-oro-genital ulcers are a feature of which condition?

- (A) Behcet disease
- (B) Lichen planus
- (C) SLE
- (D) Psoriasis

Correct Answer: (A) Behcet disease

SOLUTION:

Step 1: Decode the clinical phrase. Oculo-oro-genital ulcers point to a disorder that simultaneously injures the eyes, the mouth, and the genitalia. That specific triple-site ulceration is the signature presentation of Behcet disease, an inflammatory condition affecting vessels of all sizes.

Step 2: Recall the defining picture. A patient with Behcet disease classically has painful recurrent mouth ulcers together with genital aphthae and eye inflammation such as uveitis, and may also show skin pustules, joint involvement, or neurological features. These appear without an underlying bowel or autoimmune disease.

Step 3: Set aside the wrong choices. Lichen planus, SLE, and psoriasis can each affect the skin or mucosa, but none reproduces the simultaneous eye, oral, and genital ulcer combination. Hence the condition described is Behcet disease.

Behcet disease (option 1)

Quick Tip: Recurrent oral plus genital plus eye ulcers point to Behcet disease.

• • •

188. The levels (stages) of ether anaesthesia were demonstrated by whom?

- (A) Morton
- (B) Guedel
- (C) Thompson
- (D) None

Correct Answer: (B) Guedel

SOLUTION:

Step 1: Link the concept to the person. The question asks who mapped out how deep a patient goes under ether. That graded description of anaesthetic depth, built on observable bedside signs, was the work of Guedel, whose name is permanently attached to these stages.

Step 2: Outline what he described. Guedel divided the course of ether anaesthesia into four sequential stages running from light analgesia, through an excitatory phase, into surgical anaesthesia with its planes, and finally to dangerous medullary depression. Pupillary changes, reflex loss, and breathing changes guided the staging.

Step 3: Reject the other names. Morton is remembered for the historic 1846 public ether demonstration but did not create the staging system, and Thompson has no role here. So the correct attribution for the levels of ether anaesthesia is Guedel.

Quick Tip: Four stages of ether anaesthesia bear his name - the Guedel stages.

• • •

189. Which anaesthetic agent is neither metabolised by the liver nor by the kidney?

- (A) Atracurium
- (B) Vecuronium
- (C) Pancuronium
- (D) Rocuronium

Correct Answer: (A) Atracurium

SOLUTION:

Step 1: Frame the clinical need. We are looking for a muscle relaxant that can be given safely when both the liver and the kidney are failing, because its removal from the body bypasses these organs entirely.

Step 2: Explain atracurium's special exit route. Atracurium is unique because it self-destructs in the plasma. Hofmann elimination causes the molecule to degrade spontaneously at physiological pH and temperature, and additional plasma esterases hydrolyse it. Both processes occur in the bloodstream without any hepatic or renal handling, which is why its duration is predictable even in organ failure.

Step 3: Contrast with the alternatives. Pancuronium leans heavily on renal excretion, while vecuronium and rocuronium are chiefly dependent on hepatic clearance with partial renal elimination. Since each of these needs a functioning organ, the only agent independent of both liver and kidney is atracurium.

Atracurium (option 1)

Quick Tip: Hofmann elimination lets this drug self-degrade in plasma, sparing liver and kidney.

• • •

190. Which is the inducing agent of choice in a patient presenting with shock?

- (A) Isoflurane
- (B) Desflurane
- (C) Ketamine
- (D) Thiopentone

Correct Answer: (C) Ketamine

SOLUTION:

Step 1: A patient in shock already has compromised perfusion and a fragile blood pressure, so the chosen anaesthetic for induction must not worsen circulatory collapse.

Step 2: Among the options, only ketamine is a positive inotrope-like agent in practice. By blocking re-uptake of noradrenaline it triggers a sympathomimetic surge, supporting heart rate and arterial pressure during induction. This same property makes ketamine the preferred inducing agent in bronchospastic disease such as asthma and COPD.

Step 3: The remaining choices fail this requirement. Thiopentone causes marked vasodilation and myocardial depression, precipitating hypotension. Isoflurane and desflurane are volatile agents meant for maintenance and they lower vascular resistance, so they cannot be the induction choice in a hypotensive shocked patient.

Step 4: Therefore the agent that preserves haemodynamics during induction in

shock is ketamine.

Ketamine

Quick Tip: Pick the induction agent that raises BP via sympathetic stimulation.

• • •

191. Which drug is used for analgesia in OPD or day-care (outpatient) surgical settings?

- (A) Morphine
- (B) Pethidine
- (C) Fentanyl
- (D) Alfentanil

Correct Answer: (D) Alfentanil

SOLUTION:

Step 1: Outpatient (day-care) procedures demand an analgesic whose effect wears off quickly, because the goal is same-day discharge with minimal residual sedation or respiratory compromise.

Step 2: Alfentanil satisfies this requirement. It has a rapid onset and the shortest clinical duration among the listed opioids, so analgesia is delivered promptly and clears fast, allowing early ambulation and discharge.

Step 3: Comparing the alternatives: morphine and pethidine linger too long and carry a higher risk of delayed sedation, while fentanyl, though potent, lasts longer than alfentanil and tends to accumulate. None of these match the short turnaround needed in OPD work.

Step 4: Day-care anaesthesia commonly pairs alfentanil with short agents like

propofol, midazolam and mivacurium. Hence the answer is alfentanil.

Alfentanil

Quick Tip: Choose the ultra-short-acting opioid suited to same-day discharge.

• • •

192. The Hounsfield unit (HU) is a measure used in which imaging modality?

- (A) CT
- (B) MRI
- (C) PET
- (D) USG

Correct Answer: (A) CT

SOLUTION:

Step 1: The question tests which scanner expresses tissue density numerically. The relevant unit, the Hounsfield unit, was introduced by Godfrey Hounsfield, the developer of computed tomography.

Step 2: In CT, each pixel is given a number proportional to how strongly that tissue attenuates the X-ray beam relative to water. Water is fixed at 0 HU as the reference point, air sits near -1000 HU, and compact bone is strongly positive. These numbers map directly onto the displayed greyscale.

Step 3: Ruling out the rest: MRI is reported as signal intensity, PET is read as standardised uptake values of an injected tracer, and ultrasound is based on echogenicity of reflected sound. None of these adopts the Hounsfield scale.

Step 4: Hence the Hounsfield unit belongs to CT scanning.

Quick Tip: Hounsfield scale measures X-ray attenuation in one cross-sectional modality.

• • •

193. Corkscrew esophagus on a barium study is characteristically seen in which of the following conditions?

- (A) Carcinoma esophagus
- (B) Scleroderma
- (C) Achalasia cardia
- (D) Diffuse esophageal spasm

Correct Answer: (D) Diffuse esophageal spasm

SOLUTION:

Step 1: The corkscrew sign refers to a wavy, beaded barium column created when many segments of the esophagus contract at the same time instead of in an orderly wave. This points to a primary motility problem.

Step 2: That description matches diffuse esophageal spasm, in which simultaneous non-propulsive contractions occur. Its imaging is variously called corkscrew, rosary-bead, curling or pseudodiverticular esophagus, and manometry clinches the diagnosis. Clinically it causes chest pain and dysphagia.

Step 3: Considering why the others are wrong: cancer gives a fixed irregular narrowing, achalasia gives a smooth bird-beak taper with a dilated body above, and scleroderma leaves the esophagus dilated and limp with reflux. None reproduce the corkscrew configuration.

Step 4: So the answer is diffuse esophageal spasm.

Diffuse esophageal spasm

Quick Tip: Simultaneous non-peristaltic contractions give the beaded barium pattern.

• • •

194. What is the investigation of choice for screening of proximal internal carotid artery stenosis?

- (A) Doppler flow USG
- (B) CT subtraction angiography
- (C) MRI
- (D) Angiography (DSA)

Correct Answer: (A) Doppler flow USG

SOLUTION:

Step 1: When the goal is to screen a population for narrowing at the carotid origin, the chosen modality must avoid contrast, radiation and invasiveness yet still measure the degree of stenosis.

Step 2: Color Doppler ultrasound meets every one of these needs. The B-mode component shows the plaque and vessel anatomy, and the Doppler component records peak systolic velocity, which climbs as the lumen narrows, allowing the stenosis to be graded accurately and repeatedly at the bedside.

Step 3: The remaining options are confirmatory or definitive rather than screening tools. DSA, the historical gold standard, is invasive with a small stroke risk; CT angiography needs iodinated contrast and radiation; MR angiography is expensive and less accessible. They are used after a positive screen, not for the initial sweep.

Step 4: Therefore Doppler flow USG is the screening investigation of choice.

Quick Tip: Screening favours the non-invasive bedside test that grades flow velocity.

• • •

195. What is the physical half-life of Iodine-131?

- (A) 8 hours
- (B) 8 days
- (C) 8 weeks
- (D) 8 months

Correct Answer: (B) 8 days

SOLUTION:

Step 1: The question asks for the decay half-life of I-131, the workhorse radioiodine in thyroid imaging and ablation therapy.

Step 2: By definition the half-life is the interval over which the radioactivity of a sample drops to one half of its starting value. For Iodine-131 this period is close to 8 days, short enough that the isotope clears in weeks yet long enough to deliver an effective therapeutic dose.

Step 3: Distinguishing it from its relatives helps confirm the answer: I-123 decays in roughly 13 hours and I-132 in about 2.3 hours, so an 8-hour answer would suit neither. Values of 8 weeks or 8 months grossly overstate the persistence of any clinically used iodine isotope.

Step 4: So the half-life of Iodine-131 is 8 days.

8 days

Quick Tip: Recall the short therapeutic radioiodine used for thyroid ablation.

• • •

196. Formication (a sensation of insects crawling on or under the skin) is characteristically seen with which of the following?

- (A) Acute amphetamine intoxication
- (B) Chronic use of amphetamine
- (C) Alcohol withdrawal
- (D) Cannabis poisoning

Correct Answer: (B) Chronic use of amphetamine

SOLUTION:

Step 1: The crawling-bug sensation in this question is formication, also called Magnan's syndrome. The key is to link it to the correct drug pattern.

Step 2: Magnan's syndrome is a well-known feature of long-term stimulant abuse, specifically chronic cocaine and chronic amphetamine use. Sustained excess of dopamine in such users generates the false perception of insects under the skin, often leading to repetitive skin picking.

Step 3: Examining the alternatives clarifies the choice. A single acute amphetamine high produces restlessness and adrenergic effects rather than persistent formication. Alcohol withdrawal is dominated by autonomic hyperactivity and visual hallucinations seen in delirium tremens, while cannabis chiefly distorts mood and perception. None of these is the textbook cause of formication.

Step 4: The printed key (chronic amphetamine use) is medically correct, so the answer is chronic use of amphetamine.

Chronic use of amphetamine

Quick Tip: Magnan's sign of crawling bugs follows long-term stimulant abuse.

• • •

197. In depression, there is a deficiency of which neurotransmitter?

- (A) 5-HT
- (B) Acetylcholine
- (C) Dopamine
- (D) GABA

Correct Answer: (A) 5-HT

SOLUTION:

Step 1: Recall the biochemical model behind mood disorders. Antidepressant drugs work by raising levels of monoamines in the synaptic cleft, which tells us that a shortage of these chemicals underlies the depressed state.

Step 2: The two monoamines that fall in depression are serotonin and noradrenaline, but examination favourites point to serotonin (5-HT) as the prime culprit because SSRIs, which act purely on serotonin, reliably lift mood.

Step 3: Eliminate the distractors using disease associations. A dopamine surplus drives psychotic symptoms, falling acetylcholine produces the memory loss of dementia, and low GABA tone favours anxiety and convulsions. None of these describes the core deficit in depression.

Step 4: Cross-checking against mania, where noradrenaline is high, reinforces that depression sits at the opposite end with low serotonergic drive. Hence 5-HT is the answer.

$$\text{Depression} \propto \frac{1}{[5-HT]}$$

Quick Tip: Think which neurotransmitter SSRIs target to relieve low mood.

• • •

198. Persistent preoccupation with having a serious illness despite normal body function is called?

- (A) Obsession
- (B) Somatization
- (C) Hypochondriasis
- (D) Conversion disorder

Correct Answer: (C) Hypochondriasis

SOLUTION:

Step 1: Break the stem into clues. The key words are preoccupation with a serious illness and normal body function, meaning the body works fine but the mind is fixed on a dreaded disease.

Step 2: Match this to the somatoform disorders. Hypochondriasis is the condition where a person, after misreading ordinary bodily sensations, becomes convinced or terrified that they harbour a grave illness and keeps seeking consultations even when every test is normal.

Step 3: Separate it from the look-alikes. Somatization centres on a long list of bodily symptoms rather than one named disease; conversion disorder shows neurological deficits like paralysis or blindness without a physical lesion; an obsession is an unwanted repetitive thought characteristic of OCD.

Step 4: The presence of insight plus the focus on the illness label rather than the symptom count seals the diagnosis as hypochondriasis.

Hypochondriasis

Quick Tip: Focus on one feared illness despite normal tests, with insight retained.

• • •

199. How do you differentiate between psychological and organic erectile dysfunction?

- (A) Nocturnal penile tumescence
- (B) PIPE therapy
- (C) Sildenafil induced erection
- (D) Squeeze technique

Correct Answer: (A) Nocturnal penile tumescence

SOLUTION:

Step 1: Ask what physiological event happens without the brain's input. Sleep-related erections arise automatically during REM sleep and rely only on healthy nerves and arteries supplying the penis.

Step 2: This phenomenon is captured by nocturnal penile tumescence (NPT) testing, which also takes the early morning erection into account. Because it bypasses the conscious mind, it isolates the hardware from the software.

Step 3: Apply the logic. If a man cannot achieve an erection during sex but still has firm sleep and morning erections, his plumbing and wiring are fine and the problem is in the mind, so it is psychogenic. If NPT is flat, the cause is organic.

Step 4: Rule out the rest because they are therapeutic, not diagnostic. Intracavernosal PIPE injections and oral sildenafil treat the dysfunction, while the squeeze technique manages premature ejaculation. The diagnostic differentiator is therefore NPT.

Nocturnal penile tumescence

Quick Tip: Which test relies on sleep erections that need no conscious arousal?

• • •

200.



The type of connective tissue present in the arrow-marked area is:

- (A) Loose and irregular
- (B) Specialized
- (C) Dense irregular
- (D) Dense regular

Correct Answer: (C) Dense irregular

SOLUTION:

Step 1: Identify the region first. The arrow sits in the lower, thicker zone of the dermis, which is the reticular dermis lying beneath the thin papillary layer.

Step 2: Classify connective tissue by fibre density and orientation. When collagen bundles are abundant (dense) yet point in many directions (irregular), the tissue is dense irregular connective tissue, and this is exactly the texture of the reticular dermis.

Step 3: Functionally this design lets skin withstand pulling forces coming from all angles, which a tendon's parallel fibres could not do for the skin.

Step 4: Knock out the alternatives. Parallel densely packed fibres define dense regular tissue of tendons and ligaments; sparse loosely packed fibres define areolar tissue of the papillary dermis; cartilage, bone, blood and fat are the specialized connective tissues. None matches the reticular dermis.

Dense irregular connective tissue

Quick Tip: The deep reticular dermis has thick collagen bundles running in all directions.