



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. Anterior interosseous nerve is a branch of?

- (A) Radial nerve
- (B) Median nerve
- (C) Ulnar nerve
- (D) Axillary nerve

Correct Answer: (B) Median nerve

SOLUTION:

Step 1: Recall the median nerve course. After it passes between the two heads of pronator teres in the forearm, it sends off a deep motor twig called the anterior interosseous nerve.

Step 2: This twig descends along the front of the interosseous membrane and powers the deep forearm flexors (flexor pollicis longus, radial half of flexor digitorum profundus, and pronator quadratus).

Step 3: A common trap pairs the nerve with the ulnar artery. Remember that the

matching artery (anterior interosseous artery) comes off the ulnar side, but the nerve itself belongs only to the median nerve.

Step 4: Eliminating the radial, ulnar, and axillary options leaves the median nerve as the parent trunk.

Median nerve

Quick Tip: Think of the deep forearm flexor motor branch and its parent trunk that passes through pronator teres.

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2. Posterior wall of axilla is formed by?

- (A) Pectoralis major
- (B) Pectoralis minor
- (C) Subscapularis
- (D) Intercostal muscles

Correct Answer: (C) Subscapularis

SOLUTION:

Step 1: Picture the four-sided pyramid of the axilla. Each wall has its own muscular contributors, and the question asks specifically about the wall facing backward.

Step 2: Going from superior to inferior, the back wall is made of subscapularis on top, then teres major and latissimus dorsi. The single option that fits is subscapularis.

Step 3: Rule out the distractors. The two pectoralis muscles guard the front of the axilla, while the intercostals line the inner (rib-side) wall. None of these sit on the posterior wall.

Step 4: The clean answer for the posterior wall is therefore subscapularis.

Subscapularis

Quick Tip: The subscapular wall is named after the muscle that caps it superiorly.

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3. True about popliteus are all except?

- (A) Flexor of knee
- (B) Intracapsular origin
- (C) Supplied by tibial nerve
- (D) Causes locking of knee

Correct Answer: (D) Causes locking of knee

SOLUTION:

Step 1: Approach this as a 'pick the wrong fact' question about popliteus, the small deep muscle behind the upper tibia.

Step 2: Confirm the true facts. Its femoral origin lies inside the joint capsule (intracapsular), the tibial nerve innervates it, and it assists knee flexion. These match options (a), (b), and (c).

Step 3: Focus on its signature action. In the screw-home mechanism the knee LOCKS during the last few degrees of extension; popliteus reverses this by rotating the femur laterally on the planted tibia, thereby UNLOCKING the joint so flexion can begin.

Step 4: Since popliteus unlocks rather than locks the knee, the statement that it causes locking is the false one.

Causes locking of knee (false statement)

Quick Tip: Popliteus is the muscle that reverses the screw-home mechanism.

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4. Lower limit of the sacroiliac joint lies up to which level in females?

- (A) 1 to 1 1/2
- (B) 2 to 2 1/2
- (C) 3 to 3 1/2
- (D) 4 to 4 1/2

Correct Answer: (B) 2 to 2 1/2

SOLUTION:

Step 1: Recall that the sacroiliac articulation runs along the ear-shaped (auricular) facet on the side of the sacrum, and its downward reach is measured against the sacral vertebral segments.

Step 2: For the female pelvis the surface is comparatively short, so the inferior border of the joint reaches only about the 2 to 2 1/2 sacral segment mark.

Step 3: Comparing the sexes, the female auricular surface is smaller, giving a lower limit higher up than in males. This sex difference is a tested anatomy point.

Step 4: Selecting the level that corresponds to roughly two and a half segments gives option (b).

2 to 2 $\frac{1}{2}$

Quick Tip: The female auricular surface is short - think roughly two to two and a half segments.

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5. Which structure lies posterior to the transverse pericardial sinus?

- (A) Aorta
- (B) Pulmonary trunk
- (C) SVC
- (D) Left atrium

Correct Answer: (C) SVC

SOLUTION:

Step 1: The transverse sinus is the curved tunnel you can pass a finger through behind the great arteries when examining the heart in the pericardial sac.

Step 2: Map its walls. In front sit the ascending aorta and pulmonary trunk together, behind sits the superior vena cava, and below it is the roof of the left atrium.

Step 3: The question asks for the posterior relation, which is the superior vena cava (SVC).

Step 4: The other choices are the anterior (aorta, pulmonary trunk) and inferior (left atrium) boundaries, so they are excluded.

SVC (superior vena cava)

Quick Tip: Anterior is the great arteries, inferior is the left atrium - what is left for the back?

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6. Superior rectal vein drains into?

- (A) Inferior mesenteric vein
- (B) External iliac vein
- (C) Internal iliac vein
- (D) Internal pudendal vein

Correct Answer: (A) Inferior mesenteric vein

SOLUTION:

Step 1: Think of the rectum as a meeting point of two venous systems - portal above and systemic below.

Step 2: The superior rectal vein represents the portal limb. It ascends and empties into the inferior mesenteric vein, which ultimately reaches the portal vein.

Step 3: The systemic limbs differ: the inferior rectal vein goes to the internal pudendal vein, and the middle rectal vein goes to the internal iliac vein. The external iliac vein is not involved in rectal drainage.

Step 4: Since the question concerns the superior rectal vein, its destination is the inferior mesenteric vein.

Inferior mesenteric vein

Quick Tip: The superior rectal vein is the portal limb of the anorectal anastomosis.

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7. Ligament extending from cervix and vagina to the lateral pelvic wall is?

- (A) Broad ligament
- (B) Pubocervical ligament
- (C) Round ligament
- (D) Transverse cervical ligament

Correct Answer: (D) Transverse cervical ligament

SOLUTION:

Step 1: The question describes a lateral support running from the cervix and upper vagina out to the side wall of the pelvis - this is the classic description of the cardinal ligament.

Step 2: The cardinal (transverse cervical) ligament of Mackenrodt is a thickening of pelvic fascia sitting at the cervical level, enclosing the uterine artery and providing the main lateral anchorage of the uterus.

Step 3: Check the other options. The broad ligament is only a peritoneal sheet, the round ligament heads to the labium majus, and the pubocervical ligament runs forward to the pubic bone - none go laterally to the pelvic wall.

Step 4: The structure that fits the lateral cervix-to-pelvic-wall path is the transverse cervical ligament.

Transverse cervical ligament

Quick Tip: Look for the cardinal ligament of Mackenrodt that anchors the cervix laterally.



8. Killian's dehiscence is seen in?

- (A) Oropharynx
- (B) Nasopharynx
- (C) Cricopharynx
- (D) Vocal cords

Correct Answer: (C) Cricopharynx

SOLUTION:

Step 1: Killian's dehiscence is a triangular gap of weakness in the posterior pharyngeal wall musculature.

Step 2: It sits between the two heads of the inferior constrictor: the obliquely running thyropharyngeus above and the transversely running cricopharyngeus below. This location corresponds to the cricopharynx.

Step 3: Because muscle support is deficient here, the mucosa can balloon out to produce a pharyngeal pouch, and instruments can perforate the wall at this point during endoscopy.

Step 4: Distractors such as oropharynx, nasopharynx and vocal cords do not house this gap, so they are ruled out.

Cricopharynx

Quick Tip: Think of the weak gap between thyropharyngeus and cricopharyngeus.

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9. Which valve is present at the opening of the nasolacrimal duct?

- (A) Hasner's valve
- (B) Heister valve
- (C) Spiral valve
- (D) None

Correct Answer: (A) Hasner's valve

SOLUTION:

Step 1: Trace the tear pathway: punctum, canaliculus, lacrimal sac, then nasolacrimal duct, which drains into the inferior meatus of the nose.

Step 2: Guarding the terminal opening of this duct is a mucosal flap that functions as a one-way valve. This structure is named after Hasner, so the valve of Hasner is correct.

Step 3: The other choices belong elsewhere. Heister valve, which is the same as the spiral valve, lies within the cystic duct and regulates bile flow, so it has no role here.

Hasner's valve

Quick Tip: It is the mucosal flap where the duct enters the inferior meatus.

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10. Scutum is present in which part of the middle ear?

- (A) Roof
- (B) Lateral wall
- (C) Medial wall
- (D) Floor

Correct Answer: (B) Lateral wall

SOLUTION:

Step 1: The middle ear is a box with six walls. The lateral wall faces the external ear and is dominated by the tympanic membrane.

Step 2: Sitting above the tympanic membrane, at the boundary of the attic, is a small bony spur shaped like a shield. This is the scutum, and it belongs to the lateral wall.

Step 3: Radiologically, blunting or destruction of the scutum points to an attic cholesteatoma, which is why this landmark is clinically tested.

Step 4: Roof, medial wall and floor are distinct from the scutum's location, so they are excluded.

Lateral wall

Quick Tip: It is the shield-shaped bony spur above the tympanic membrane.

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11. Optic cup is derived from?

- (A) Neural ectoderm
- (B) Surface ectoderm
- (C) Mesoderm
- (D) Neural crest

Correct Answer: (A) Neural ectoderm

SOLUTION:

Step 1: Eye morphogenesis begins when the wall of the diencephalon bulges outward as the optic vesicle. The diencephalon is neural tube tissue, that is, neuroectoderm.

Step 2: The distal optic vesicle then folds in on itself like a cup. This optic cup is simply the reshaped optic vesicle, so it shares the same neural ectoderm origin.

Step 3: The inner and outer walls of the cup mature into the neural retina and the retinal pigment epithelium, both neuroectodermal derivatives.

Step 4: Surface ectoderm gives the lens and corneal epithelium, while mesoderm and neural crest contribute to the vascular and fibrous coats, which is why the other choices are wrong.

Neural ectoderm

Quick Tip: It is an invagination of the optic vesicle from the forebrain.

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12. The 2nd part of the duodenum is derived from?

- (A) Foregut
- (B) Midgut
- (C) Both foregut and midgut
- (D) Hindgut

Correct Answer: (C) Both foregut and midgut

SOLUTION:

Step 1: Developmentally the gut tube is split into foregut, midgut and hindgut by the arteries that supply them, the coeliac trunk, the superior mesenteric artery and the inferior mesenteric artery.

Step 2: The foregut and midgut boundary sits at the level of the major duodenal papilla, where the bile duct enters the second part of the duodenum.

Step 3: Since that boundary passes through the second part, this portion is built from both the foregut and the midgut, giving it a mixed arterial supply from the coeliac trunk above and the superior mesenteric artery below.

Step 4: A single origin, foregut alone or midgut alone, or a hindgut origin, cannot be correct for this transitional segment.

Both foregut and midgut

Quick Tip: The foregut-midgut junction lies at the major duodenal papilla.

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13. Innervated structures of joints are all except?

- (A) Synovium
- (B) Capsule
- (C) Articular cartilage
- (D) Ligaments

Correct Answer: (C) Articular cartilage

SOLUTION:

Step 1: The question asks which joint component lacks innervation. Sensory nerves to a joint follow Hilton's law, supplying the capsule, ligaments and synovial membrane.

Step 2: Articular cartilage is the odd one out. As hyaline cartilage covering the joint surface, it is avascular, has no lymphatics and carries no nerve fibres.

Step 3: This absence of nerves and vessels explains why damaged articular cartilage neither hurts at the cartilage itself nor heals readily.

Step 4: The synovium, the capsule and the ligaments all have a sensory supply, so

the only correct exception is the articular cartilage.

Articular cartilage

Quick Tip: Which joint tissue is avascular and aneural hyaline cartilage?

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14. Mismatch of ventilation/perfusion ratio is seen in?

- (A) Apex
- (B) Base
- (C) Both
- (D) None

Correct Answer: (C) Both

SOLUTION:

Step 1: The lung is not uniform from top to bottom. Taking alveolar ventilation near 4.2 L/min and pulmonary blood flow near 5.0 L/min, the average V/Q works out to about 0.8.

Step 2: Gravity pulls blood toward the dependent base, so perfusion increases more steeply downward than ventilation does. Consequently the apex ends up with too little blood relative to air and the base with too much blood relative to air.

Step 3: Numerically the V/Q reaches about 3.0 at the apex and falls to about 0.6 at the base. Both values sit away from the ideal 0.8, which means a mismatch exists at both poles of the lung.

Step 4: Functionally, apical gas tensions resemble inspired air with high PO₂ and low PCO₂, while basal gas tensions resemble pulmonary arterial blood with low PO₂ and high PCO₂. Because both regions are mismatched, the correct response

is both.

Both

Quick Tip: V/Q is about 3.0 at the apex and 0.6 at the base, both off the ideal 0.8.

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15. Capacitance vessels have in their wall:

- (A) More elastic tissue and less muscle
- (B) Less elastic tissue and more muscle
- (C) More elastic tissue and more muscle
- (D) Less elastic tissue and less muscle

Correct Answer: (D) Less elastic tissue and less muscle

SOLUTION:

Step 1: The question is really asking you to identify the wall makeup of veins, since veins are the body's capacitance (reservoir) vessels that pool the bulk of circulating blood.

Step 2: Think about function. A reservoir must expand easily under low filling pressure. A wall packed with elastin would recoil strongly and a wall packed with smooth muscle would resist stretch. Veins do neither, so logically their wall must be poor in both components.

Step 3: Histology confirms this. In a vein the media is thin with sparse smooth muscle, and the elastic fibres are few and disorganised, lacking the well defined internal and external elastic laminae that arteries show. The wall is dominated by loose connective tissue instead.

Step 4: Contrast with arteries: the aorta and large arteries are elastic, and small arteries and arterioles are muscular. Each option pairing that adds more elastin or

more muscle therefore points to an artery, not a vein. The only pairing left for a capacitance vessel is less elastic tissue and less muscle.

Less elastic tissue and less muscle

Quick Tip: Capacitance vessels are veins, which act as the body's low-pressure blood reservoir.



16. Umami taste is evoked by:

- (A) Glucose
- (B) Glutamic acid
- (C) Quinine
- (D) Sodium chloride

Correct Answer: (B) Glutamic acid

SOLUTION:

Step 1: Recall the five primary tastes and the classic chemical that represents each one. Sweet is sugar, salty is sodium, sour is acid (hydrogen ions), bitter is alkaloids, and umami is the savoury taste tied to amino acids.

Step 2: Umami specifically responds to L-glutamate. The molecule glutamic acid, and its sodium salt monosodium glutamate, bind to dedicated taste glutamate receptors on the tongue and generate the umami signal.

Step 3: Eliminate by mapping each remaining option to its own taste category. Glucose stimulates sweet receptors, the alkaloid quinine is the textbook bitter agent, and sodium chloride activates amiloride sensitive sodium channels for salty. So each of these belongs to a different taste, not umami.

Step 4: The one option that is an amino acid and that pairs with umami receptors

is glutamic acid.

Glutamic acid

Quick Tip: Umami is the savoury taste linked to monosodium glutamate (MSG).

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17. Which of the following increases appetite?

- (A) CART
- (B) α -MSH
- (C) AGRP
- (D) Insulin

Correct Answer: (C) AGRP

SOLUTION:

Step 1: Sort the four molecules into the two hypothalamic feeding circuits. One circuit drives hunger (orexigenic) and the other suppresses it (anorexigenic). The correct answer must be the only orexigenic member.

Step 2: The POMC neuron products are appetite suppressors. From POMC come α -MSH and the co-transmitter CART, both of which act on melanocortin receptors to curb feeding. Insulin reaches the hypothalamus as an adiposity signal and likewise dampens appetite.

Step 3: That leaves AGRP, the agouti-related peptide. Released by the NPY/AGRP neurons, it is a potent hunger signal: it antagonises the MC4 receptor, removing the brake that α -MSH applies, and thereby pushes food intake up.

Step 4: Since three of four options reduce appetite and only AGRP raises it, AGRP is the answer. (Printed as AGPP by a typographical slip.)

Quick Tip: Look for the orexigenic peptide that blocks the MC4 melanocortin receptor.

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18. S1 and S2 nerve roots are checked by which reflex?

- (A) Knee jerk
- (B) Patellar reflex
- (C) Calcaneal reflex
- (D) None

Correct Answer: (C) Calcaneal reflex

SOLUTION:

Step 1: Anchor each tendon reflex to its root level. The biceps jerk is C5-C6, the triceps jerk is C7-C8, the knee jerk is L3-L4, and the ankle jerk is S1-S2.

Step 2: The question asks for the S1-S2 reflex, so the answer must be the ankle reflex. This same reflex carries several names: calcaneal reflex and Achilles reflex, all describing a strike on the Achilles tendon that produces plantar flexion at the ankle.

Step 3: Discard the knee-level options. The knee jerk and the patellar reflex are simply two names for one reflex that evaluates L3-L4, well above the sacral roots in question.

Step 4: The calcaneal reflex is the unique S1-S2 test, making it the correct choice.

Calcaneal reflex

Quick Tip: S1-S2 maps to the ankle jerk, also known as the Achilles reflex.

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19. Implantation occurs on which menstrual cycle day?

- (A) 5-7 days
- (B) 20-22 days
- (C) 14-18 days
- (D) 26-28 days

Correct Answer: (B) 20-22 days

SOLUTION:

Step 1: Separate the two timelines that students often confuse: time measured from fertilization versus time measured from the first day of the period. The options here are menstrual cycle days, so we count from the start of menstruation.

Step 2: Establish ovulation. For the textbook 28-day cycle, the luteal phase is fixed at 14 days, so ovulation falls on cycle day 14. The egg is fertilised in the ampulla shortly after, within a day.

Step 3: Add the pre-implantation development. The conceptus travels and develops for about a week, and the blastocyst attaches to the endometrium roughly 6 to 7 days after fertilisation. Day 14 plus about 7 days equals about day 21.

Step 4: That places implantation in the 20 to 22 day window of the cycle. The 5-7 day choice is a trap because it is the interval after fertilisation, not the cycle day.

20-22 days

Quick Tip: Ovulation is day 14; add 6-7 days of pre-implantation development.

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20. FSH and LH both are inhibited by:

- (A) Cortisol
- (B) Aldosterone
- (C) Estrogen
- (D) Progesterone

Correct Answer: (C) Estrogen

SOLUTION:

Step 1: Frame this as a feedback-loop question. We need the single ovarian hormone whose rise turns down both FSH and LH at the same time.

Step 2: Remove the adrenal steroids first. Cortisol is a glucocorticoid and aldosterone is a mineralocorticoid; neither functions as the routine feedback brake on the gonadotropins, so options a and b are out.

Step 3: Distinguish the two ovarian feedback signals that are selective. Inhibin, made by granulosa cells, dampens FSH alone and acts only on the pituitary. Progesterone preferentially dampens LH. Because each hits only one gonadotropin, progesterone cannot be the both answer.

Step 4: Estrogen is produced under combined LH and FSH drive and feeds back, at both hypothalamus and pituitary, to lower both LH and FSH. This dual suppression makes estrogen correct. (The exception is the ovulatory phase, where high steady estrogen flips to positive feedback and provokes the LH surge.)

Estrogen

Quick Tip: Find the ovarian hormone that feeds back on both gonadotropins, unlike inhibin (FSH only) or progesterone (LH only).

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21. Maximum amount of K^+ ion is seen in which GI secretion?

- (A) Saliva
- (B) Colonic
- (C) Gastric
- (D) Jejunal

Correct Answer: (A) Saliva

SOLUTION:

Step 1: Recall that the four listed fluids differ in their ionic make-up, and we are hunting for the one with the greatest potassium level.

Step 2: Focus on how saliva is formed. The acinar cells make an isotonic primary secretion, and as it flows along the ducts the epithelium pulls sodium out and pumps potassium in. The result is a final saliva that is low in sodium but distinctly high in potassium, well above plasma values.

Step 3: Weigh the alternatives. Gastric juice and jejunal fluid carry comparatively modest potassium. Colonic fluid does secrete potassium, but among the choices given saliva still holds the top potassium concentration.

Step 4: By this reasoning the GI secretion with the maximum potassium is saliva.

Saliva

Quick Tip: Salivary ducts secrete K^+ and reabsorb Na^+ , giving saliva a high potassium content.



22. Maximum water reabsorption in the gastrointestinal tract occurs in?

- (A) Stomach
- (B) Jejunum
- (C) Ileum
- (D) Colon

Correct Answer: (B) Jejunum

SOLUTION:

Step 1: Water in the gut is never digested. It is simply absorbed passively along the osmotic gradient created when sodium, glucose and amino acids are pumped out of the lumen into the blood.

Step 2: The daily fluid load reaching the intestine is close to 9 L (drink plus the combined secretions of salivary glands, stomach, pancreas, liver and gut wall). Almost all of this must be recovered to avoid massive fluid loss.

Step 3: The proximal small bowel, particularly the jejunum, has the most leaky tight junctions and the largest surface area from its villi and microvilli. Because it follows solute absorption fastest, it reclaims the greatest share of luminal water. The ileum and colon handle progressively smaller residual amounts.

Step 4: Therefore, comparing all four sites, the jejunum is where the highest quantity of water is reabsorbed.

Jejunum

Quick Tip: Think of the proximal small bowel with its leaky, high-surface villous epithelium.



23. Most diffusible ion across the cell membrane is?

- (A) Na^+
- (B) K^+
- (C) Cl^-
- (D) None

Correct Answer: (C) Cl^-

SOLUTION:

Step 1: Diffusion across the membrane depends on how well a solute dissolves in the fatty interior of the bilayer. The better the lipid solubility, the higher the permeability.

Step 2: Ions face a barrier because of their charge and hydration shell, so all of them cross slowly compared with gases. But among ions themselves there is a ranking.

Step 3: Chloride moves through the membrane more freely than the cations sodium and potassium. Sodium is actively excluded by the Na-K pump, and potassium sits between the two. Comparing the three, chloride shows the greatest passive movement.

Step 4: So the single ion that diffuses most across the membrane is chloride.



Quick Tip: Compare the cations with the chief diffusible anion of the body.

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24. Which of the following is present in the cornea?

- (A) Hyaluronic acid
- (B) Chondroitin sulfate
- (C) Dermatan sulfate
- (D) Heparan sulfate

Correct Answer: (B) Chondroitin sulfate

SOLUTION:

Step 1: Each glycosaminoglycan has a signature location. Remembering these pairings answers the question directly.

Step 2: Hyaluronic acid goes with synovial fluid and vitreous, dermatan sulfate with skin and vessels, and heparan sulfate with basement membranes.

Step 3: The cornea, by contrast, depends on keratan sulfate together with chondroitin sulfate to hold its collagen lattice in the regular spacing needed for clarity. Of the four choices, only chondroitin sulfate fits the cornea.

Step 4: Therefore the GAG present in the cornea is chondroitin sulfate.

Chondroitin sulfate

Quick Tip: Pair each GAG with its tissue; the clear cornea uses keratan and this sulfated GAG.

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25. The extrinsic system of coagulation is activated by?

- (A) Factor XI
- (B) Factor X
- (C) Factor XII
- (D) Factor III

Correct Answer: (D) Factor III

SOLUTION:

Step 1: Coagulation runs along two arms. The intrinsic arm starts inside the vessel from contact activation (Factor XII), and the extrinsic arm starts from outside the vessel after tissue injury.

Step 2: Injured tissue releases tissue factor, which is named Factor III or tissue thromboplastin. This is the spark for the extrinsic pathway.

Step 3: Tissue factor joins Factor VII and calcium ions to switch on Factor X. From Factor X onward both arms share the common pathway, so Factor X is convergence rather than the extrinsic starter, and Factors XI and XII sit in the intrinsic arm.

Step 4: Hence the molecule that activates the extrinsic system is Factor III.

Factor III (tissue factor)

Quick Tip: The pathway from outside the vessel begins with tissue factor.

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26. NADH-CoQ reductase is inhibited by?

- (A) Rotenone
- (B) Carbon monoxide
- (C) Antimycin
- (D) Atractyloside

Correct Answer: (A) Rotenone

SOLUTION:

Step 1: The respiratory chain has four complexes. The question targets Complex I, the NADH to coenzyme Q reductase.

Step 2: Sorting the options by their site of action makes the answer clear. Carbon monoxide poisons Complex IV by blocking cytochrome aa3 to oxygen, antimycin A blocks Complex III between cytochrome b and c1, and atractyloside acts on the adenine nucleotide translocase that moves ADP into the mitochondrion.

Step 3: Rotenone is the agent that specifically halts electron transfer at Complex I, stopping the hand-off from the iron-sulfur centers to coenzyme Q.

Step 4: Therefore the inhibitor of NADH-CoQ reductase is rotenone.

Rotenone

Quick Tip: Which insecticide is the classic Complex I blocker?

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27. UDP-glucose is NOT used in?

- (A) Uronic acid pathway
- (B) Glycogen synthesis
- (C) Galactose metabolism
- (D) HMP shunt

Correct Answer: (D) HMP shunt

SOLUTION:

Step 1: Think of UDP-glucose as a delivery van that carries activated glucose to several destinations. Identify which listed pathway it never visits.

Step 2: It delivers glucose for glycogen building, supplies the uronic acid cycle to

form UDP-glucuronate, and participates in interconverting galactose. It is also used to attach sugars to proteins and lipids.

Step 3: The hexose monophosphate shunt branches off straight from glucose-6-phosphate and runs through 6-phosphogluconate to produce NADPH and pentose sugars. At no step does it require UDP-glucose.

Step 4: So the pathway that does not use UDP-glucose is the HMP shunt.

HMP shunt

Quick Tip: Which pathway runs straight from glucose-6-phosphate to make NADPH?

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28. Which of the following steps is specific for gluconeogenesis?

- (A) Pyruvate to acetyl CoA
- (B) Oxaloacetate to citrate
- (C) Oxaloacetate to phosphoenolpyruvate (PEP)
- (D) Malate to oxaloacetate

Correct Answer: (C) Oxaloacetate to phosphoenolpyruvate (PEP)

SOLUTION:

Step 1: To find a gluconeogenesis-specific step, look for a reaction that exists only in glucose synthesis and nowhere else among the choices.

Step 2: The PEP carboxykinase reaction turns oxaloacetate into phosphoenolpyruvate, releasing carbon dioxide and using GTP. This is one of the four key bypass enzymes that distinguish gluconeogenesis from glycolysis.

Step 3: The other options are not exclusive. Pyruvate to acetyl CoA feeds the TCA cycle, while oxaloacetate to citrate and malate to oxaloacetate are ordinary TCA

cycle reactions that operate independently of glucose synthesis.

Step 4: Hence the reaction unique to gluconeogenesis is oxaloacetate to PEP.

Oxaloacetate to PEP

Quick Tip: Look for the PEP carboxykinase bypass reaction.

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29. Which of the following is increased in lipoprotein lipase deficiency?

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

Correct Answer: (D) Chylomicrons

SOLUTION:

Step 1: Recall the substrate of lipoprotein lipase. This endothelial enzyme strips triacylglycerol out of the two largest, most TG-loaded particles: chylomicrons (dietary fat) and VLDL (hepatic fat). Apo CII switches the enzyme on.

Step 2: Knock out the enzyme and the particle that arrives first and is most TG-rich piles up the most. Dietary chylomicrons enter the blood after every meal, so with no LPL they are not degraded and their level rises sharply, producing milky plasma. This picture is Type I hyperlipoproteinemia.

Step 3: Map the distractors to their own disorders. **LDL** rises in familial hypercholesterolemia (Type II, receptor problem). **VLDL** predominates in Type IV. **HDL** is the anti-atherogenic carrier and is not the accumulating fraction here.

Step 4: Clinically the patient shows eruptive xanthomas, an enlarged tender liver

and bouts of abdominal pain or pancreatitis, treated by cutting fat intake and giving medium chain triglycerides that bypass the chylomicron route.

Chylomicrons

Quick Tip: LPL clears triglyceride-rich particles; without it, the dietary fat carrier accumulates (Type I).

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30. Tay-Sachs disease is due to deficiency of which enzyme?

- (A) Hexosaminidase A
- (B) Hexosaminidase B
- (C) Sphingomyelinase
- (D) Alpha-galactosidase

Correct Answer: (A) Hexosaminidase A

SOLUTION:

Step 1: Place Tay-Sachs in the family of sphingolipidoses. It belongs to the GM2 gangliosidoses, where the lipid that fails to be broken down is the GM2 ganglioside.

Step 2: The catabolic enzyme for GM2 is hexosaminidase A (the alpha subunit defect). When it is absent the ganglioside builds up inside neuronal lysosomes, the child shows worsening neurologic decline, a heightened startle to sound, blindness and a cherry-red macular spot, with the liver and spleen staying normal in size.

Step 3: Eliminate the rest by their own enzymes. Hexosaminidase B alone is not the classic Tay-Sachs defect; loss of both A and B is Sandhoff disease.

Sphingomyelinase loss gives Niemann-Pick, and α -galactosidase loss gives Fabry

disease.

Hexosaminidase A

Quick Tip: GM2 gangliosidosis with a cherry-red spot and no organomegaly.

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31. The rate limiting step in the urea cycle is catalyzed by which enzyme?

- (A) Arginase
- (B) Argininosuccinase
- (C) Carbamoyl-phosphate synthase
- (D) Ornithine transcarbamylase

Correct Answer: (C) Carbamoyl-phosphate synthase

SOLUTION:

Step 1: Think about which reaction sets the pace of nitrogen disposal. In any pathway the rate limiting enzyme usually sits at the first irreversible, regulated, energy-investing step.

Step 2: For urea synthesis that step is the very first one: condensing NH_3 and CO_2 into carbamoyl phosphate at the cost of two ATP, done by carbamoyl phosphate synthase I inside the mitochondrion. Its allosteric on-switch is N-acetylglutamate, confirming it as the regulated, rate controlling enzyme.

Step 3: Run down the remaining choices, all of which act downstream. Ornithine transcarbamylase builds citrulline, argininosuccinase liberates arginine and fumarate, and arginase performs the final hydrolysis yielding urea plus ornithine. None of these governs overall cycle speed.

Step 4: Note the trap: a second carbamoyl phosphate synthase (CPS-II) exists in the cytosol but it serves pyrimidine synthesis and uses glutamine, so it is

irrelevant to the urea cycle.

Carbamoyl-phosphate synthase (CPS-I)

Quick Tip: First, allosteric, mitochondrial step activated by N-acetylglutamate.

• • •

32. Which of the following is a neutral amino acid?

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

Correct Answer: (C) Glycine

SOLUTION:

Step 1: Sort the four options by side-chain chemistry. The question asks for the amino acid whose R group is electrically neutral around pH 7.

Step 2: Glycine's side chain is simply a single *H* atom, the smallest possible, with nothing to ionize. So it sits squarely in the neutral, nonpolar group and is the answer.

Step 3: Cross off the charged ones. Aspartate bears an extra —COO^- , making it acidic and negatively charged. Arginine carries a guanidinium group and histidine an imidazole ring, both of which can hold a positive charge, so both are basic.

Glycine

Quick Tip: Look for the amino acid whose side chain has no ionizable charged group.

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33. Which is the first purine nucleotide synthesized in purine biosynthesis?

- (A) AMP
- (B) GMP
- (C) IMP
- (D) UMP

Correct Answer: (C) IMP

SOLUTION:

Step 1: Trace the de novo route. The cell starts with ribose-5-phosphate from the pentose phosphate pathway, converts it to PRPP, then adds carbons and nitrogens one at a time to construct the purine ring directly on the sugar.

Step 2: When the ring is finally closed, the nucleotide produced carries hypoxanthine as its base, that is inosine monophosphate (**IMP**). This is the first finished purine nucleotide of the pathway.

Step 3: Only after **IMP** does the pathway branch: one branch makes **AMP** and the other makes **GMP**, so neither can come first. **UMP** is excluded outright because it is a pyrimidine, built by a separate pathway.

IMP

Quick Tip: The ring is assembled on ribose; the first complete purine nucleotide carries hypoxanthine.

• • •

34. Which of the following is a nucleoside?

- (A) Adenine
- (B) Uridine
- (C) Thymine
- (D) Guanine

Correct Answer: (B) Uridine

SOLUTION:

Step 1: Fix the definitions before choosing. Base alone, base plus sugar is a nucleoside, and base plus sugar plus phosphate is a nucleotide. The names of nucleosides usually end in -idine or -osine.

Step 2: Scan the options for that ending. Uridine ends in -idine and is in fact uracil linked to ribose, a base plus sugar with no phosphate, exactly fitting a nucleoside.

Step 3: The other three (adenine, thymine, guanine) are bare nitrogenous bases. With a sugar attached they would become adenosine, thymidine and guanosine, but as written they are not nucleosides.

Uridine

Quick Tip: Nucleoside = base + sugar, no phosphate; its name often ends in -idine or -osine.

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35. Which is the strongest interaction among the following?

- (A) Covalent
- (B) Hydrogen
- (C) Electrostatic
- (D) Van der Waals

Correct Answer: (A) Covalent

SOLUTION:

Step 1: Split the choices into bonding types. One option, covalent, shares electrons between atoms; the other three (hydrogen, electrostatic, van der Waals) are non-covalent attractions of much lower energy.

Step 2: Compare bond energies. A shared electron pair, as in a peptide or disulphide bond, holds atoms together far more tightly than any electrostatic, hydrogen or van der Waals contact. So the covalent bond is the strongest.

Step 3: Rank the weaker ones for completeness: electrostatic is stronger than hydrogen, and van der Waals forces are the feeblest. None of these out-pulls a covalent bond.

Covalent

Quick Tip: Shared electron pairs (peptide, disulphide bonds) beat all non-covalent forces.

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36. Hypertrophy is -

- (A) Increase in cell number
- (B) Increase in cell size
- (C) Decrease in cell number
- (D) Decrease in cell size

Correct Answer: (B) Increase in cell size

SOLUTION:

Step 1: Match the word to its meaning. The prefix hyper- means excess and -trophy refers to growth or nourishment of an existing cell. So hypertrophy means an existing cell grows larger; it does not make more cells. The answer is increase in cell size.

Step 2: Cellular events. Under a sustained load the cell ramps up production of contractile and structural proteins. Because the cell is often post-mitotic, it cannot divide, so the extra protein simply makes each cell bulkier. DNA content per nucleus may rise as the cell is held in the cycle without splitting.

Step 3: Clinical anchor. Think of an athlete's heart or a weightlifter's skeletal muscle, and the thickened ventricle in hypertension. These are tissues whose cells cannot multiply, so they cope with extra demand by enlarging.

Step 4: Eliminate distractors. More cells equals hyperplasia, fewer cells equals hypoplasia or involution, and smaller cells equals atrophy. Only enlargement of the cell fits hypertrophy.

Increase in cell size

Quick Tip: Trophy means growth of the same cell, not creation of new cells.

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37. Matrix metalloproteinases are -

- (A) Cathepsin
- (B) Zn metalloproteinases
- (C) Cu metalloproteinases
- (D) Cd metalloproteinases

Correct Answer: (B) Zn metalloproteinases

SOLUTION:

Step 1: Read the name literally. Metallo- tells you a metal sits in the catalytic site, and protease tells you it cuts proteins. For matrix metalloproteinases that metal is zinc, so the family is the zinc metalloproteinases.

Step 2: Biological role. After a wound, fibroblasts lay down collagen-rich scar tissue. To remodel and balance that scar, the same tissue must also break down ECM. MMPs do this demolition work, and their zinc-dependent active site is blocked by tissue inhibitors of metalloproteinases (TIMPs).

Step 3: Know the subtypes. Collagenases handle fibrillar collagen, gelatinases handle denatured or amorphous collagen plus fibronectin, and stromelysins chew through proteoglycans and laminin. All share the zinc-centered mechanism.

Step 4: Rule out traps. Cathepsins belong to lysosomal protease groups and are not classed as MMPs, while copper and cadmium are not the functional metal here.

Zn metalloproteinases

Quick Tip: Metallo- in MMP refers to a zinc ion in the active site.

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38. Which of the following interleukin is secreted by T helper 2 cells?

- (A) IL 11
- (B) IL 7
- (C) IL 1
- (D) IL 13

Correct Answer: (D) IL 13

SOLUTION:

Step 1: Set up the two camps. Helper T cells split into Th1, which favors cell-mediated defense, and Th2, which favors antibody and allergic responses. The question wants a Th2 cytokine.

Step 2: Memorize the Th2 list. A handy cluster for Th2 is IL-4, IL-5, IL-6, IL-10 and IL-13. IL-4 and IL-13 push IgE class switching, IL-5 grows eosinophils, and IL-10 dampens Th1. Of the choices, only IL-13 sits in this Th2 cluster.

Step 3: Check the Th1 side so you do not confuse it. Th1 hallmarks are IL-2 and interferon-gamma, used to switch on macrophages. IL-13 has nothing to do with this side.

Step 4: Knock out the wrong options. IL-1 comes from activated macrophages, IL-7 comes from marrow and thymic stroma for lymphocyte survival, and IL-11 comes from stroma for platelet production, so none qualify as Th2.

IL-13

Quick Tip: Th2 cytokines include IL-4, IL-5, IL-6, IL-10 and IL-13.

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39. Leukocyte migration through endothelium is induced by -

- (A) Selectin
- (B) N CAM
- (C) C CAM
- (D) PECAM

Correct Answer: (D) PECAM

SOLUTION:

Step 1: Picture the recruitment sequence. To leave a vessel a white cell first rolls, then sticks firmly, then crawls between two endothelial cells into the tissue. That last crawling step through the junction is diapedesis, and it happens chiefly in postcapillary venules.

Step 2: Pin the junctional molecule. The protein that lines the endothelial cell-to-cell junction and lets the leukocyte pass is PECAM-1, also tagged CD31, a member of the immunoglobulin superfamily. Its presence on both the leukocyte and the junction is what guides transmigration. Hence the answer is PECAM.

Step 3: Avoid mixing up the phases. Selectins are the rolling molecules and integrins with their ICAM/VCAM partners give firm adhesion; neither performs the final passage through the wall.

Step 4: Dismiss the rest. N-CAM operates in nervous tissue and C-CAM is not the diapedesis molecule, so they do not fit.

PECAM

Quick Tip: Transmigration (diapedesis) is mediated by PECAM-1 (CD31).

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40. Pendred syndrome is due to mutation of -

- (A) Bartillin
- (B) Pendrin
- (C) Fibrillin
- (D) Reticulin

Correct Answer: (B) Pendrin

SOLUTION:

Step 1: Use the name as a clue. Pendred syndrome is named after the same root as its causative protein pendrin. The disease combines sensorineural deafness with goitre, so the answer is pendrin.

Step 2: Understand the protein. Pendrin is an anion exchanger encoded by SLC26A4 (the PDS gene). It transports iodide and chloride or bicarbonate, and is active in the thyroid follicular cells and the inner ear. Loss of function explains both the goitre and the hearing loss.

Step 3: Genetics worth recalling. The PDS gene maps to chromosome 7q31 and the disorder follows autosomal recessive inheritance, so two defective copies are required for disease.

Step 4: Reject the decoys. Fibrillin defects give Marfan syndrome, reticulin is a stromal fiber rather than a disease gene product, and bartillin is not associated with this syndrome.

Pendrin

Quick Tip: Pendred syndrome = pendrin (SLC26A4); deafness plus goitre.

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41. Which is not a feature of Down syndrome?

- (A) Clinodactyly
- (B) Pigmented birth marks
- (C) Hypotonia
- (D) Respiratory tract infections

Correct Answer: (B) Pigmented birth marks

SOLUTION:

Step 1: Frame the question. This is a negative-stem item, so I list the true features of trisomy 21 and pick the one that does not belong.

Step 2: Build the true list. Down syndrome shows hypotonia in infancy, fifth-finger clinodactyly and a single palmar crease in the hands, plus a sandal gap in the feet. Frequent respiratory tract infections occur because of associated heart defects, hypotonia and immune differences. Craniofacial clues include epicanthic folds, a flat nasal bridge, protruding tongue and Brushfield spots.

Step 3: Test each option. Clinodactyly, hypotonia and respiratory infections all map onto the real phenotype, so they cannot be the answer.

Step 4: Spot the outlier. Pigmented birth marks (such as cafe-au-lait spots) are not a feature of Down syndrome; they point toward conditions like neurofibromatosis. So the exception is pigmented birth marks.

Pigmented birth marks

Quick Tip: Look for the sign that is not part of the trisomy 21 phenotype.

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42. Keratinization and pearl formation is characteristic of -

- (A) Squamous cell carcinoma
- (B) Basal cell carcinoma
- (C) Melanoma
- (D) Lymphoma

Correct Answer: (A) Squamous cell carcinoma

SOLUTION:

Step 1: Decode the buzzword. A keratin or epithelial pearl is a round nest of cells laying down keratin in the center. Only a tumor arising from keratin-making squamous epithelium can do this, which points straight to squamous cell carcinoma.

Step 2: Confirm the microscopy. Well-differentiated squamous cell carcinoma shows nests of malignant squamous cells with central keratin pearls, intercellular bridges and cells with dense pink (eosinophilic) cytoplasm. The better differentiated the tumor, the more pearls you see.

Step 3: Compare the alternatives. Basal cell carcinoma forms islands of basaloid cells with palisaded edges and no true pearls. Melanoma is made of atypical pigment-bearing melanocytes, and lymphoma is a sheet of malignant lymphocytes. None keratinize.

Step 4: Settle the answer. Keratinization plus pearl formation is the signature of squamous cell carcinoma.

Squamous cell carcinoma

Quick Tip: Keratin pearls signal a keratin-producing squamous epithelial tumor.

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43. The phenomenon by which cancer cells are able to sustain and proliferate under adverse conditions of hypoxia is?

- (A) Warburg
- (B) Wanton
- (C) Wormian
- (D) Wolf

Correct Answer: (A) Warburg

SOLUTION:

Step 1: Solid tumours frequently outgrow their blood supply, creating regions of poor oxygen delivery. A specific metabolic strategy allows malignant cells to keep generating energy and dividing in such an environment.

Step 2: Otto Warburg noted that tumour cells rely heavily on glycolysis and lactate production rather than oxidative phosphorylation, a feature retained even when oxygen is plentiful. This rewiring of energy metabolism is the hallmark adaptation.

Step 3: This metabolic reprogramming favours rapid biomass synthesis, supports survival under hypoxia, and drives invasion and spread, so it is labelled a growth-promoting effect.

Step 4: Eliminating the alternatives: Wormian denotes accessory skull bones, Wolffian is an embryological duct system, and Wanton has no oncological meaning.

Warburg phenomenon

Quick Tip: Named after the scientist who described aerobic glycolysis in tumours.

• • •

44. Which of the following is not a large vessel vasculitis?

- (A) Takayasu arteritis
- (B) Cogan syndrome
- (C) Churg-Strauss syndrome
- (D) Giant cell arteritis

Correct Answer: (C) Churg-Strauss syndrome

SOLUTION:

Step 1: The classification of vasculitis hinges on the dominant vessel size affected, which guides the answer.

Step 2: The three large-vessel entities to remember are Takayasu arteritis, giant cell (temporal) arteritis, and Cogan syndrome. Three of the four listed options fall into this category.

Step 3: Churg-Strauss syndrome, by contrast, is an eosinophil-rich, ANCA-associated process that targets small vessels and is associated with asthma and eosinophilia. It does not fit the large-vessel group.

Step 4: Therefore the entity that is not a large vessel vasculitis is Churg-Strauss syndrome.

Churg-Strauss syndrome

Quick Tip: One option is an ANCA-associated small vessel vasculitis linked to asthma.

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45. True about gastric lymphoma:

- (A) Non-Hodgkin lymphoma is the commonest variety
- (B) Diagnosis is made by biopsy
- (C) *H. pylori* has a direct relationship
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Evaluate each statement about gastric lymphoma in turn. The stomach is the leading extranodal lymphoma site, and the dominant histology is MALT

lymphoma, which is a non-Hodgkin B-cell lymphoma - so the commonest variety being NHL is accurate.

Step 2: A strong, direct link with *Helicobacter pylori* exists; the majority of MALTomas arise on a background of *H. pylori* gastritis, and antibiotic eradication can produce lasting remission, proving the connection.

Step 3: The tissue diagnosis is confirmed by endoscopic biopsy, making the biopsy statement true as well.

Step 4: With every individual statement valid, the inclusive option covering all of them is correct.

All of the above

Quick Tip: MALToma is NHL, biopsy-diagnosed, and *H. pylori* driven - check each option.

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46. Maintenance dose is calculated by using the value of?

- (A) Clearance
- (B) Volume of distribution
- (C) Oral bioavailability
- (D) Daily dosage

Correct Answer: (A) Clearance

SOLUTION:

Step 1: To sustain a therapeutic level, the amount of drug delivered per unit time must replace the amount the body removes per unit time once steady state is reached.

Step 2: The body's capacity to remove the drug is quantified by clearance. With a desired steady-state concentration C_{ss} , the dosing rate equals $CL \times C_{ss}$, so clearance directly sets the maintenance regimen.

Step 3: It is worth distinguishing this from the loading dose, which fills the apparent distribution space and is computed from the volume of distribution rather than clearance.

Step 4: Bioavailability merely adjusts for the fraction absorbed orally, and daily dosage is a derived figure. The fundamental parameter for maintenance dosing is clearance.

Clearance

Quick Tip: At steady state, dosing rate replaces elimination rate - which depends on this parameter.

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47. A young child weighing 20 kg was given a drug in the dose 100 mg/kg body weight. The plasma concentration of the drug is 2 mg/dl and the clearance is 200 ml/hr. What is the time required to reach steady state plasma concentration?

- (A) 10 hrs
- (B) 20 hrs
- (C) 30 hrs
- (D) 40 hrs

Correct Answer: (B) 20 hrs

SOLUTION:

Step 1: Begin with the administered amount: multiplying the per-kilogram dose by the child's weight gives $100 \times 20 = 2000$ mg as the total drug given.

Step 2: The apparent distribution space follows from dividing the total amount by the measured plasma level: $V_d = 2000/2 = 1000$.

Step 3: Now derive the elimination half-life from the standard relation linking it to volume of distribution and clearance: $t_{1/2} = 0.693 \times V_d/CL = 0.693 \times 1000/200 = 3.5$ hours.

Step 4: A drug attains steady state after roughly 5 to 5.5 half-lives; using 5.5, the time is $5.5 \times 3.5 = 19.25$ hours, best matched by the 20-hour option.

20 hours

Quick Tip: Find V_d , then half-life from $0.693 \times V_d / CL$, then multiply by about 5.5.

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48. Most common cytochrome P-450 enzyme for drug metabolism detoxification reactions is?

- (A) CYP 3A4
- (B) CYP 1A2
- (C) CYP 2A6
- (D) CYP 2B6

Correct Answer: (A) CYP 3A4

SOLUTION:

Step 1: The P-450 superfamily is organised into families (letters) and subfamilies followed by individual enzyme numbers, reflecting how closely their protein sequences match.

Step 2: Among the many isoforms, just a handful drawn from three families handle the bulk of human drug biotransformation.

Step 3: The single most prolific isoform is CYP3A4 (together with 3A5), responsible for metabolising close to half of all drugs, which makes it the dominant detoxification enzyme.

Step 4: Compared with CYP1A2, 2A6 and 2B6, the 3A4 isoform processes a far greater share of the pharmacopoeia and is the one heavily affected by inducers like rifampin and phenytoin.

CYP 3A4

Quick Tip: This isoform metabolises nearly 50% of all drugs.

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49. A patient on verapamil should not be given a beta blocker as?

- (A) Conduction block
- (B) Bronchospasm
- (C) Neurogenic shock
- (D) Anaphylaxis

Correct Answer: (A) Conduction block

SOLUTION:

Step 1: Verapamil belongs to the non-DHP calcium channel blockers, a group whose cardiac action prominently slows impulse transmission through the atrioventricular node and reduces heart rate.

Step 2: Beta-adrenergic blockers exert a parallel depressant influence on the conducting system, also lowering rate and slowing nodal conduction.

Step 3: Giving both drugs together summates these effects, which can precipitate marked bradycardia and high-grade atrioventricular block, the reason verapamil is contraindicated alongside a beta blocker and in pre-existing second or third

degree block.

Step 4: The remaining options do not apply: bronchospasm relates to beta blockade in asthmatics, while neurogenic shock and anaphylaxis are unrelated mechanisms.

Conduction block

Quick Tip: Both agents depress the AV node - their additive effect is the danger.

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50. Which of the following is an inverse agonist at the benzodiazepine receptor?

- (A) Phenobarbitone
- (B) Flumazenil
- (C) Beta carboline
- (D) Gabapentin

Correct Answer: (C) Beta carboline

SOLUTION:

Step 1: Picture the BZD recognition pocket on the GABA-A receptor as a switch that can be pushed in three directions. Push it one way (full agonist) and inhibitory chloride flow rises, giving calm and sleep. Leave it neutral (antagonist) and nothing changes on its own. Push it the other way (inverse agonist) and chloride flow falls below baseline, which translates clinically into restlessness, anxiety and seizures.

Step 2: Among the listed drugs, the beta carbolines occupy exactly that opposite, negative-efficacy end of the spectrum. By lowering GABA-driven inhibition they are anxiogenic and convulsant, the textbook signature of an inverse agonist.

Step 3: Checking the rest: flumazenil only sits in the pocket and blocks it

(antagonist used to reverse BZD overdose), phenobarbitone works through the barbiturate site, and gabapentin works on a calcium channel subunit. None of them flips the receptor in the negative direction.

Beta carboline

Quick Tip: Look for the anxiogenic and proconvulsant agent that does the opposite of diazepam.

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51. A patient on carbidopa plus levodopa for 10 years now has a wearing-off effect. Which drug should be added to restore the action?

- (A) Tolcapone
- (B) Amantadine
- (C) Rasagiline
- (D) Benzhexol

Correct Answer: (A) Tolcapone

SOLUTION:

Step 1: After a decade of levodopa-carbidopa, the response becomes pulsatile and short, the dose stops covering the full inter-dose interval. The therapeutic goal is to make each levodopa dose last longer rather than to add a fresh dopaminergic mechanism.

Step 2: Levodopa is degraded peripherally by two enzymes: dopa decarboxylase (already blocked by carbidopa) and COMT. Adding a COMT inhibitor closes the second escape route. Tolcapone does this, and because it has a longer half-life and crosses the blood-brain barrier, it improves levodopa bioavailability and reduces its clearance, translating into longer 'on' periods and less 'off' time.

Step 3: The alternatives miss the target: rasagiline blocks MAO-B, amantadine is

reserved for dyskinesias, and benzhexol is an antimuscarinic chiefly for tremor. The drug that directly restores and prolongs the failing levodopa effect is the COMT inhibitor.

Tolcapone

Quick Tip: Block the second peripheral enzyme that destroys levodopa to make each dose last longer.

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52. Let A = ACE inhibitor, B = beta blocker, C = calcium channel blocker, and D = diuretic. For an elderly patient with hypertension, the antihypertensive drug of choice is?

- (A) A or D
- (B) A or B
- (C) A or C
- (D) C or D

Correct Answer: (D) C or D

SOLUTION:

Step 1: Hypertension management can be remembered through the stepped AB/CD scheme. Drugs A (ACE inhibitor) and B (beta blocker) lower pressure by damping the renin-angiotensin axis, so they shine when renin is high. Drugs C (calcium channel blocker) and D (diuretic) reduce pressure through vasodilatation and sodium-volume offloading, working well when renin is low.

Step 2: Age shifts the renin profile. Older people characteristically run a low-renin, salt-sensitive form of hypertension, and the same is true for patients of African descent. Therefore the renin-independent pair, calcium channel blockers and diuretics, is preferred first-line for the elderly.

Step 3: Every other option keeps an A or a B in the answer, which steers toward the younger, high-renin patient. For the elderly the correct pairing is the volume-and-vasodilatation duo.

C or D (calcium channel blocker or diuretic)

Quick Tip: Elderly patients are low-renin, so favour the renin-independent arm of the AB/CD rule.

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53. Colistin is obtained from which of the following?

- (A) Bacteria
- (B) Fungi
- (C) Actinomycetes
- (D) Herbs

Correct Answer: (A) Bacteria

SOLUTION:

Step 1: Sort antibiotics by who makes them in nature. The mould-and-fungus group gives penicillins, cephalosporins and griseofulvin. The soil-dwelling actinomycetes give the big workhorses such as aminoglycosides, tetracyclines, chloramphenicol and macrolides. A smaller third group, true bacteria of the *Bacillus* genus, manufacture the polypeptide antibiotics.

Step 2: Colistin, known pharmacologically as polymyxin E, belongs to that polypeptide group and is harvested from a *Bacillus* species. Its source is therefore bacterial, the same origin as polymyxin B, bacitracin and tyrothricin.

Step 3: Ruling out the rest is straightforward: none of the listed drugs is fungal in this question, colistin is not an actinomycete product, and it has no plant origin.

Bacteria

Quick Tip: Colistin is polymyxin E, a polypeptide from a *Bacillus* species.

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54. Which cephalosporin characteristically causes thrombocytopenia?

- (A) Cefixime
- (B) Ceftazidime
- (C) Cefoperazone
- (D) Cefdinir

Correct Answer: (B) Ceftazidime

SOLUTION:

Step 1: Beyond the generic cephalosporin reactions, examiners test the drug-specific toxicities. So the task is to match thrombocytopenia to the one agent that owns it.

Step 2: The marrow-related effects of neutropenia together with thrombocytopenia are the recognised fingerprint of ceftazidime. Therefore ceftazidime is the answer.

Step 3: Separating the others: cefoperazone is the bleeding-and-disulfiram drug (its side chain interferes with vitamin K dependent clotting factors and with alcohol metabolism), while cefixime and cefdinir are oral agents whose dominant complaint is diarrhea. None of these three is the textbook cause of a low platelet count.

Ceftazidime

Quick Tip: Pair low platelets and low neutrophils with the antipseudomonal third-generation agent.

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55. Irreversible hearing loss is caused by which of the following?

- (A) Gentamicin
- (B) Clarithromycin
- (C) Both of the above
- (D) None of the above

Correct Answer: (A) Gentamicin

SOLUTION:

Step 1: The question hinges on whether the drug-induced deafness is permanent or recovers. Sorting the two named drugs on that single axis settles the answer.

Step 2: Aminoglycosides such as gentamicin are directly toxic to the sensory hair cells of the inner ear. Once those cells die they are not replaced, so the deafness is irreversible, and gentamicin additionally produces vestibular damage.

Step 3: Clarithromycin can also blunt hearing, but its effect lifts after the drug is withdrawn, making it reversible. Since only gentamicin produces lasting loss, the combined option and the 'none' option are both excluded.

Gentamicin

Quick Tip: Aminoglycoside hair-cell damage does not recover; macrolide hearing loss does.

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56. Regarding nicotinic acid (niacin), which of the following is correct?

- (A) Increases HDL
- (B) Increases triglyceride synthesis
- (C) Used for type II hyperlipoproteinemia
- (D) Decreases hydrolysis of VLDL

Correct Answer: (A) Increases HDL

SOLUTION:

Step 1: Trace what niacin does at each lipase. By blocking hormone-sensitive lipase inside fat cells it cuts the release of free fatty acids, starving the liver of the substrate it needs to build triglyceride and VLDL. At the same time it boosts lipoprotein lipase, which speeds the breakdown of circulating VLDL triglyceride.

Step 2: The standout benefit is on the protective lipoprotein. Niacin lifts HDL more than any other agent by interfering with apo-A1 driven hepatic uptake of HDL, so HDL stays higher in the blood. Hence raising HDL is the true statement.

Step 3: Checking the rest against these mechanisms: triglyceride synthesis falls rather than rises, VLDL hydrolysis is enhanced rather than reduced, and the clinical use spans types I, III, IV and V, not type II selectively. All three are therefore wrong.

Increases HDL

Quick Tip: Niacin is the single best drug for raising the protective lipoprotein.

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57. Prophylactic dose of vitamin K given to newborn infants at delivery is?

- (A) 1 mg
- (B) 5 mg
- (C) 10 mg
- (D) 15 mg

Correct Answer: (A) 1 mg

SOLUTION:

Step 1: The question targets the routine vitamin K prophylaxis dose used in the delivery room for every baby.

Step 2: A baby is born with very little vitamin K. Reasons include scanty body fat where the vitamin is stored, minimal vitamin K in mother's milk, a germ-free intestine that has no bacteria to make the vitamin, an underdeveloped liver, and weak transfer across the placenta.

Step 3: Without adequate vitamin K, the liver cannot make the clotting factors that stop bleeding, putting the infant at risk of dangerous brain, gut and skin haemorrhage in the first 7 days of life.

Step 4: Standard practice is therefore to inject **1 mg** of vitamin K into the muscle of every newborn right after birth. Larger amounts such as 5, 10 or 15 mg are not used for this purpose.

1 mg

Quick Tip: Every newborn gets a single small intramuscular injection right after birth.

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58. DMPA (Depot medroxyprogesterone acetate) is given once in?

- (A) 3 months
- (B) 6 months
- (C) 9 months
- (D) 45 days

Correct Answer: (A) 3 months

SOLUTION:

Step 1: The question asks how often the injectable contraceptive DMPA must be repeated.

Step 2: DMPA stands for Depot medroxyprogesterone acetate, a progestin-only agent injected deep into muscle as an oily depot. The depot slowly leaks the hormone into the blood, keeping levels high enough to block ovulation for roughly three months.

Step 3: The recommended schedule is 150 mg every 3 months (about 12 weeks). This makes the 3-month answer correct.

Step 4: Other injectables differ: norethisterone enanthate is repeated every 2 months and combined monthly injectables every month, so 6 months, 9 months and 45 days do not fit DMPA.

3 months

Quick Tip: This 150 mg depot progestin injection lasts about one quarter of a year.

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59. Drug which decreases efficacy of testosterone?

- (A) Isoniazid
- (B) Ketoconazole
- (C) Rifampicin
- (D) None

Correct Answer: (B) Ketoconazole

SOLUTION:

Step 1: We need the agent that lowers the biological effect of testosterone.

Step 2: The male hormone is built from cholesterol via a cascade of cytochrome P450 catalysed reactions in the testis and adrenal cortex.

Step 3: Ketoconazole, an imidazole antifungal, is a potent blocker of these steroidogenic P450 enzymes (notably 17-alpha-hydroxylase and 17,20-lyase). Shutting down these enzymes cuts androgen production, so circulating testosterone and its effect fall. This anti-androgenic property is exploited clinically to suppress testosterone in hormone-driven prostate cancer.

Step 4: The antitubercular drugs isoniazid and rifampicin are not the expected answer; therefore the correct choice is ketoconazole.

Ketoconazole

Quick Tip: An azole antifungal that blocks P450 steroid-synthesis enzymes and acts as an anti-androgen.

• • •

60. Mechanism of action of actinomycin D is?

- (A) Inhibits DNA dependent RNA synthesis
- (B) Activates DNA dependent RNA synthesis
- (C) Inhibits RNA dependent DNA synthesis
- (D) Activates RNA dependent DNA synthesis

Correct Answer: (A) Inhibits DNA dependent RNA synthesis

SOLUTION:

Step 1: The task is to identify how the antitumour antibiotic actinomycin D kills cancer cells.

Step 2: Actinomycin D slides flatly between adjacent base pairs of DNA, a process called intercalation, anchoring tightly at guanine-cytosine sites. This distorts the DNA template.

Step 3: With the antibiotic lodged in the helix, RNA polymerase can no longer read the DNA, so the making of RNA from a DNA template (transcription) is shut down. Thus actinomycin D inhibits DNA-dependent RNA synthesis.

Step 4: It neither stimulates transcription nor touches the RNA-to-DNA reverse transcription pathway, ruling out the other three options.

Inhibits DNA dependent RNA synthesis

Quick Tip: It intercalates into DNA and blocks RNA polymerase, halting transcription.

• • •

61. Grievous hurt comes under which section of the Indian Penal Code?

- (A) 319
- (B) 320
- (C) 324
- (D) 326

Correct Answer: (B) 320

SOLUTION:

Step 1: This question concerns the legal definition of grievous hurt under the IPC, a frequently tested forensic point.

Step 2: The code separates hurt into simple and grievous. The general definition of hurt is in Section 319, but the special category of grievous hurt has its own definition under Section 320.

Step 3: Section 320 enumerates the eight kinds of grievous hurt, such as emasculation, permanent loss of an eye or ear, loss of a limb or joint, disfiguration of head or face, fracture or dislocation of a bone or tooth, and any hurt that endangers life or disables the person for twenty days.

Step 4: The remaining sections deal with the act of causing hurt: 324 (hurt by dangerous weapons) and 326 (grievous hurt by dangerous weapons), while 319 covers simple hurt. None of these defines grievous hurt itself.

320

Quick Tip: Simple hurt is 319; the very next section defines grievous hurt.

• • •

62. Which of Gustafson's parameters is the most accurate?

- (A) Attrition
- (B) Periodontosis
- (C) Root resorption
- (D) Transparency of the tooth

Correct Answer: (D) Transparency of the tooth

SOLUTION:

Step 1: The question asks which of the six dental changes used by Gustafson gives the most dependable age estimate.

Step 2: Gustafson studied six features that change with age in adult teeth: wear of the crown (attrition), gum recession (periodontosis), laying down of secondary dentine, build-up of cementum, resorption of the root, and increasing transparency of the root dentine.

Step 3: Among these, the rise in root transparency is judged the most trustworthy. It begins around 30 years and grows steadily because minerals progressively fill the dentinal tubules, turning the dentine clear in a predictable way.

Step 4: The other features are swayed by outside factors: chewing habits and food hardness affect attrition, oral hygiene affects periodontosis, and root resorption can be disease-driven, so they are less accurate. Therefore transparency of the tooth is the answer.

Transparency of the tooth

Quick Tip: The root dentine change that appears after age 30 is the most reliable criterion.



63. Preauricular sulcus is a part of?

- (A) Humerus
- (B) Femur
- (C) Pelvis
- (D) Skull

Correct Answer: (C) Pelvis

SOLUTION:

Step 1: We must locate which bone carries the preauricular sulcus.

Step 2: This sulcus is a shallow groove on the ilium, situated just below the auricular (ear-shaped) articular surface of the sacroiliac joint. It marks where the anterior sacroiliac ligament attaches. Anatomically, therefore, it belongs to the pelvis.

Step 3: In forensic anthropology the preauricular sulcus is a sex-determining marker. It is more common, wider and deeper in females because of the demands of pregnancy and childbirth on the female pelvis.

Step 4: No equivalent groove exists on the humerus, femur or skull, so the pelvis is the only correct answer.

Pelvis

Quick Tip: This groove near the sacroiliac joint helps determine sex and is broader in females.

• • •

64. Maximum soft tissue bruising in the neck is seen in -

- (A) Strangulation
- (B) Hanging
- (C) Burking
- (D) Smothering

Correct Answer: (A) Strangulation

SOLUTION:

Step 1: Mechanical asphyxia deaths differ mainly in where the compressing force lands. To answer, ask which technique drives force hardest into the muscles and structures of the neck itself.

Step 2: Throttling (manual strangulation) uses the bare hands. The grip is forceful and prolonged, and the fingertips dig deep, so the strap muscles get heavily contused and the hyoid bone frequently fractures. This concentrated crushing is why neck bruising is most marked here.

Step 3: Look at the other choices. A hanging ligature spreads load gradually as the body drops, sparing deep muscle bruising. Burking is smothering plus thoracic compression, so the neck is largely uninvolved. Smothering targets the mouth and nose, giving facial rather than cervical injuries.

Step 4: Comparing all four, the hands-on crushing of throttling produces the greatest soft tissue damage in the neck.

Strangulation (throttling)

Quick Tip: Think of the hands-on method that crushes the neck and breaks the hyoid.

• • •

65. Lucid interval may be seen in?

- (A) Intracerebral hemorrhage
- (B) Alcohol intake
- (C) Insanity
- (D) Subdural hemorrhage

Correct Answer: (C) Insanity

SOLUTION:

Step 1: The phrase lucid interval describes a window of normality sandwiched between two abnormal states. It carries weight in two fields: traumatic brain injury and the medico-legal assessment of mental illness.

Step 2: Classically, the head-injury lucid interval belongs to extradural (epidural) bleeding, where a short conscious gap precedes collapse. In the psychiatric sense, it is the spell of clear sanity that separates two episodes of insanity.

Step 3: Scanning the choices, insanity is the listed condition that genuinely shows a lucid interval. Legally this matters because during such an interval the individual can execute a valid will, testify validly, and remains answerable for their acts.

Step 4: The remaining options fail. Intracerebral and subdural haemorrhages tend to evolve without the textbook lucid gap of extradural bleeds, and alcohol intake alone does not generate one.

Insanity

Quick Tip: Besides extradural bleed, which listed mental state has a sane gap between two abnormal phases?

• • •

66. Legal age by which a fetus is capable of independent existence is?

- (A) 240 days
- (B) 230 days
- (C) 220 days
- (D) 210 days

Correct Answer: (D) 210 days

SOLUTION:

Step 1: Viability means a fetus is developed enough to survive on its own outside the uterus, independent of the mother. The question asks for the legally recognised age at which this becomes possible.

Step 2: In medico-legal practice this threshold is set at 210 days, roughly the completion of the 7th lunar month of intrauterine life. Survival is occasionally reported from 180 days, but such fetuses are usually too immature to live.

Step 3: Of the choices, only 210 days matches this standard. The larger figures of 220, 230 and 240 days exceed the accepted point of independent existence and are therefore incorrect.

Step 4: Confirming the age, the talus shows its primary ossification centre at the end of the 7th month, a recognised sign that viability has been reached.

210 days

Quick Tip: Viability is about 7 months of intrauterine life.

• • •

67. Postmortem blood is collected from which vessel?

- (A) Femoral artery
- (B) Femoral vein
- (C) Cephalic vein
- (D) Brachial artery

Correct Answer: (B) Femoral vein

SOLUTION:

Step 1: Postmortem blood sampling supports toxicology, alcohol levels and grouping. To keep the sample reliable, it should be drawn from a sizeable peripheral vein accessible before the body is opened.

Step 2: The standard practice is to take roughly 10 to 20 ml from the femoral vein in the groin region prior to commencing the autopsy. Being peripheral, it minimises the postmortem redistribution artefacts that plague central samples.

Step 3: If the femoral vein is unsuitable, the jugular or subclavian veins serve as acceptable backups, yet the femoral vein stays the first choice.

Step 4: Arteries such as the femoral and brachial, and the cephalic vein, are not used for this routine collection.

Femoral vein

Quick Tip: A large peripheral vein in the groin, sampled before opening the body.

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68. Chocolate brown postmortem staining is seen in?

- (A) KCl poisoning
- (B) Opium poisoning
- (C) H₂S poisoning
- (D) Cyanide poisoning

Correct Answer: (A) KCl poisoning

SOLUTION:

Step 1: Postmortem lividity colour mirrors the dominant haemoglobin derivative in the blood, so a specific hue points to a specific poison.

Step 2: A chocolate brown tint signals methaemoglobin. Oxidising poisons that convert haemoglobin to methaemoglobin, such as potassium chlorate, leave this brown stain, making the KCl option the match for chocolate brown lividity.

Step 3: Each other agent paints a different colour. Cyanide leaves a cherry red hypostasis, hydrogen sulphide turns it greenish from sulphaemoglobin, and opium has no signature brown stain.

Step 4: Mapping colour to chemistry, the brown shade equals methaemoglobinaemia from the oxidising poison listed.

KCl poisoning (chocolate brown / methaemoglobin)

Quick Tip: Chocolate brown means methaemoglobin from an oxidising agent.

• • •

69. For phage typing, how many phages of *Staphylococcus aureus* are used?

- (A) 12
- (B) 15
- (C) 20
- (D) 23

Correct Answer: (D) 23

SOLUTION:

Step 1: Phage typing of *Staphylococcus aureus* is used in epidemiology to fingerprint strains by checking which bacteriophages can lyse them, allowing outbreak strains to be traced.

Step 2: In the pattern method a fixed panel of 23 standard typing phages is spotted on the isolate. The unique combination of phages that produce lysis defines the strain.

Step 3: Naming follows the lysing phages; a strain lysed by 83A, 84 and 85 becomes type 83A/84/85. This pattern-based identity is the heart of the method.

Step 4: Because the recognised basic set holds 23 phages, the values 12, 15 and 20 are incorrect.

23

Quick Tip: Recall the standard international basic set size for Staph phage typing.

• • •

70. Infective endocarditis after tooth extraction is probably due to?

- (A) *Streptococcus viridans*
- (B) *Streptococcus pneumoniae*
- (C) *Streptococcus pyogenes*
- (D) *Staphylococcus aureus*

Correct Answer: (A) *Streptococcus viridans*

SOLUTION:

Step 1: When endocarditis follows a dental extraction, the culprit is usually an organism that normally lives in the mouth and slips into the blood during the procedure.

Step 2: That organism is the viridans group of streptococci, normal inhabitants of the oral cavity and upper airway. Extraction triggers a brief bacteremia, after which the bacteria lodge on abnormal heart valves and build vegetations.

Step 3: In people with prior valve damage, prosthetic valves or congenital defects, viridans streptococci, especially *Streptococcus sanguis*, are the classic agents of subacute bacterial endocarditis, helped by their ability to stick to surfaces.

Step 4: The alternatives cause other illnesses: pneumococcus drives pneumonia and meningitis, *Strep. pyogenes* causes sore throat and rheumatic fever, and *Staph. aureus* produces aggressive acute endocarditis rather than the post-dental picture.

Streptococcus viridans

Quick Tip: Which mouth commensal seeds damaged valves after dental work?

• • •

71. Which *Vibrio* species is the most halophilic (most salt tolerant)?

- (A) *V. cholerae*
- (B) *V. vulnificus*
- (C) *V. alginolyticus*
- (D) *V. parahaemolyticus*

Correct Answer: (C) *V. alginolyticus*

SOLUTION:

Step 1: The term halophilic means salt loving. To rank the vibrios, compare the maximum sodium chloride concentration each one can grow in.

Step 2: *V. cholerae* is the odd one out because it is non-halophilic and grows well even with no added salt, putting it at the bottom of the salt tolerance scale.

Step 3: *V. parahaemolyticus* and *V. vulnificus* are true halophiles, but their upper limit sits around 8 percent sodium chloride.

Step 4: *V. alginolyticus* pushes the ceiling higher, growing in roughly 10 percent sodium chloride, which makes it the champion of salt tolerance among these species.

V. alginolyticus

Quick Tip: Think of the vibrio that tolerates the highest salt, around 10 percent NaCl.

• • •

72. Which of the following is a liquid medium used for the culture of tuberculosis bacilli?

- (A) LJ medium
- (B) Dorset medium
- (C) Loeffler's medium
- (D) MGIT

Correct Answer: (D) MGIT

SOLUTION:

Step 1: Sort the four options into solid versus liquid media before choosing.

Step 2: LJ medium and Dorset medium are both coagulated egg based solid media, so they form slants rather than broths. Loeffler's serum slope is also a solid coagulated medium and is best known for diphtheria bacilli.

Step 3: That leaves MGIT, the Mycobacterial Growth Indicator Tube, which is a tube of modified Middlebrook 7H9 broth. Being a broth, it is the liquid medium requested.

Step 4: MGIT also speeds up TB detection because it is automated and reads growth through a fluorescence based oxygen sensor.

MGIT

Quick Tip: Look for the automated broth based Middlebrook 7H9 system.

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73. Indian tick typhus is caused by which organism?

- (A) R. typhi
- (B) R. conorii
- (C) R. akari
- (D) C. burnetii

Correct Answer: (B) *R. conorii*

SOLUTION:

Step 1: Match the disease name to its rickettsial group. The word tick points to the spotted fever group rather than the typhus group.

Step 2: Within the spotted fever group, *R. conorii* is the species responsible for Indian tick typhus and Mediterranean spotted fever, with the dog tick acting as vector.

Step 3: Eliminate the distractors by their vectors and groups. *R. typhi* is flea transmitted murine typhus, *R. akari* is mite transmitted rickettsialpox, and *C. burnetii* is the Q fever organism spread mainly by aerosols.

Step 4: The only tick borne spotted fever agent in the list is *R. conorii*.

R. conorii

Quick Tip: It is a tick borne spotted fever group rickettsia spread by the dog tick.

• • •

74. What is the natural reservoir of plague?

- (A) Domestic rat
- (B) Wild rat
- (C) Rat flea
- (D) Man

Correct Answer: (B) Wild rat

SOLUTION:

Step 1: Separate the roles of reservoir, vector and incidental host for *Yersinia pestis* before answering.

Step 2: The flea is the vector that carries the bacillus between hosts, so option c is out. Man is only an accidental host who does not sustain the organism in nature, so option d is out.

Step 3: That narrows it to rats. The domestic rat is the bridge that brings plague into human settlements, but the disease truly persists in wild rodent colonies as sylvatic plague.

Step 4: Since the question asks for the maintaining reservoir, the wild rat is the correct choice.

Wild rat

Quick Tip: The flea is the vector and man is incidental, so look at the sylvatic rodent host.

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75. Molluscum contagiosum virus belongs to which group of viruses?

- (A) Poxviruses
- (B) Herpesviruses
- (C) Picornaviruses
- (D) Adenovirus

Correct Answer: (A) Poxviruses

SOLUTION:

Step 1: Recall the morphology clue. Molluscum contagiosum is famous for large intracytoplasmic inclusion bodies, a hallmark of cytoplasmic replicating DNA

viruses.

Step 2: The poxvirus family is the group of large brick shaped double stranded DNA viruses that multiply in the cytoplasm, and molluscum contagiosum virus sits squarely within it.

Step 3: Rule out the rest. Herpesviruses replicate in the nucleus with intranuclear inclusions, picornaviruses are tiny RNA viruses, and adenoviruses are non enveloped icosahedral DNA viruses, none matching the cytoplasmic poxvirus profile.

Step 4: The cytoplasmic inclusion bearing, brick shaped agent of molluscum is a poxvirus.

Poxviruses

Quick Tip: Think of the large brick shaped DNA virus with cytoplasmic inclusion bodies.

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76. Exanthema subitum is caused by which virus?

- (A) HHV-6
- (B) HHV-8
- (C) Parvovirus
- (D) Coxsackievirus

Correct Answer: (A) HHV-6

SOLUTION:

Step 1: Translate the names. Exanthema subitum equals roseola infantum equals sixth disease, a classic exanthem of infancy.

Step 2: The agent of this sixth disease is human herpesvirus 6, with the clinical signature of three days of high fever that drops just as the trunk rash appears.

Step 3: Cross off the others by their own exanthems. Parvovirus B19 gives fifth disease with slapped cheeks, coxsackievirus gives hand foot and mouth disease, and HHV-8 is the Kaposi sarcoma virus rather than a childhood exanthem.

Step 4: The number that fits the sixth disease is HHV-6.

HHV-6

Quick Tip: Roseola infantum or sixth disease points to one herpesvirus.

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77. Which serum marker appears after successful Hepatitis B vaccination?

- (A) Anti-HBsAg
- (B) Anti-HBeAg
- (C) Anti-HBcAg
- (D) HBsAg

Correct Answer: (A) Anti-HBsAg

SOLUTION:

Step 1: Remember what is inside the hepatitis B vaccine. It is a recombinant preparation of surface antigen alone, with no core or e antigen.

Step 2: Because only surface antigen is presented, the single antibody a vaccinated person develops is anti-HBs, and its rise above the protective level signals successful immunity.

Step 3: This is why anti-HBc is a useful discriminator. Its presence means the person met the whole virus through natural infection rather than the vaccine.

Anti-HBe likewise tracks infection, and detectable HBsAg indicates ongoing infection or carriage.

Step 4: The lone marker expected purely from vaccination is anti-HBs.

Anti-HBsAg (anti-HBs)

Quick Tip: The vaccine carries only surface antigen, so the antibody formed is against it.

• • •

78. The chance that a health worker gets HIV from an accidental needle prick is:

- (A) 1%
- (B) 10%
- (C) 95%
- (D) 100%

Correct Answer: (A) 1%

SOLUTION:

Step 1: Occupational HIV exposure in health staff is graded by how much infected material enters the body. A needle prick transfers only a tiny droplet, so the probability of catching the virus is one of the lowest among all exposure routes.

Step 2: Pooled surveillance data put the per-incident seroconversion rate after a percutaneous sharps injury at about 0.3%, which standard relative-risk charts round to nearly 1 percent. That points straight to choice (a).

Step 3: Compare this with receiving a full unit of contaminated blood, where transmission exceeds 90 percent. The figures of 95 percent and 100 percent listed in the other options simply do not exist for any HIV exposure scenario, let alone a

small skin puncture.

Step 4: Aggravating factors such as a hollow bleeding needle, deep wound, or a source patient with high viraemia increase the odds, while prompt antiretroviral prophylaxis brings them back down.

About 1 percent

Quick Tip: Percutaneous occupational HIV risk is roughly 0.3 percent, charted as about 1 percent.

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79. The band form of *Plasmodium malariae* is which stage?

- (A) Schizont stage
- (B) Trophozoite stage
- (C) Merozoite stage
- (D) Gametocyte stage

Correct Answer: (B) Trophozoite stage

SOLUTION:

Step 1: Identifying malaria species rests on the shape the parasite takes within the red cell. For *Plasmodium malariae* one diagnostic appearance is a ribbon of cytoplasm laid straight across the cell, the band form.

Step 2: This band is produced by the feeding, enlarging parasite, that is, the trophozoite. As it consumes haemoglobin it elongates into the band shape carrying brown pigment, which makes choice (b) the answer.

Step 3: The other choices describe different points in the life cycle. The schizont of *P. malariae* divides into roughly eight daughter cells in a daisy-head pattern, the merozoite is the tiny released invader, and the gametocyte is the round sexual

cell destined for the mosquito gut. None of these forms a band.

Step 4: Spotting band-form trophozoites on a film is a practical way to flag quartan malaria caused by *P. malariae*.

Trophozoite stage

Quick Tip: A cytoplasmic band stretching across the red cell is the growing form of the parasite.

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80. Which of the following fungi is difficult to isolate in culture?

- (A) *Candida*
- (B) Dermatophytes
- (C) *Cryptococcus*
- (D) *Malassezia furfur*

Correct Answer: (D) *Malassezia furfur*

SOLUTION:

Step 1: The ease of growing a fungus depends on whether it has any unusual nutritional demand. Standard Sabouraud agar supports the common pathogens, but a lipid-craving organism needs extra fat added to the plate.

Step 2: *Malassezia furfur* is exactly such an organism. Being lipophilic, it stays inert on plain Sabouraud medium and only thrives when oil, for instance 1 percent emulsified olive oil, or a tailored Dixon (or modified Dixon) medium is provided. That dependence makes it the troublesome isolate, so (d) wins.

Step 3: By contrast, *Candida* species, the dermatophytes, and *Cryptococcus neoformans* all colonise routine Sabouraud agar without fuss and are considered easy laboratory growers.

Step 4: This fastidious nature fits its life on oily, sebaceous skin, where it produces the hypopigmented or hyperpigmented patches of pityriasis versicolor.

Malassezia furfur

Quick Tip: Look for the lipid-dependent yeast that will not grow on plain Sabouraud agar.

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81. Heat labile liquids are sterilized by which method?

- (A) Hot air oven
- (B) Autoclaving
- (C) Membrane filter
- (D) Moist heat

Correct Answer: (C) Membrane filter

SOLUTION:

Step 1: When a liquid cannot tolerate heat, sterilization must rely on a process that does not raise the temperature. That immediately rules out every furnace or steam method on the list.

Step 2: Passing the fluid through a fine membrane filter, typically with 0.22 micrometre pores, traps and removes the microorganisms while leaving the liquid cool and intact. This is the routine way to sterilize antibiotics, sera, eye drops, oils, and delicate culture media, so the correct pick is (c).

Step 3: The remaining options all apply heat. A hot air oven bakes at around 160 degrees C, while autoclaving and plain moist heat deliver pressurised steam near 121 degrees C. Any of these would spoil a heat-labile preparation.

Step 4: Keep in mind that ordinary filters stop bacteria and fungi but allow viruses through, so the term sterile here refers to removal of the larger organisms.

Membrane filter

Quick Tip: If heat would wreck the liquid, you must physically strain out the microbes instead.

• • •

82. Blood agar is an example of which type of medium?

- (A) Enriched media
- (B) Indicator media
- (C) Enrichment media
- (D) Selective media

Correct Answer: (A) Enriched media

SOLUTION:

Step 1: The way to answer is to recall the categories of bacteriological media and what blood contributes. Adding a rich nutrient like blood to a basal agar defines an enriched medium meant for hard-to-grow species.

Step 2: Blood agar is built by mixing 5 to 10 percent defibrinated blood into nutrient agar, giving fastidious bacteria the growth factors they need. That places it squarely in the enriched category, so (a) is the right label.

Step 3: Each wrong option describes a different design. Indicator media use a colour-changing dye to flag a reaction, enrichment broths chemically boost one target organism while holding back the rest, and selective media carry inhibitors to block unwanted flora. None of these describes the action of blood agar.

Step 4: Although blood agar usefully shows haemolysis types and so has a

differential role, by definition it is first and foremost an enriched medium.

Enriched media

Quick Tip: Adding blood as an extra nutrient to a basal agar defines this category.

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83. Which of the following is true about endotoxin?

- (A) Protein
- (B) Highly antigenic
- (C) No enzymatic activity
- (D) Produced by gram positive bacteria

Correct Answer: (C) No enzymatic activity

SOLUTION:

Step 1: Start from what endotoxin actually is. It is the lipopolysaccharide woven into the outer membrane of gram-negative organisms, with lipid A as the toxic moiety, and it is part of the cell wall rather than a secreted molecule.

Step 2: Since the molecule is a lipopolysaccharide and not a protein, it carries no enzyme function. It produces fever, hypotension, and shock by provoking host cytokines, not by catalysing any biochemical step, which makes statement (c) the true one.

Step 3: Testing the other claims: it is not a protein, so (a) fails; it is only weakly immunogenic, unlike the strongly antigenic exotoxins, so (b) fails; and it comes from gram-negative, never gram-positive, bacteria, so (d) fails.

Step 4: Remember too that endotoxin resists heat and cannot be detoxified into a toxoid, the opposite of the heat-sensitive exotoxins.

No enzymatic activity

Quick Tip: Endotoxin is a lipopolysaccharide, not a protein enzyme, and is poorly antigenic.

• • •

84. Which of the following staphylococcal infections is not toxin mediated?

- (A) Toxic shock syndrome
- (B) Scalded skin syndrome
- (C) Food poisoning
- (D) Septic shock

Correct Answer: (D) Septic shock

SOLUTION:

Step 1: Split staphylococcal illness into two groups, those driven by a defined exotoxin and those driven by the bacteria themselves spreading through the body.

Step 2: Septic shock falls in the second group. It arises when *Staphylococcus aureus* enters the bloodstream and the resulting bacteraemia ignites a massive host inflammatory cascade, with no single specific toxin responsible. That marks it as the non-toxin-mediated condition, choice (d).

Step 3: The other three each map to a named toxin: toxic shock syndrome to TSST-1, scalded skin syndrome to exfoliative toxin, and food poisoning to a preformed heat-stable enterotoxin. Their mechanism is purely toxin based.

Step 4: So the contrast is invasion-plus-cytokines (septic shock) versus toxin action (the rest), and the odd one out is septic shock.

Septic shock

Quick Tip: Three options map to a named staphylococcal toxin; one is caused by bacteraemia.

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85. Primordial prevention is done to prevent the development of?

- (A) Disease
- (B) Risk factors
- (C) Impairment
- (D) Disability

Correct Answer: (B) Risk factors

SOLUTION:

Step 1: Recall the hierarchy of prevention. The four tiers, from earliest to latest, are primordial, primary, secondary and tertiary prevention. Each acts at a different point along the natural history of a disease.

Step 2: Primordial prevention sits at the very top of this ladder. Its goal is to stop the underlying risk factors from ever taking root in a community that does not yet show them, rather than treating an illness that has already begun.

Step 3: Because lifestyle and behavioural risk factors drive chronic illness, primordial prevention relies on individual and mass health education and is regarded as the ideal approach for non-communicable diseases.

Step 4: Preventing the disease itself belongs to primary prevention; limiting impairment and disability belongs to the later tiers. Therefore primordial prevention specifically blocks the development of risk factors.

Risk factors

Quick Tip: It is the earliest level, acting before the disease itself even has its drivers.

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86. Which of the following is NOT true about vaccines?

- (A) Two live vaccines can be given at the same time at different sites
- (B) Two live vaccines at the same site should be given at least 3 weeks apart
- (C) In a vaccine vial monitor, if the colour of the inner square is the same as the outer background, the vaccine is good for use
- (D) Live and killed vaccines can be given together

Correct Answer: (C) In a vaccine vial monitor, if the colour of the inner square is the same as the outer background, the vaccine is good for use

SOLUTION:

Step 1: We need the single incorrect statement. Focus first on the vaccine vial monitor, a temperature-sensitive sticker introduced to the Pulse Polio Immunisation programme to flag heat-spoiled vials.

Step 2: Its design is a dark blue ring enclosing a lighter inner square. Heat makes the inner square darken progressively. The usable end-point is the opposite of what option c claims: the vial is fit only while the inner square stays LIGHTER than the ring. Once the inner square matches the ring, the vaccine is spoiled and rejected. That makes option c the false statement.

Step 3: Cross-checking the remaining choices confirms they are standard immunisation practice. Different anatomical sites allow two live vaccines simultaneously; a gap of about 4 weeks is needed if they are not co-administered; and inactivated vaccines may freely accompany live ones.

Step 4: Only option c contradicts accepted guidance.

VVM: matching inner square means the vaccine is spoiled, so the statement is false

Quick Tip: On a VVM, the vial is usable only while the inner square stays lighter than the ring.

• • •

87. Missing cases are detected by?

- (A) Active surveillance
- (B) Passive surveillance
- (C) Sentinel surveillance
- (D) Prevalence rate

Correct Answer: (C) Sentinel surveillance

SOLUTION:

Step 1: The key phrase is detecting cases that the routine system has missed. Match this to the correct type of surveillance.

Step 2: Sentinel surveillance works through a few high-quality reporting points that act as sensors for the whole population. Its defining purpose is to uncover under-reported or missing cases and to supplement officially notified figures, which is exactly what the question describes. India applies it within the National AIDS Control Programme.

Step 3: Compare the alternatives. Passive surveillance simply receives data that flow in on their own as patients seek care, so missing cases stay missing. Active surveillance involves the system going out to gather data, such as fortnightly malaria blood slides, but it is not framed around recovering missed cases.

Step 4: A prevalence rate is merely a frequency measure and detects nothing. So

the method designed to catch missing cases is sentinel surveillance.

Sentinel surveillance

Quick Tip: It uses select reporting sites to supplement notified cases and pick up the ones that slip through.

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88. Matching is not required in which epidemiological study?

- (A) Case control study
- (B) Cohort study
- (C) Case report
- (D) Randomized control trial

Correct Answer: (C) Case report

SOLUTION:

Step 1: Ask what matching is for. It exists to balance two groups on confounding variables so that any difference seen can be attributed to the exposure under investigation.

Step 2: This logic only applies when there are two groups to compare. A case report studies just one patient and presents the full clinical picture of a single, often rare, occurrence. With no second group, matching has no role, making the case report the correct choice.

Step 3: Each of the other designs is comparative by nature. Case control studies set cases against controls, cohort studies follow exposed against unexposed, and randomized controlled trials weigh an intervention arm against a control arm. All of them need matching or randomisation to keep the arms comparable.

Step 4: Therefore the only study without a matching requirement is the case

report.

Case report

Quick Tip: Matching balances two groups, so a study with only a single patient needs none.

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89. Which of the following is a positive mortality indicator?

- (A) IMR (Infant mortality rate)
- (B) Child mortality rate
- (C) MMR (Maternal mortality rate)
- (D) Life expectancy

Correct Answer: (D) Life expectancy

SOLUTION:

Step 1: Separate indicators by direction. A negative indicator worsens health as it rises; a positive indicator signals better health as it rises.

Step 2: Run through the choices. IMR, child mortality rate and MMR all count deaths, so a larger number means a sicker community. These are negative indicators and are ruled out.

Step 3: Life expectancy is different. The longer people are expected to live, the healthier the population, so its value moves in the same direction as good health. That is the textbook definition of a positive indicator.

Step 4: Hence, of the mortality indicators listed, life expectancy is the only positive one.

Life expectancy

Quick Tip: Look for the one indicator where a higher value means a healthier population.

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90. The STOP TB Strategy was launched in?

- (A) 2002
- (B) 2006
- (C) 2010
- (D) 2013

Correct Answer: (B) 2006

SOLUTION:

Step 1: Anchor the answer to the WHO timeline for tuberculosis control. The Stop TB Strategy replaced the earlier DOTS-only framework and was rolled out by the WHO in 2006.

Step 2: Its accompanying roadmap, the Global Plan to Stop TB, explicitly covered the decade 2006 to 2015, which fixes the launch year firmly at 2006.

Step 3: The strategy still keeps DOTS at its heart and is monitored through case detection, treatment success, incidence, prevalence and death rates, all aligned with the Millennium Development Goals. Targets included a 50 percent cut in prevalence and deaths versus 1990 by 2015.

Step 4: None of the other listed years marks this launch, so 2006 is correct.

2006

Quick Tip: Its Global Plan covered 2006 to 2015, which gives away the launch year.

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91. The incubation period of measles is?

- (A) 18 to 72 hours
- (B) 10 to 14 days
- (C) 3 to 4 days
- (D) 20 to 25 days

Correct Answer: (B) 10 to 14 days

SOLUTION:

Step 1: Recall the natural history of measles, a droplet-spread paramyxovirus infection in which fever and Koplik spots precede the rash.

Step 2: The standard teaching is an incubation of around 10 to 14 days: about 10 days from contact to the first fever and about 14 days to the full-blown rash. This points straight to the 10 to 14 day option.

Step 3: The remaining choices fail the test. An 18 to 72 hour or 3 to 4 day window is far too short for measles and suits other acute infections, while 20 to 25 days overshoots the known period.

Step 4: Therefore the correct incubation period is 10 to 14 days.

10 to 14 days

Quick Tip: Think roughly 10 days to fever and 14 days to the rash.

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92. In the National AIDS Control Programme, for the syndromic management of STDs, the blue colored kit is used for the treatment of which condition?

- (A) Urethral discharge
- (B) Scrotal swelling
- (C) Genital ulcers
- (D) Ano-rectal discharge

Correct Answer: (C) Genital ulcers

SOLUTION:

Step 1: Under the Suraksha Clinic STI/RTI service of NACO, ready-to-use drug kits are colour labelled. The clinician matches the patient's main complaint to a coloured pack rather than waiting for a culture report.

Step 2: Among these, the pack coloured blue corresponds to ulcerative lesions of the genitalia caused by treponemal and chancroidal infection. Its medicines are long-acting penicillin by injection together with oral azithromycin.

Step 3: Reviewing the choices, scrotal swelling, urethral discharge and ano-rectal discharge each map to a separate kit colour, so they are excluded. The complaint that fits the blue pack is the presence of sores or ulcers over the genitals.

Step 4: Therefore the blue colour signals treatment of genital ulcer disease.

Genital ulcers

Quick Tip: NACO colour kits: blue equals genital ulcer disease, treated with benzathine penicillin and azithromycin.

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93. What is the recommended dose of equine rabies immunoglobulin for post-exposure prophylaxis?

- (A) 10 IU/kg
- (B) 20 IU/kg
- (C) 30 IU/kg
- (D) 40 IU/kg

Correct Answer: (B) 20 IU/kg

SOLUTION:

Step 1: For a severe (category III) animal bite, ready-made antibody in the form of rabies immunoglobulin is placed in and around the bite wound to neutralise virus before the vaccine takes effect.

Step 2: The standard equine (horse-derived) immunoglobulin preparation is administered at **20 IU** per kilogram of body weight.

Step 3: The higher figure of **40 IU/kg** applies only to F(ab)₂ fragment preparations, so option d is a trap; 10 and 30 IU/kg are not recognised dosing schedules.

Step 4: Hence the dose asked for is 20 IU/kg.

20 IU/kg

Quick Tip: Equine RIG is 20 IU/kg; F(ab)₂ products are 40 IU/kg.

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94. Endemic typhus is transmitted by which vector?

- (A) Louse
- (B) Flea
- (C) Tick
- (D) Mite

Correct Answer: (B) Flea

SOLUTION:

Step 1: Rickettsial fevers are best recalled by pairing each illness with its arthropod carrier.

Step 2: Endemic typhus, also called murine typhus and due to *Rickettsia typhi*, circulates between rodents and is passed to humans through the bite or contaminated faeces of the rat flea.

Step 3: Louse points to epidemic typhus, mite points to scrub typhus, and tick points to the spotted fever group; none of these is endemic typhus.

Step 4: The answer is therefore the flea.

Flea

Quick Tip: Endemic (murine) typhus equals *Rickettsia typhi*, spread by the rat flea.

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95. Among the following states, the least neonatal mortality rate is seen in which state?

- (A) Delhi
- (B) Tamil Nadu
- (C) Karnataka
- (D) Maharashtra

Correct Answer: (B) Tamil Nadu

SOLUTION:

Step 1: The proportion of babies dying within the first four weeks of life, expressed per 1000 live births, reflects how well a state delivers obstetric and newborn services.

Step 2: At the national level Kerala leads with the smallest such figure, but Kerala is absent from the choices, so the comparison is restricted to the four listed states.

Step 3: Of those four, the southern state of Tamil Nadu posts the minimum value, ahead of Delhi, Karnataka and Maharashtra.

Step 4: Hence the correct pick is Tamil Nadu.

Tamil Nadu

Quick Tip: Kerala has lowest NMR overall; among the options Tamil Nadu is lowest.

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96. What is the recommended level of fluoride in drinking water?

- (A) 0.2 to 0.5 mg/L
- (B) 0.5 to 0.8 mg/L
- (C) 0.8 to 1.2 mg/L
- (D) 1.2 to 2.0 mg/L

Correct Answer: (B) 0.5 to 0.8 mg/L

SOLUTION:

Step 1: The fluoride concentration of water must be kept in a tight window so that teeth are protected from decay without inviting fluorosis.

Step 2: The accepted recommended figure for the country lies between **0.5** and **0.8** milligram per litre.

Step 3: Values from the lower band of 0.2 to 0.5 are insufficient, while the higher bands approaching and exceeding 1.2 push toward the permissible ceiling of 1.5 mg/L and the risk of mottled enamel and bone changes.

Step 4: Thus the recommended level is 0.5 to 0.8 mg/L.

0.5 to 0.8 mg/L

Quick Tip: Recommended fluoride is 0.5 to 0.8 mg/L; maximum permissible is 1.5 mg/L.

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97. Which of the following is true about the Indian reference female?

- (A) Height 161 cm
- (B) Weight 60 kg
- (C) BMI 22
- (D) None of the above

Correct Answer: (A) Height 161 cm

SOLUTION:

Step 1: Indian dietary energy recommendations use a model man and model woman as benchmarks, with the woman's profile used to scale needs for real subjects.

Step 2: For the reference woman aged 18 to 29 years, the recorded body weight is 55 kg, the stature is 1.61 metre, and the body mass index is roughly 21.2.

Step 3: A weight of 60 kg actually describes the reference man, so option b is wrong; the index is 21.2 rather than 22, so option c is wrong; this leaves the stated height of 161 cm as the sole accurate value.

Step 4: Therefore height 161 cm is correct.

Height 161 cm

Quick Tip: Indian reference woman: 55 kg, 161 cm, BMI 21.2 (60 kg is the reference man).

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98. Which disease is associated with an excessive maize diet?

- (A) Wernicke's encephalopathy
- (B) Pellagra
- (C) Beri-Beri
- (D) Scurvy

Correct Answer: (B) Pellagra

SOLUTION:

Step 1: The condition tied to a maize-heavy diet is a lack of usable vitamin B3, presenting as photosensitive dermatitis, loose stools and mental changes.

Step 2: Maize and sorghum carry a large amount of leucine, and this amino acid blocks the body's pathway that turns tryptophan into niacin, deepening the niacin shortfall.

Step 3: Because of this, communities depending on maize or jowar, for example parts of Andhra Pradesh, have shown outbreaks of this disease.

Step 4: Thiamine deficiency would give Wernicke's encephalopathy or beri-beri, and vitamin C deficiency would give scurvy, none of which fits a maize diet. The answer is pellagra.

Pellagra

Quick Tip: Maize is high in leucine which blocks tryptophan to niacin, causing pellagra.

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99. Which virus is NOT sensitive to disinfection of water by chlorination?

- (A) Rotavirus
- (B) Norwalk virus
- (C) Poliovirus
- (D) None

Correct Answer: (C) Poliovirus

SOLUTION:

Step 1: The question tests which waterborne virus survives ordinary chlorine disinfection. Chlorine sanitises drinking water effectively against vegetative bacteria but spares a defined group of resistant organisms.

Step 2: Organisms that escape routine chlorine doses include *Entamoeba histolytica* cysts, bacterial spores, and the hardy enteric viruses, chiefly poliovirus and the hepatitis A and E viruses.

Step 3: Why poliovirus survives: its non-enveloped, tightly packed protein capsid resists oxidative damage from hypochlorous acid at the concentrations normally used for municipal water.

Step 4: Rotavirus and Norwalk (norovirus) are listed as distractors, but the textbook-recognised chlorine-resistant virus in this set is poliovirus.

Poliovirus

Quick Tip: Think of the non-enveloped enteric viruses that survive routine chlorine, the same group as hepatitis A and E.

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100. The most common cause of blindness in India is?

- (A) Cataract
- (B) Trachoma
- (C) Refractive errors
- (D) Vitamin A deficiency

Correct Answer: (A) Cataract

SOLUTION:

Step 1: This is a public-health epidemiology fact. National Programme for Control of Blindness data place cataract at the top of the list of blinding conditions in India.

Step 2: Cataract contributes the majority share, about two-thirds of blindness, mainly because of the large elderly population and an operative backlog.

Step 3: The remaining options sit lower: refractive error is the main cause of visual impairment but not of outright blindness, while trachoma and vitamin A deficiency have declined sharply due to targeted programmes.

Cataract

Quick Tip: It is an age-related lens opacity that contributes about two-thirds of blindness in India.



101. The "3 by 5" initiative in the AIDS control programme refers to?

- (A) Providing 3 million people treatment by the end of 2005
- (B) Providing treatment to 3 out of 5 patients
- (C) Reducing the incidence of AIDS by 3% by 2005
- (D) All of the above

Correct Answer: (A) Providing 3 million people treatment by the end of 2005

SOLUTION:

Step 1: The "3 by 5" slogan is decoded directly from its figures: treat 3 million, by the year 2005.

Step 2: It was a joint WHO and UNAIDS target announced in December 2003 to scale up antiretroviral therapy to 3 million HIV-positive people in low and middle income countries by end of 2005, as a stepping stone toward universal ART access.

Step 3: The strategy rested on five pillars including simplified ART tools, a reliable medicine supply service, knowledge dissemination, sustained country support, and global leadership. The distractor ratios and percentages do not match this definition.

Providing 3 million people treatment by the end of 2005

Quick Tip: Decode the two numbers literally: 3 million people, by the year 2005.



102. The most common cause of trigeminal neuralgia is?

- (A) Infection
- (B) Trauma
- (C) Vascular compression
- (D) Iatrogenic

Correct Answer: (C) Vascular compression

SOLUTION:

Step 1: Trigeminal neuralgia produces brief electric, stabbing pains along the distribution of the fifth cranial nerve.

Step 2: The dominant mechanism is a neurovascular conflict: an artery (commonly the superior cerebellar artery) or a vein presses on the nerve root entry zone at the brainstem, causing demyelination and abnormal firing. This vascular compression underlies the great majority of cases.

Step 3: Secondary causes such as tumours, cysts, AV malformations, and multiple sclerosis exist but are far less frequent, while infection, trauma, and iatrogenic causes are rare. Carbamazepine remains the drug of choice.

Vascular compression

Quick Tip: Think of a neurovascular conflict at the nerve root entry zone near the brainstem.

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103. Potato tumor (rhinophyma) is due to?

- (A) Hypotrophy of sebaceous glands of the nose
- (B) Hypertrophy of sebaceous glands of the nose
- (C) Hypotrophy of sweat glands of the nose
- (D) Hypertrophy of sweat glands of the nose

Correct Answer: (B) Hypertrophy of sebaceous glands of the nose

SOLUTION:

Step 1: The clue word "potato tumor" identifies rhinophyma, a benign enlargement and disfigurement of the lower nose.

Step 2: Its pathological basis is overgrowth, that is hypertrophy, of the nasal sebaceous glands, often with connective tissue and vascular increase. It is considered the most advanced stage of acne rosacea.

Step 3: The bulbous nose looks ruddy because of dilated and engorged superficial blood vessels, and it predominantly affects older men. Alcohol is a myth rather than a cause.

Step 4: Management is surgical: laser, sharp excision, or dermabrasion with re-epithelialisation, or full excision and grafting. Sweat-gland and hypotrophy choices do not fit the sebaceous-gland pathology.

Hypertrophy of sebaceous glands of the nose

Quick Tip: The bulbous red nose of end-stage rosacea is an overgrowth of oil-producing glands.



104. Acute suppurative otitis media in children is most commonly caused by?

- (A) Streptococcus pneumoniae
- (B) Staphylococcus epidermidis
- (C) Staphylococcus aureus
- (D) Pseudomonas

Correct Answer: (A) Streptococcus pneumoniae

SOLUTION:

Step 1: ASOM is a pus-forming middle-ear infection that peaks in early childhood because of the short, horizontal eustachian tube.

Step 2: Infection typically begins as a viral cold or throat infection and spreads up the eustachian tube to the middle ear, where bacteria take over.

Step 3: *Streptococcus pneumoniae* is the leading bacterial pathogen, with *Haemophilus influenzae* and *Moraxella catarrhalis* next in line.

Step 4: The staphylococci and *Pseudomonas* listed are more typical of external ear or chronic ear disease, not the usual ASOM cause in children.

Streptococcus pneumoniae

Quick Tip: The leading middle-ear pathogen in children, ahead of *H. influenzae* and *M. catarrhalis*.

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105. The length of the external auditory meatus is?

- (A) 12 mm
- (B) 16 mm
- (C) 20 mm
- (D) 24 mm

Correct Answer: (D) 24 mm

SOLUTION:

Step 1: The external acoustic meatus runs an S-shaped course from the auricle to the eardrum and measures about 24 mm in the adult.

Step 2: Its length is the sum of two segments: the lateral cartilaginous portion of roughly 8 mm and the medial bony portion of roughly 16 mm.

Step 3: The cartilaginous part bears hair and ceruminous and sebaceous glands, so furuncles form only there, while the thin-skinned bony part contains the isthmus, the narrowest zone about 5 mm from the tympanic membrane where foreign bodies lodge.

Step 4: Combining 8 mm plus 16 mm confirms a total close to 24 mm, ruling out the 12, 16, and 20 mm options.

24 mm

Quick Tip: Add the cartilaginous outer third (about 8 mm) to the bony inner two-thirds (about 16 mm).

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106. When a patient fails to understand normal speech but can understand shouted or amplified speech, the hearing loss is termed?

- (A) Mild hearing loss
- (B) Moderate hearing loss
- (C) Severe hearing loss
- (D) Profound hearing loss

Correct Answer: (C) Severe hearing loss

SOLUTION:

Step 1: The key clue is that conversational speech is lost but loud or amplified speech is still perceived. We must map this to the audiometric grading of deafness.

Step 2: Grades by better-ear threshold are roughly mild **26 – 40 dB**, moderate **41**

– 70 dB, severe 71 – 95 dB, and profound greater than 95 dB. Normal speech sits near 50 – 60 dB.

Step 3: A person needing shouting or amplification has a threshold high enough to miss 50 – 60 dB speech yet low enough to catch loud sound, which places them in the 71 – 95 dB band, that is the severe category.

Step 4: Functionally these patients lean on lip-reading even with strong hearing aids. Moderate loss would still allow some normal speech, and profound loss would miss even shouting, so both are excluded.

Severe hearing loss

Quick Tip: Threshold of 70 to 95 dB in the better ear; normal speech missed but loud speech heard.

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107. The most common bacterial cause of rhinitis is?

- (A) Haemophilus influenzae
- (B) Streptococcus haemolyticus
- (C) Pasteurella multocida
- (D) Corynebacterium diphtheriae

Correct Answer: (A) Haemophilus influenzae

SOLUTION:

Step 1: Note the trap first: overall the commonest cause of rhinitis is a virus. The stem deliberately asks for the bacterial cause, so a respiratory bacterial pathogen is expected.

Step 2: The classic trio that colonises and infects the upper respiratory mucosa is *S. pneumoniae*, *H. influenzae* and *M. catarrhalis* - the same organisms behind

otitis media and sinusitis.

Step 3: From the four choices, only *Haemophilus influenzae* belongs to this respiratory trio, making it the correct pick.

Step 4: *Pasteurella multocida* points to animal bites, *Corynebacterium diphtheriae* to membranous infection, and *Streptococcus haemolyticus* is not the usual rhinitis organism, so each is ruled out.

Haemophilus influenzae

Quick Tip: Think of the respiratory trio that also causes otitis media and sinusitis.

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108. Turban epiglottitis is seen in?

- (A) TB
- (B) Leprosy
- (C) Laryngeal papilloma
- (D) Epiglottitis

Correct Answer: (A) TB

SOLUTION:

Step 1: The named sign points to a specific disease. Turban epiglottitis is a swollen, pale, oedematous epiglottitis described in chronic tuberculous involvement of the larynx.

Step 2: Laryngeal TB is secondary to lung TB and prefers the posterior larynx. Hyperaemia of the cords with poor adduction is the first sign, with later mammilated interarytenoid swelling and ragged ulcers over the arytenoids.

Step 3: As the disease spreads anteriorly the epiglottitis becomes diffusely

thickened and pale, giving the turban appearance, alongside marked pallor of the neighbouring mucosa.

Step 4: Acute epiglottitis gives a cherry-red, not pale, epiglottis; leprosy and papilloma cause different lesions. Therefore the disease is tuberculosis.

Tuberculosis (TB)

Quick Tip: A pale pseudoedematous epiglottis in chronic posterior laryngitis.

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109. Amsler's grid is used to evaluate?

- (A) Central 10 degrees of vision
- (B) Central 20 degrees of vision
- (C) Peripheral vision
- (D) Lens opacity

Correct Answer: (A) Central 10 degrees of vision

SOLUTION:

Step 1: Ask what part of the retina the test targets. The Amsler grid is a macular function chart, and the macula corresponds to roughly the central 10° of the field of vision.

Step 2: Looking at the central spot, a patient with macular pathology sees the straight grid lines as bent or interrupted, the hallmark of metamorphopsia.

Step 3: This makes it a simple bedside or home monitor for diseases of the macula like ARMD, central serous chorioretinopathy, diabetic macular oedema and macular hole.

Step 4: The far field needs perimetry and the lens needs the slit lamp, so neither

peripheral vision nor lens opacity is correct.

Central 10 degrees of vision

Quick Tip: A wavy-line chart that tests the macula.

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110. Munson's sign is a feature of?

- (A) Keratoconus
- (B) Corneal ulcer
- (C) Pterygium
- (D) Posterior staphyloma

Correct Answer: (A) Keratoconus

SOLUTION:

Step 1: Trace the sign to its mechanism. Munson's sign needs a cornea shaped like a cone, which is exactly what occurs in keratoconus.

Step 2: When the patient with keratoconus looks down, the protruding apex pushes the lower lid into a sharp angular bulge, and that lid contour is Munson's sign.

Step 3: Keratoconus also gives a Fleischer ring, an oil-drop reflex, a scissor retinoscopy reflex and progressive irregular astigmatism, all consistent with a thinning ectatic cornea beginning around puberty.

Step 4: A corneal ulcer causes an infiltrate, pterygium a fleshy conjunctival growth, and posterior staphyloma a backward scleral bulge - none indents the lid on downgaze. Hence the diagnosis is keratoconus.

Keratoconus

Quick Tip: Lower-lid bulges into a V on downgaze due to a cone-shaped cornea.

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111. The gland of Moll opens in or on the?

- (A) Skin
- (B) Hair follicle
- (C) Tarsal plate
- (D) Ducts of Meibomian glands

Correct Answer: (B) Hair follicle

SOLUTION:

Step 1: Recall the eyelid glands. The gland of Moll is a modified apocrine sweat gland clustered around the bases of the eyelashes at the lid margin.

Step 2: Its secretion is not discharged onto the lid skin. The duct empties into the eyelash hair follicle, and at times into the duct of the nearby Zeis gland.

Step 3: Compare this with neighbours - Meibomian glands sit in the tarsal plate and open at the lid margin, and Zeis glands are sebaceous glands opening into lash follicles. Moll therefore drains into the lash follicle.

Step 4: Choices of skin, tarsal plate and Meibomian ducts each describe a different gland, so they are excluded.

Hair follicle (of the eyelash)

Quick Tip: Modified sweat gland near the lash roots, draining into the lash follicle.



112. Diabetic ischemic maculopathy is characterized by all of the following except?

- (A) It occurs due to microvascular blockage
- (B) Mild visual loss
- (C) Areas of non-perfusion are evident on fluorescein angiography
- (D) Microaneurysms and hemorrhages are seen

Correct Answer: (B) Mild visual loss

SOLUTION:

Step 1: This is a negative-stem question, so we look for the one feature that does not fit ischaemic diabetic maculopathy.

Step 2: The condition arises from occlusion of the macular microvasculature, which starves the fovea of blood and therefore tends to drop central acuity severely.

Step 3: On fundus examination there are microaneurysms and haemorrhages with little or no oedema, and fluorescein angiography reveals capillary non-perfusion, an enlarged foveal avascular zone and later precapillary arteriolar blockage.

Step 4: Statements about microvascular blockage, angiographic non-perfusion and microaneurysms with haemorrhages are correct. The visual loss is marked rather than mild, so the inaccurate option is mild visual loss.

Mild visual loss (it is in fact marked)

Quick Tip: Foveal ischaemia kills central acuity, so visual loss is marked, not mild.



113. Bilateral inferior dislocation of the lens (ectopia lentis) is characteristically seen in which condition?

- (A) Marfan's syndrome
- (B) Homocystinuria
- (C) Weil-Marchesani syndrome
- (D) Trauma

Correct Answer: (B) Homocystinuria

SOLUTION:

Step 1: The key to this question is the DIRECTION of lens displacement, since several inherited disorders produce ectopia lentis but each in a typical direction.

Step 2: Homocystinuria is an autosomal recessive defect of methionine metabolism (cystathionine beta-synthase deficiency). The weakened zonules give way inferiorly, so the lens drifts down and toward the nose on both sides, producing bilateral inferior (inferonasal) ectopia lentis.

Step 3: Contrast this with Marfan's syndrome, where the displacement is superotemporal (up and out), and with Weil-Marchesani syndrome, where a small spherical lens tends to fall forward into the anterior chamber. Traumatic dislocation is one-sided and follows the line of injury, not a tidy bilateral inferior pattern.

Step 4: Therefore a symmetric, bilateral, downward lens dislocation maps to homocystinuria.

Homocystinuria

Quick Tip: Direction matters: down and in is metabolic, up and out is connective tissue.



114. All of the following are clinical features of Leber's hereditary optic neuropathy EXCEPT:

- (A) Seen in the 2nd or 3rd decade of life
- (B) It is an example of gradual painless visual loss
- (C) Males can transmit the disease
- (D) No leak of dye is observed on fluorescein angiography

Correct Answer: (C) Males can transmit the disease

SOLUTION:

Step 1: LHON is the classic mitochondrial inheritance disorder of the optic nerve. The single most important fact is that mitochondria come only from the egg, hence the inheritance is purely maternal.

Step 2: Apply that to each option. A male, even if affected, contributes sperm whose mitochondria are not passed to the offspring, so he is a genetic dead end for this trait. The statement that males can transmit the disease therefore contradicts the basic biology and is the EXCEPTION being asked for.

Step 3: Verifying the rest: onset is in the young adult years (roughly 11 to 30, the 2nd-3rd decade) [true]; the visual failure is subacute and painless, matching a gradual painless loss [true]; and although the acute disc looks swollen with peripapillary telangiectasia, dye does NOT leak from the disc on fluorescein angiography [true].

Step 4: The one false statement is male transmission.

Males can transmit the disease

Quick Tip: Mitochondrial DNA comes only from mother, so fathers never pass it on.

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115. Retinoblastoma occurs bilaterally in what percentage of cases?

- (A) 10 - 15%
- (B) 15 - 20%
- (C) 20 - 25%
- (D) 25 - 30%

Correct Answer: (D) 25 - 30%

SOLUTION:

Step 1: Think of retinoblastoma in two buckets: the common sporadic form and the inherited form. The inherited form drives the bilateral cases.

Step 2: Roughly three-quarters of patients (70-75%) have one eye involved, while the remaining quarter (25-30%) have both eyes involved. That bilateral fraction is the value asked for, so option d (25-30%) fits.

Step 3: The reason bilateral disease clusters at about a quarter of cases is the germline RB1 mutation. With one defective RB allele already present in every retinal cell (first hit), the second hit happens easily and often in both eyes, explaining the bilateral and multifocal pattern of hereditary retinoblastoma.

Step 4: So bilaterality is seen in 25-30% of patients.

25-30%

Quick Tip: Unilateral is about 70-75%, so bilateral makes up the rest.

• • •

116. Bett's classification deals with which of the following?

- (A) Ocular trauma
- (B) Ocular foreign body
- (C) Squint
- (D) Maculopathy

Correct Answer: (A) Ocular trauma

SOLUTION:

Step 1: Decode the eponym. BETTS = Birmingham Eye Trauma Terminology System, and the word Trauma in the title already answers the question.

Step 2: This system was created so that surgeons worldwide describe eye injuries with consistent terms. It first splits injuries into closed-globe and open-globe groups, then further into rupture, penetrating injury, perforating injury, and intraocular foreign body. All of these are forms of ocular trauma.

Step 3: An ocular foreign body is merely one branch inside this trauma tree, not the whole classification, so that option is incomplete. Squint (strabismus) and maculopathy are graded by completely different ophthalmic schemes and have nothing to do with BETTS.

Step 4: So the correct match is ocular trauma.

Ocular trauma

Quick Tip: BETTS - Birmingham Eye TRAUMA Terminology System.

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117. Which metabolic derangement is normally seen in pregnancy?

- (A) Metabolic acidosis
- (B) Metabolic alkalosis
- (C) Respiratory acidosis
- (D) Respiratory alkalosis

Correct Answer: (D) Respiratory alkalosis

SOLUTION:

Step 1: Start from the hormone change of pregnancy. Rising progesterone resets the brainstem respiratory centre to a more sensitive level, so the pregnant woman breathes more (increased tidal volume).

Step 2: More breathing means more CO₂ is exhaled, so arterial pCO₂ drops. Since CO₂ is an acid gas, removing it shifts pH upward. A primary fall in pCO₂ with a rise in pH is by definition a respiratory alkalosis, pointing to option d.

Step 3: The kidney responds to this long-standing alkalosis by dumping bicarbonate in the urine, which is why serum bicarbonate is mildly low and pH stays close to normal (compensation). This rules out metabolic acidosis or alkalosis (the primary problem is respiratory, not renal/metabolic) and respiratory acidosis (CO₂ is low, not high).

Step 4: The expected derangement is therefore respiratory alkalosis.

Respiratory alkalosis

Quick Tip: Progesterone drives hyperventilation, so CO₂ falls.

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118. High steppage gait is seen in which of the following?

- (A) Foot drop
- (B) Frontal lobe stroke
- (C) Tabes dorsalis
- (D) Leprosy

Correct Answer: (C) Tabes dorsalis

SOLUTION:

Step 1: Picture the walk: the patient hitches the hip and knee up high and slaps the front of the foot down because the foot hangs limp. That exaggerated lift is

the steppage gait, and it tells you dorsiflexion has failed.

Step 2: Dorsiflexion failure follows damage to motor fibres of the common peroneal nerve and to the posterior column pathways that guide limb placement. Of the options offered, tabes dorsalis is the disease the source flags as the answer (c).

Step 3: Note that foot drop is the descriptive mechanism, not a discrete diagnosis, and leprosy is another peripheral cause of the same gait. A frontal lobe stroke instead gives a shuffling, magnetic, apraxic gait, so it does not fit. Within the single-answer frame the keyed choice is tabes dorsalis.

Step 4: Therefore high steppage gait here maps to tabes dorsalis.

Tabes dorsalis

Quick Tip: Cannot dorsiflex, so the leg lifts high and the forefoot lands first.

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119. Aphasia which affects the arcuate fibres (arcuate fasciculus) is called:

- (A) Global aphasia
- (B) Anomic aphasia
- (C) Conduction aphasia
- (D) Broca's aphasia

Correct Answer: (C) Conduction aphasia

SOLUTION:

Step 1: Anatomy first: the arcuate fasciculus is the cable linking the comprehension area (Wernicke) at the back to the speech-output area (Broca) at the front.

Step 2: If you cut only this cable, both language areas still work, but they cannot

talk to each other. The clinical result is conduction aphasia, which makes option c correct.

Step 3: Its signature finding is a striking inability to repeat phrases, even though the patient understands what is said and speaks fluently apart from sound errors (phonemic paraphasias). This contrasts with Broca's aphasia (non-fluent, frontal lesion), global aphasia (both centres destroyed, severe deficit in all language functions), and anomic aphasia (chiefly word-finding/naming trouble), so those options do not match an isolated tract lesion.

Step 4: So a lesion of the arcuate fibres yields conduction aphasia.

Conduction aphasia

Quick Tip: Cutting the cable between Broca and Wernicke wrecks repetition.

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120. Interstitial nephritis is common with

- (A) NSAID
- (B) Black water fever
- (C) Rhabdomyolysis
- (D) Tumor lysis syndrome

Correct Answer: (A) NSAID

SOLUTION:

Step 1: The question asks which agent typically triggers inflammation of the renal interstitium. Interstitial nephritis is most often a hypersensitivity reaction, and pharmacological agents top the list of triggers.

Step 2: Non-steroidal anti-inflammatory drugs are a textbook offender. They provoke interstitial nephritis and can also cause nephrotic-range proteinuria through minimal change pattern, making them a well recognised renal hazard.

Step 3: Contrast this with the remaining choices. Blackwater fever produces massive intravascular haemolysis with haemoglobinuria; rhabdomyolysis releases myoglobin; tumor lysis syndrome floods the tubules with uric acid and phosphate. Each of these injures the tubules directly (acute tubular necrosis or crystal nephropathy) rather than mounting an allergic interstitial response.

Step 4: Therefore the agent classically linked to interstitial nephritis here is the NSAID.

NSAID

Quick Tip: Think of the drug class notorious for allergic tubulointerstitial injury, not pigment-induced ATN.

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121. A patient is diagnosed with HIV and tuberculosis together. How should anti-tubercular treatment (ATT) and combination antiretroviral therapy (cART) be started?

- (A) Start ATT first
- (B) Start cART first
- (C) Start both simultaneously
- (D) Start cART only

Correct Answer: (A) Start ATT first

SOLUTION:

Step 1: A co-infected patient (HIV plus active TB) needs both diseases treated, but the order of drugs matters because of immune reconstitution risk.

Step 2: The safer strategy is to bring the tuberculosis under control before reviving the immune system. So anti-tubercular drugs go in first, typically about two weeks ahead of antiretrovirals.

Step 3: If you reverse the order and start antiretrovirals first, the rapidly rising CD4 count can attack the still-active TB bacilli with an overwhelming inflammatory reaction. This is IRIS, and it makes the patient appear clinically worse even though treatment is working.

Step 4: Hence the recommended approach is to begin ATT first, then layer cART on top.

Start ATT first

Quick Tip: Control the mycobacteria before reviving the immune system to avoid IRIS.

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122. All of the following are true about Rheumatoid arthritis, except

- (A) PIP and DIP joints involved equally
- (B) Pathology limited to articular cartilage
- (C) Women are affected 3 times more commonly than men
- (D) 20% of patients have extra articular manifestations

Correct Answer: (B) Pathology limited to articular cartilage

SOLUTION:

Step 1: We must spot the incorrect statement among facts about rheumatoid arthritis. The disease is a synovium-driven autoimmune arthropathy, strongly linked to HLA-DR4.

Step 2: The defining error is the idea that damage stops at the articular cartilage. In reality the inflamed synovium forms a pannus that erodes cartilage AND the underlying bone, and also damages the joint capsule, ligaments and tendons. RA is destructive and systemic, not a cartilage-only condition.

Step 3: The female predominance (about 3:1) and the presence of extra-articular features in a significant share of patients are genuine textbook points. RA also

typically spares the distal interphalangeal joints, favouring the metacarpophalangeal and proximal interphalangeal joints.

Step 4: So the statement that does not hold true is that the pathology is confined to articular cartilage.

Pathology limited to articular cartilage (FALSE)

Quick Tip: RA destroys far more than cartilage; the synovial pannus erodes bone and soft tissue too.

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123. The finger-in-glove sign is seen in

- (A) Pulmonary alveolar proteinosis
- (B) Pneumocystis carinii
- (C) Tuberculosis
- (D) Bronchocele

Correct Answer: (D) Bronchocele

SOLUTION:

Step 1: The phrase finger-in-glove describes branching, tube-like opacities on a chest film that look like the fingers of a glove. These are mucus-filled, dilated bronchi.

Step 2: This pattern is the hallmark of a bronchocele - mucoid impaction inside an obstructed or dilated airway. Classic settings are allergic bronchopulmonary aspergillosis, asthma, cystic fibrosis, and obstruction by a tumour such as a carcinoid or hamartoma.

Step 3: Differentiating it from the distractors - alveolar proteinosis is recognised by crazy-paving, Pneumocystis by diffuse ground-glass haze, and tuberculosis by cavities and apical scarring. The gloved-finger shadow does not belong to any of

these.

Step 4: Thus the sign points to a bronchocele.

Bronchocele

Quick Tip: Branching mucus-filled dilated bronchi resembling gloved fingers - think mucoid impaction.



124. The vitamin B12 level in chronic myeloid leukemia is

- (A) Elevated
- (B) Decreased
- (C) Normal
- (D) Markedly decreased

Correct Answer: (A) Elevated

SOLUTION:

Step 1: CML is a myeloproliferative neoplasm with a massive expansion of the granulocytic series in blood and marrow.

Step 2: Granulocytes are the source of vitamin B12 binding proteins (transcobalamins I and III). With so many extra granulocytes, the circulating amount of these carrier proteins rises sharply, dragging the serum vitamin B12 concentration upward.

Step 3: This pairs with two other signature CML labs - a high LDH from rapid cell turnover and a characteristically low leukocyte alkaline phosphatase score, the latter being a key clue separating CML from a reactive leukocytosis.

Step 4: So the expected vitamin B12 level here is high.

Elevated

Quick Tip: Excess granulocytes raise B12-binding transcobalamins, pushing serum B12 up.

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125. Brock's syndrome is

- (A) Bronchiectasis sicca
- (B) Middle lobe bronchiectasis
- (C) Kartagener's syndrome
- (D) Sarcoidosis

Correct Answer: (B) Middle lobe bronchiectasis

SOLUTION:

Step 1: Brock's syndrome carries the alternative name middle lobe syndrome, which immediately points to the right middle lobe.

Step 2: The mechanism is compression of the right middle lobe bronchus by adjacent tuberculous hilar lymph nodes, usually a leftover from childhood primary TB. Because this bronchus is long and narrow with poor collateral ventilation, it collapses easily.

Step 3: Recurrent collapse and fibrosis eventually produce bronchiectasis localised to the middle lobe. The label is sometimes extended to repeated middle lobe atelectasis even when no clear obstruction is found.

Step 4: The remaining choices do not fit - sicca is dry upper-lobe bronchiectasis, Kartagener combines situs inversus with bronchiectasis and sinusitis, and sarcoidosis is granulomatous. So Brock's syndrome is middle lobe bronchiectasis.

Middle lobe bronchiectasis

Quick Tip: Named the middle lobe syndrome - hilar TB nodes compress the right middle lobe bronchus.

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126. Which of the following is given to treat thrombocytopenia secondary to anti-cancer therapy and is known to stimulate progenitor megakaryocytes?

- (A) Filgrastim
- (B) Oprelvekin
- (C) Erythropoietin
- (D) Anagrelide

Correct Answer: (B) Oprelvekin

SOLUTION:

Step 1: We need a growth factor that drives the megakaryocyte line to lift platelets after cancer chemotherapy.

Step 2: That role belongs to oprelvekin, which is interleukin-11 made by recombinant technology. It expands megakaryocyte progenitors and pushes their maturation, so the marrow churns out more platelets. Its licensed indication is chemotherapy-associated thrombocytopenia.

Step 3: The distractors each act on a different lineage or in the wrong direction. Filgrastim (G-CSF) targets neutrophils, erythropoietin targets red cells, and anagrelide is given to bring a high platelet count down in thrombocythemia. None of them raises platelets via megakaryocyte progenitor stimulation.

Step 4: The answer is therefore oprelvekin.

Quick Tip: Recombinant IL-11 that boosts megakaryocyte progenitors and platelet output.

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127. Which of the following is NOT true regarding obstructive sleep apnea (OSA)?

- (A) Nocturnal asphyxia
- (B) Alcoholism is a cofactor
- (C) Prone to hypertension
- (D) Overnight oximetry is diagnostic and can replace polysomnography

Correct Answer: (D) Overnight oximetry is diagnostic and can replace polysomnography

SOLUTION:

Step 1: The question asks which option is false for OSA. OSA results from upper-airway obstruction during sleep, giving apneas, hypopneas, and arousals.

Step 2: Recurrent airway closure produces drops in oxygen, i.e. nocturnal asphyxia, confirming option a. Sedatives and alcohol reduce upper-airway muscle tone and aggravate OSA, validating option b. Intermittent hypoxia activates the sympathetic system and raises blood pressure, validating option c.

Step 3: For diagnosis, the reference standard is attended in-lab polysomnography. Simple overnight pulse oximetry detects desaturations but misses many events and has poor specificity, so it cannot substitute for polysomnography.

Step 4: The incorrect statement is the one claiming oximetry replaces polysomnography.

Overnight oximetry is diagnostic to replace polysomnography

Quick Tip: The gold-standard diagnostic test for OSA is full-night polysomnography, not oximetry.

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128. The most common acute complication of dialysis is:

- (A) Hypotension
- (B) Bleeding
- (C) Dementia
- (D) Muscle cramps

Correct Answer: (A) Hypotension

SOLUTION:

Step 1: During a dialysis session fluid is pulled out of the vascular space faster than it can be replenished from the tissues.

Step 2: When intravascular volume falls and the cardiovascular compensatory mechanisms (vasoconstriction, autonomic reflexes) cannot keep up, blood pressure drops. This intradialytic hypotension is seen most often, and diabetics with autonomic neuropathy are particularly vulnerable.

Step 3: Comparing the choices: bleeding relates to heparin use, cramps to rapid sodium and volume shifts, and dementia to long-term aluminium toxicity. None matches the frequency of hypotension during the procedure.

Step 4: So the leading acute event is a fall in blood pressure.

Hypotension

Quick Tip: Think of the immediate drop in blood pressure caused by rapid fluid removal during a dialysis session.

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129. All of the following statements about the genetics of G6PD deficiency are true, EXCEPT:

- (A) X-linked inheritance
- (B) More severe in men
- (C) Contradicts the Lyon hypothesis
- (D) May affect heterozygous females

Correct Answer: (C) Contradicts the Lyon hypothesis

SOLUTION:

Step 1: G6PD deficiency maps to band Xq28, making it an X-linked condition. Because males are hemizygous (one X only), an abnormal allele has no normal counterpart and the clinical effect is greater in males.

Step 2: The Lyon hypothesis states that random inactivation of one X chromosome occurs in every cell of a female. In a heterozygous woman this yields a mixture of roughly 50 percent normal and 50 percent enzyme-deficient red cells, so she may indeed manifest hemolysis to a variable degree.

Step 3: Far from contradicting Lyon, this variable mosaic expression in carrier females is a classic illustration of the Lyon hypothesis. The statement that G6PD deficiency contradicts the Lyon hypothesis is therefore incorrect.

Step 4: The exception we must pick is the claim that it contradicts Lyon's hypothesis.

Contradicts Lyon Hypothesis

Quick Tip: Variable enzyme levels in carrier females actually prove, not disprove, random X-inactivation.

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130. Asbestosis causes all of the following EXCEPT:

- (A) Shaggy heart borders
- (B) Honeycombing
- (C) Hilar lymphadenopathy
- (D) Basal peribronchial fibrosis

Correct Answer: (C) Hilar lymphadenopathy

SOLUTION:

Step 1: In asbestosis, inhaled asbestos fibres lodge in the lower zones and drive progressive interstitial fibrosis predominantly at the lung bases.

Step 2: Radiologically this basal-predominant fibrosis produces peribronchial fibrosis at the bases, end-stage honeycombing, and irregular, ill-defined cardiac and diaphragmatic margins described as the shaggy heart sign. All three of these are genuine features.

Step 3: Enlargement of the hilar lymph nodes is not part of the asbestosis picture; it points instead to sarcoidosis or silicosis. So among the options, hilar lymphadenopathy is the odd one out.

Step 4: The exception is therefore hilar lymphadenopathy.

Hilar lymphadenopathy

Quick Tip: Asbestosis is a basal interstitial fibrosis; enlarged hilar nodes point instead to sarcoidosis or silicosis.



131. Gout can be precipitated by all of the following EXCEPT:

- (A) Thiazides
- (B) Furosemide
- (C) Cyclosporine
- (D) High dose salicylates

Correct Answer: (D) High dose salicylates

SOLUTION:

Step 1: The question is really about which agent does not raise uric acid. Hyperuricemia triggers acute gout, so we look for the drug that does not retain urate.

Step 2: Thiazide and loop diuretics both compete with urate for tubular secretion and curtail its excretion, raising serum levels. Calcineurin inhibitors like cyclosporine impair urate clearance similarly. All three are classic precipitants.

Step 3: Aspirin and other salicylates act in a biphasic way. Small doses block urate secretion and elevate uric acid, but large doses (above about 3 g/day) block reabsorption and promote uricosuria, lowering serum urate. So high-dose salicylate would not provoke gout.

Step 4: The agent that does not precipitate gout is high-dose salicylate.

High dose salicylates

Quick Tip: Salicylates are biphasic: low doses retain urate, but high doses are uricosuric.



132. Rupture of a berry aneurysm most commonly results in:

- (A) Subarachnoid hemorrhage
- (B) Subdural hemorrhage
- (C) Extradural hemorrhage
- (D) Intra-parenchymal hemorrhage

Correct Answer: (A) Subarachnoid hemorrhage

SOLUTION:

Step 1: A berry aneurysm is a thin-walled saccular outpouching at the arterial bifurcations of the circle of Willis, which sits within the subarachnoid space.

Step 2: Because the aneurysm lies in that space, its rupture spills arterial blood straight into the subarachnoid compartment, giving the picture of a thunderclap headache from subarachnoid hemorrhage. This is the leading cause of spontaneous subarachnoid bleeding (trauma being the overall most common cause).

Step 3: The other choices have different mechanisms: subdural from bridging veins, extradural from the middle meningeal artery, and intraparenchymal from hypertensive vessel rupture. They do not arise from berry aneurysm rupture.

Step 4: Hence rupture of a berry aneurysm produces subarachnoid hemorrhage.

Subarachnoid hemorrhage

Quick Tip: Berry aneurysms sit in the subarachnoid space at the circle of Willis.



133. Round pneumonia is seen with:

- (A) Streptococcal pneumonia
- (B) Kerosene oil aspiration
- (C) Lung cancer
- (D) Mendelson syndrome

Correct Answer: (A) Streptococcal pneumonia

SOLUTION:

Step 1: Round pneumonia describes a well-defined spherical area of consolidation, most often encountered in young children whose lungs lack mature collateral ventilation pathways, which keeps the infection confined and rounded.

Step 2: The classic causative organism is the pneumococcus, *Streptococcus pneumoniae*, which is why streptococcal pneumonia is the correct association.

Step 3: The distractors represent other lung processes: kerosene aspiration leads to hydrocarbon pneumonitis, Mendelson syndrome is acid-aspiration pneumonitis, and lung cancer is a neoplastic mass. The relevance of round pneumonia is that radiologically it can resemble a tumour and must be distinguished from one.

Step 4: Thus round pneumonia is linked to streptococcal pneumonia.

Streptococcal pneumonia

Quick Tip: This spherical consolidation in children is most often caused by the pneumococcus.



134. HIV RNA detection by PCR (viral load assay) can reliably detect as low as how many copies of viral RNA per millilitre of blood?

- (A) 30 copies viral RNA/ml of blood
- (B) 40 copies viral RNA/ml of blood
- (C) 50 copies of viral RNA/ml of blood
- (D) 60 copies of viral RNA/ml of blood

Correct Answer: (B) 40 copies viral RNA/ml of blood

SOLUTION:

Step 1: HIV nucleic acid testing by reverse-transcriptase PCR measures circulating viral particles and expresses the answer as copies of HIV RNA in each millilitre of plasma. This quantitative figure guides treatment decisions and tells the clinician how well the antiretroviral regimen is suppressing replication.

Step 2: For the widely used clinical platforms the dependable floor of detection sits at **40** copies per millilitre. Below that level the assay can no longer give a trustworthy number, so 40 copies/ml is the accepted answer.

Step 3: Values such as 30, 50 or 60 copies/ml do not represent the established sensitivity limit. Ultra-sensitive research tools can sense even one copy per millilitre, but the question asks about the standard reliable threshold.

40 copies viral RNA/ml of blood

Quick Tip: Routine clinical viral load assays bottom out at this two-digit copy number.

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135. What is the most common cause of complete heart block (acquired complete AV block) in infants and children?

- (A) SLE
- (B) Surgery for congenital heart disease
- (C) Viral myocarditis
- (D) Rheumatic fever

Correct Answer: (B) Surgery for congenital heart disease

SOLUTION:

Step 1: When a child develops a permanent acquired third-degree AV block, the leading explanation is injury sustained while correcting a congenital cardiac defect surgically. Therefore option b is correct.

Step 2: During repair the AV node or its surrounding conduction pathway can be damaged by bleeding, reduced blood supply, tissue death, swelling, or mechanical cutting, any of which interrupts the normal electrical relay between atria and ventricles.

Step 3: Ranking second is congenital heart disease that comes packaged with congenital complete heart block, a distinct entity from the post-operative form.

Step 4: Inflammatory causes such as viral myocarditis, acute rheumatic fever, Lyme disease and drug toxicity (digitalis) can block AV conduction too, yet they tend to resolve and occur less often, so none outranks surgical trauma.

Surgery for congenital heart disease

Quick Tip: Think of trauma to the AV node during cardiac repair in children.



136. A banana shaped left ventricle on imaging is characteristically seen in which condition?

- (A) HOCM (hypertrophic obstructive cardiomyopathy)
- (B) DCM (dilated cardiomyopathy)
- (C) RCM (restrictive cardiomyopathy)
- (D) Takotsubo cardiomyopathy

Correct Answer: (A) HOCM (hypertrophic obstructive cardiomyopathy)

SOLUTION:

Step 1: Cavity morphology is a recognised imaging signpost. In hypertrophic cardiomyopathy the thickened, asymmetric septum squeezes the chamber into a slender curved silhouette resembling a banana, so option a is the right pick.

Step 2: A round, ball-like (spherical) chamber instead points to dilated cardiomyopathy where the muscle thins and the heart balloons out evenly.

Step 3: Takotsubo or stress cardiomyopathy produces transient apical ballooning that mimics an octopus pot, and apical hypertrophic cardiomyopathy carves out a spade-shaped cavity on ventriculography.

Step 4: After a myocardial infarction the wall may bulge or form an aneurysm, distorting the ventricle, but this is not banana shaped. Hence hypertrophic cardiomyopathy remains the single best answer.

HOCM

Quick Tip: Asymmetric septal thickening curves the cavity into a banana shape.

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137. Which of the following is NOT a high pitched heart sound?

- (A) Mid systolic click
- (B) Pericardial shudder
- (C) Opening snap
- (D) Tumor plop sound

Correct Answer: (D) Tumor plop sound

SOLUTION:

Step 1: Classifying these auscultatory findings by frequency separates the clicks and snaps (high) from the gallops and the myxoma sound (low). Since the tumour plop belongs to the low frequency group, it is the odd one out and option d is correct.

Step 2: A mid systolic click, the classic accompaniment of mitral valve prolapse, is sharp and high pitched, audible during systole.

Step 3: The opening snap of mitral stenosis and the pericardial knock or shudder of constrictive pericarditis are both crisp, high frequency early-diastolic events.

Step 4: By contrast the tumour plop of a left atrial myxoma is a soft, low pitched diastolic sound produced when the pedunculated tumour tumbles through the mitral orifice, sometimes audible only in certain body positions. Its low pitch makes it the exception asked for.

Tumor plop sound

Quick Tip: Group these by pitch; the atrial myxoma sound is the low pitched one.



138. A Mentzer index of more than 13 suggests a diagnosis of which condition?

- (A) Iron deficiency anemia
- (B) Thalassemia
- (C) Hereditary spherocytosis
- (D) Autoimmune hemolytic anemia

Correct Answer: (A) Iron deficiency anemia

SOLUTION:

Step 1: The Mentzer index is a quick microcytosis discriminator obtained by dividing the average red cell size by the red cell count: **Mentzer index** = $\frac{MCV}{RBC \text{ count}}$.

Step 2: A result above 13 steers the diagnosis toward iron deficiency anaemia, whereas a result under 13 favours beta thalassaemia. With a value exceeding 13 the answer is iron deficiency anaemia, option a.

Step 3: Mechanistically, iron-starved marrow turns out a reduced number of small cells, so both the numerator (MCV) and denominator (RBC) are depressed; the quotient climbs past 13.

Step 4: In thalassaemia the marrow still churns out plenty of red cells that happen to be small, keeping the RBC count high while MCV stays low, so the ratio drops below 13. Spherocytosis and autoimmune haemolysis lie outside the scope of this index.

Iron deficiency anemia

Quick Tip: MCV divided by RBC count above 13 points away from thalassaemia.



139. Chronic non-spherocytic hemolytic anemia is seen in which WHO class of G6PD deficiency?

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

Correct Answer: (A) Class I

SOLUTION:

Step 1: The World Health Organization sorts G6PD variants by how little enzyme remains and how badly the red cells break down. The variant that gives ongoing, lifelong (congenital non-spherocytic) haemolysis is Class I, making option a correct.

Step 2: In Class I the residual enzyme activity is under 10% of normal, frequently because mutations sit at the substrate or NADP binding pockets, so red cells cannot survive even routine oxidative stress and haemolyse continuously without any trigger.

Step 3: Class II (such as G6PD Mediterranean) shares severe deficiency but haemolyses only in bursts after oxidant exposure, while Class III (G6PD A-) carries a milder 10 to 60 percent deficiency with occasional drug- or infection-induced episodes.

Step 4: Class IV has essentially normal enzyme with no haemolysis and Class V actually shows raised activity; both are clinically silent. Hence only Class I explains chronic non-spherocytic haemolytic anaemia.

Class I

Quick Tip: The most severe variant with under 10 percent activity haemolyses for life.

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140. All of the following are markers of acute kidney injury EXCEPT?

- (A) Clusterin
- (B) Osteopontin
- (C) Alanine aminopeptidase
- (D) Acid phosphatase

Correct Answer: (D) Acid phosphatase

SOLUTION:

Step 1: A growing list of biomarkers signals early tubular injury in acute kidney injury, allowing detection before serum creatinine rises. We must spot the one substance that does not belong to this group.

Step 2: Alanine aminopeptidase is a brush-border tubular enzyme that leaks with injury; clusterin and osteopontin are stress proteins upregulated in damaged tubules. All three are validated AKI markers, joining KIM-1, NGAL, IL-18, NAG, cystatin C and beta-2-microglobulin.

Step 3: Acid phosphatase, by contrast, is not recognised as a kidney injury marker, so it is the exception and option d is the answer.

Step 4: The trap lies in confusing acid phosphatase with alkaline phosphatase; it is the alkaline form that figures among renal tubular enzyme markers.

Acid phosphatase

Quick Tip: One option is the acid form of an enzyme; the alkaline form is the real renal marker.

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141. Sialolithiasis is most commonly seen in which gland?

- (A) Parotid
- (B) Sublingual
- (C) Submandibular
- (D) Minor salivary gland

Correct Answer: (C) Submandibular

SOLUTION:

Step 1: The question asks which salivary gland most often develops calculi.

Step 2: Among the major and minor salivary glands, the submandibular gland accounts for the overwhelming majority of cases, roughly four out of five.

Step 3: Several anatomical and physiological factors are responsible. Wharton's duct is long and runs in an uphill direction toward the floor of the mouth, its saliva is thick and mucous, and the calcium content is high. Together these promote pooling of secretions and precipitation of calcium salts.

Step 4: By contrast the parotid produces thin serous saliva, the sublingual gland and minor glands secrete small volumes, so each of these is an uncommon source of stones.

Submandibular gland

Quick Tip: Think of the gland with thick mucinous saliva and a long uphill duct.

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142. ABPI (ankle brachial pressure index) of imminent necrosis is

- (A) < 0.3
- (B) 0.3
- (C) < 0.6
- (D) > 0.6

Correct Answer: (A) < 0.3

SOLUTION:

Step 1: ABPI is calculated by dividing the higher ankle systolic pressure by the brachial systolic pressure; it quantifies how badly the lower-limb arteries are narrowed.

Step 2: As the ratio falls the clinical picture deteriorates in steps: a healthy limb sits near 1.0, intermittent claudication develops below about 0.9, and rest pain emerges near 0.4.

Step 3: Once the value sinks below **0.3** the residual blood flow is inadequate to keep tissue alive, so frank necrosis and gangrene are imminent.

Step 4: The other listed figures correspond to milder ischaemia and would not herald tissue death.

< 0.3

Quick Tip: The lower the index, the worse the perfusion; necrosis looms at the very lowest value.

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143. Indications of liver transplantation are all EXCEPT

- (A) Biliary atresia
- (B) Sclerosing cholangitis
- (C) Hepatitis A
- (D) Cirrhosis

Correct Answer: (C) Hepatitis A

SOLUTION:

Step 1: This is an all-except question, so we identify the one condition that does not warrant a new liver.

Step 2: Biliary atresia destroys the bile ducts in infancy and is the leading paediatric reason for transplantation. Primary sclerosing cholangitis progressively scars the biliary tree and end-stage cirrhosis from any aetiology destroys hepatic function; all three are standard indications.

Step 3: Hepatitis A, by contrast, is an acute fecal-oral viral illness that almost always clears completely and leaves no chronic injury. With no irreversible damage there is nothing to transplant for.

Step 4: Hence hepatitis A stands out as the exception.

Hepatitis A

Quick Tip: Which listed liver disease is acute and self-limiting rather than chronic and irreversible?

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144. Commonest type of anal canal carcinoma is?

- (A) Squamous cell carcinoma
- (B) Adenocarcinoma
- (C) Adenoacanthoma
- (D) Papillary type

Correct Answer: (A) Squamous cell carcinoma

SOLUTION:

Step 1: Histology of a tumour follows the epithelium from which it springs. The lower anal canal carries squamous mucosa.

Step 2: Consequently the dominant malignancy at this site is squamous cell carcinoma, which arises in that squamous lining.

Step 3: Basal cell carcinoma ranks second and malignant melanoma is another recognised but uncommon anal tumour.

Step 4: Adenocarcinoma is characteristic of the glandular colorectal mucosa rather than the anal canal, so it is the wrong choice here.

Squamous cell carcinoma

Quick Tip: Match the tumour type to the squamous lining of the anal canal.

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145. True about blind loop syndrome, all EXCEPT

- (A) Syndrome of bacterial overgrowth
- (B) Steatorrhea, megaloblastic anemia and deficiency of fat soluble vitamins
- (C) Surgery is not indicated
- (D) ¹⁴C-xylose or ¹⁴C-cholylglycine breath tests are indirect tests for bacterial overgrowth

Correct Answer: (C) Surgery is not indicated

SOLUTION:

Step 1: We must find the single incorrect statement about blind loop syndrome.

Step 2: The condition is fundamentally bacterial overgrowth in a stagnant loop of small intestine, confirming option a as true.

Step 3: Bacterial deconjugation of bile salts and B12 capture explain the steatorrhoea, megaloblastic anaemia and fat-soluble vitamin loss in option b, while the ¹⁴C-labelled xylose and cholyglycine breath tests in option d are well-known indirect screens for overgrowth.

Step 4: Although antibiotics and replacement therapy form the mainstay, an underlying structural lesion that creates the stagnant loop often needs surgical correction. Saying surgery is never needed is therefore false.

Surgery is not indicated

Quick Tip: If an anatomical blind loop causes the stasis, what definitive treatment may still be required?

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146. Prophylactic thyroidectomy is indicated in

- (A) Hashimoto thyroiditis
- (B) MEN type 2
- (C) Riedel thyroiditis
- (D) De-Quervain's thyroiditis

Correct Answer: (B) MEN type 2

SOLUTION:

Step 1: The key is identifying a thyroid condition where future cancer is so predictable that the gland is removed before disease appears.

Step 2: Familial medullary thyroid carcinoma occurs as part of the MEN 2 syndromes (2A and 2B), all linked to autosomal dominant RET mutations.

Step 3: Carriers almost always develop medullary carcinoma, often at a very young age, so guidelines recommend taking out the whole thyroid prophylactically once the RET mutation is documented, typically by around five years of age.

Step 4: The three thyroiditis options are benign inflammatory disorders treated with drugs, not preventive surgery, so they are excluded.

MEN type 2

Quick Tip: Which RET-linked syndrome makes medullary thyroid cancer nearly inevitable?

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147. Choledochal cyst is dilatation of

- (A) Gall bladder
- (B) CBD
- (C) Hepatic duct
- (D) Bile duct

Correct Answer: (D) Bile duct

SOLUTION:

Step 1: We are asked which structure is abnormally dilated in a choledochal cyst.

Step 2: By definition it is a congenital cystic widening of the biliary system, which may affect the extrahepatic portion, the intrahepatic portion, or both.

Step 3: Since the dilatation is of the biliary tree as a whole rather than a single named segment, bile duct is the most accurate descriptor.

Step 4: The common bile duct (type I) is the commonest site, but the gall bladder and hepatic duct alone do not capture the condition, so the encompassing answer is preferred.

Bile duct

Quick Tip: It is a congenital cystic dilatation of the biliary tree, not just one named duct.

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148. A gum tumor measures 5 cm in dimension with contralateral lymph node enlargement of 2 cm. There is no distant metastasis. What is the stage of the tumor?

- (A) T3N2M0
- (B) T2N2M0
- (C) T1N2M0
- (D) T3N3M0

Correct Answer: (A) T3N2M0

SOLUTION:

Step 1: Read the tumor size against the T scale. Oral cavity primaries are sized as T1 (≤ 2 cm), T2 (≤ 4 cm) and T3 (> 4 cm). A 5 cm gum lesion crosses the 4 cm line, so the primary is T3.

Step 2: Place the node on the N scale. The key detail is that the involved node is on the opposite (contralateral) side. Any contralateral or bilateral node up to 6

cm is classified as N2 (specifically N2c). A 2 cm contralateral node is therefore N2.

Step 3: Confirm distant spread. No distant metastasis is reported, which is M0. N3 is reserved for nodes over 6 cm, so it does not apply to a 2 cm node.

Step 4: Assemble the stage. Putting the three values together gives T3, N2, M0.

T3N2M0

Quick Tip: A 5 cm primary is T3; a contralateral node under 6 cm is N2c; no distant spread is M0.

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149. What is the appropriate management of a carcinoma of the lateral border of the tongue after primary resection?

- (A) Chemotherapy
- (B) Radiotherapy
- (C) Observation
- (D) Neck dissection

Correct Answer: (D) Neck dissection

SOLUTION:

Step 1: Recognise the drainage pattern. The tongue's lateral border drains readily into the cervical nodal basins, so tongue cancers are notorious for early, sometimes hidden, neck spread.

Step 2: Decide on the neck. Because of this nodal risk, treating the primary alone is inadequate. The standard is to clear the regional nodes via a modified radical or selective neck dissection.

Step 3: Rule out the alternatives. Plain observation gambles on missing microscopic nodal disease. Radiotherapy after surgery is reserved for adverse pathology like perineural invasion, lymphovascular invasion, or proven node positivity, and chemotherapy is not the first locoregional move.

Neck dissection

Quick Tip: Tongue cancers spread early to neck nodes, so the neck must be cleared surgically.



150. Over the last decade, the morbidity of duodenal ulcer has been reduced mainly due to which of the following?

- (A) Life style modification
- (B) Eradication of H. pylori
- (C) Proton pump inhibitors
- (D) None

Correct Answer: (C) Proton pump inhibitors

SOLUTION:

Step 1: Frame the question. The stem asks which intervention is most responsible for the falling morbidity of duodenal ulcer in recent years.

Step 2: Pick the dominant factor. Proton pump inhibitors transformed ulcer care by producing strong, durable acid suppression that heals ulcers quickly and prevents acid-driven complications. Alongside improved insight into perforated peptic ulcer, this drove down complication rates.

Step 3: Weigh the rest. H. pylori eradication mainly prevents recurrence and lifestyle change is a minor contributor for duodenal ulcer, so neither matches the

emphasis of this recall answer as well as PPIs do.

Proton pump inhibitors

Quick Tip: Potent acid suppression that heals ulcers fast is the key advance.

• • •

151. What is the most common conotruncal anomaly?

- (A) TGA
- (B) Tetralogy of Fallot
- (C) Truncus arteriosus
- (D) Double outlet right ventricle

Correct Answer: (A) TGA

SOLUTION:

Step 1: Recall what conotruncal means. These lesions arise from faulty division of the cardiac outflow tract and from defective neural crest cell migration, producing a family of great-vessel anomalies.

Step 2: Rank within the group. The members are TGA, tetralogy of Fallot, truncus arteriosus and double outlet right ventricle. Of these, transposition of the great arteries leads in frequency in this question.

Step 3: Eliminate the rest. The remaining three are genuine conotruncal defects but are not the single most common per this answer key.

TGA (transposition of the great arteries)

Quick Tip: Among outflow-tract (conotruncal) defects, transposition of the great arteries tops this list.

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152. Which of the following is NOT included as a major criterion in the modified Jones criteria?

- (A) Polyarthralgia
- (B) Carditis
- (C) Chorea
- (D) Erythema marginatum

Correct Answer: (A) Polyarthralgia

SOLUTION:

Step 1: List the five major manifestations. Acute rheumatic fever's major criteria are carditis, migratory polyarthritis, Sydenham chorea, erythema marginatum, and subcutaneous nodules.

Step 2: Compare the options. Three of the choices, carditis, chorea, and erythema marginatum, sit squarely in the major group. The remaining choice, polyarthralgia, is mere joint pain and is classified among the minor criteria.

Step 3: Resolve the contrast. The trap is polyarthritis versus polyarthralgia. Inflamed joints (arthritis) are major, whereas painful joints alone (arthralgia) are minor, so polyarthralgia is the exception.

Polyarthralgia

Quick Tip: Polyarthritis is major; mere joint pain (arthralgia) is a minor criterion.

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153. The swallowing and breathing reflex is NOT seen in the fetus until which gestational age?

- (A) 14 weeks
- (B) 12 weeks
- (C) 16 weeks
- (D) Appears in all the above periods

Correct Answer: (B) 12 weeks

SOLUTION:

Step 1: Build the timeline. Intrauterine behaviour starts with muscle contractions near 8 weeks and lateral flexion shortly after. Swallowing and breathing-type motions emerge around the 13 to 14 week mark.

Step 2: Test each age. At 12 weeks the fetus has not yet reached the 13 to 14 week window, so swallowing and breathing motions are still absent. At 14 and 16 weeks they are already established.

Step 3: Conclude. The single age at which the reflex is not yet seen is therefore 12 weeks.

12 weeks

Quick Tip: Breathing and swallowing motions begin by 13 to 14 weeks, so they are absent at 12 weeks.

...

154. What is the most common bacterial cause of lower respiratory tract infection in a 3 year old child?

- (A) Klebsiella
- (B) H. influenzae
- (C) Streptococcus pneumoniae
- (D) Staphylococcus aureus

Correct Answer: (C) Streptococcus pneumoniae

SOLUTION:

Step 1: Note the overall leader. If viruses were included, RSV would top the list of childhood pneumonia, but every option here is bacterial, so the stem targets the commonest bacterial agent.

Step 2: Name the top bacterium. Streptococcus pneumoniae (the pneumococcus) is the most frequent bacterial cause of pneumonia in this age group.

Step 3: Set aside the others. Klebsiella, H. influenzae, and Staph aureus are recognised but less common bacterial causes, while atypical pneumonia is driven by mycoplasma and chlamydia.

Streptococcus pneumoniae

Quick Tip: Among bacteria, pneumococcus leads childhood pneumonia (RSV leads overall).

• • •

155. Pedigree analysis chart is used for which of the following purposes?

- (A) Used for growth monitoring
- (B) To assess side effect during chemotherapy
- (C) Used to see genetic transmission
- (D) To assess developmental delay in infant

Correct Answer: (C) Used to see genetic transmission

SOLUTION:

Step 1: The key idea here is heredity. A pedigree chart maps out the members of a family over at least three generations using agreed symbols, marking who is affected and who is not by a particular trait.

Step 2: By examining the pattern of affected and unaffected individuals, a clinician can work out the mode of inheritance, for example autosomal dominant, autosomal recessive or X linked. This is precisely what is meant by following the path of genetic transmission.

Step 3: The remaining choices describe unrelated clinical tasks. Growth charts handle growth monitoring, toxicity logs cover chemotherapy reactions, and developmental screening tools assess infant milestones. None of these track inheritance, so the correct selection is the option about genetic transmission.

Used to see genetic transmission

Quick Tip: Think about a family tree drawn with symbols to track inheritance.

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156. In exchange blood transfusion, which blood product is used?

- (A) Whole blood
- (B) EPP
- (C) Serum
- (D) Packed cells

Correct Answer: (A) Whole blood

SOLUTION:

Step 1: The procedure being described swaps out the recipient's circulating blood little by little and substitutes it with donor blood. The classic indication is a

newborn with dangerously high bilirubin or ongoing haemolysis.

Step 2: To achieve a balanced replacement of red cells and plasma volume at the same time, the donor product must contain both. Fresh whole blood fits this requirement perfectly, since it carries the full set of cellular and liquid components.

Step 3: The alternatives fall short. Serum has no cells, EPP is not a complete blood product, and packed cells deliver only concentrated red cells without plasma. Only fresh whole blood meets every need of the exchange.

Whole blood

Quick Tip: You need to replace both red cells and plasma at the same time.

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157. The most common organ involved in congenital tuberculosis is?

- (A) Liver
- (B) Pancreas
- (C) Kidney
- (D) Lung

Correct Answer: (A) Liver

SOLUTION:

Step 1: To answer this, trace how the infection reaches the unborn child. The dominant pathway is haematogenous, with bacilli travelling along the umbilical vein from an infected placenta.

Step 2: Blood carried by the umbilical vein enters the fetal circulation by way of the liver. The first seeding of organisms therefore lodges in hepatic tissue and forms the primary complex, placing the liver at the top of the list of affected

organs.

Step 3: A second, less frequent mechanism is aspiration or swallowing of infected amniotic fluid, which can cause pulmonary or gut disease and explains the lung distractor. Pancreatic and renal involvement are not typical early targets. Hence the liver is the single best answer.

Liver

Quick Tip: Follow the umbilical vein and ask which organ it drains into first.

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158. Antiendomysial antibody is used in the screening of?

- (A) Myasthenia gravis
- (B) Autoimmune hepatitis
- (C) Coeliac disease
- (D) Graves disease

Correct Answer: (C) Coeliac disease

SOLUTION:

Step 1: The question pivots on which disease pairs with the anti-endomysial antibody. This antibody targets the endomysium of smooth muscle and is the serological signature of gluten sensitivity.

Step 2: Gluten triggers flattening of the small bowel villi and mucosal immune activation in coeliac disease. Because EMA testing carries very high sensitivity and specificity, it serves as an excellent screening marker, alongside tissue transglutaminase and antigliadin antibodies.

Step 3: Each distractor belongs to a different autoantibody. Myasthenia gravis links to acetylcholine receptor antibodies, autoimmune hepatitis to anti smooth

muscle antibodies, and Graves disease to TSH receptor stimulating antibodies. None involve endomysium, so the answer is coeliac disease, managed by lifelong gluten avoidance.

Coeliac disease

Quick Tip: Link this antibody to a gluten driven small bowel disorder.

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159. Regarding Reye syndrome, the FALSE statement is?

- (A) Associated with salicylate ingestion
- (B) Hepatomegaly
- (C) Jaundice
- (D) Hypoglycemia

Correct Answer: (C) Jaundice

SOLUTION:

Step 1: This is a negative stem asking which item does not fit Reye syndrome. Recall that this condition is a fatty liver plus brain swelling that follows a viral infection treated with aspirin in a child.

Step 2: Three of the options are genuine features. Salicylate exposure after influenza or chickenpox is the classic trigger, the fat laden liver becomes enlarged giving hepatomegaly, and disordered hepatic metabolism produces low blood glucose and high ammonia.

Step 3: The biochemical picture is rising transaminases with a normal bilirubin, so the skin and sclera do not turn yellow. Clinically jaundice is not a usual finding, which makes that statement the incorrect one and the correct choice for this question.

Quick Tip: Enzymes rise but bilirubin stays normal, so what skin sign is missing?

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160. A child has a lesion on the buttocks for 2 years, spreading peripherally with central scarring and non symptomatic. The diagnosis is?

- (A) Erythema annulare centrifugum
- (B) Erythema migrans
- (C) Erythema marginatum
- (D) Erythema gyratum repens

Correct Answer: (A) Erythema annulare centrifugum

SOLUTION:

Step 1: Focus on the description, a ring shaped lesion that creeps outward while healing in the centre, present for two years and causing no symptoms. This slow, ring forming, quiet eruption is the hallmark of erythema annulare centrifugum, which advances only a few millimetres a day.

Step 2: Compare the other rings. The lesion of erythema migrans accompanies a tick bite and Lyme disease and is not a chronic buttock plaque. Erythema gyratum repens moves quickly in a striking grained pattern and signals an internal cancer, neither of which matches a benign two year course.

Step 3: Erythema marginatum belongs to rheumatic fever and appears with cardiac or joint disease, not as an isolated chronic skin ring. Eliminating these leaves the centrifugally enlarging, centrally clearing, asymptomatic lesion, which is erythema annulare centrifugum.

Erythema annulare centrifugum

Quick Tip: A chronic, asymptomatic ring that clears centrally and creeps outward slowly.



161. The most common cause of amputation in India is?

- (A) Diabetic gangrene
- (B) Gas gangrene
- (C) Road traffic accident
- (D) Tumors

Correct Answer: (C) Road traffic accident

SOLUTION:

Step 1: Start by separating the reasons a limb is removed into two groups. Absolute reasons include gas gangrene, diabetic gangrene and an irreversible loss of blood flow, while relative reasons include injury, tumours and severe loss of function.

Step 2: When all causes are tallied, trauma to the limb stands out as the leading reason for amputation, since severe injury can wreck the vasculature or shatter the limb beyond salvage.

Step 3: The dominant source of such serious limb trauma in India is road traffic accidents, reflecting the high burden of road injuries. The gangrene options and tumours, though valid indications, account for fewer cases, so the road traffic accident option is correct.

Road traffic accident

Quick Tip: Trauma leads overall, and what causes most limb trauma in India?

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162. Which of the following is NOT a complication of fracture of the neck of the femur?

- (A) Non-union
- (B) Malunion
- (C) Avascular necrosis (AVN)
- (D) Osteoarthritis

Correct Answer: (B) Malunion

SOLUTION:

Step 1: The femoral neck sits inside the hip joint capsule, and its blood supply through the retinacular vessels is easily torn at the moment of injury. This anatomy explains why its complications are unusual.

Step 2: Because the dead-end blood supply is so fragile, the head frequently loses its circulation, giving avascular necrosis - the single most frequent problem. When the fragments fail to knit, non-union results, which is the next most common issue.

Step 3: Over the following years, a head that has gone avascular or collapsed wears out the joint surface and produces secondary osteoarthritis of the hip.

Step 4: A united but deformed position, that is malunion, requires healing within surrounding soft tissue and periosteum. An intracapsular fracture lacks this, so malunion essentially never happens here, making it the exception.

Malunion is not a complication of fracture neck of femur

Quick Tip: An intracapsular fracture with a poor blood supply dies or fails to unite, it does not heal in a deformed position.

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163. The most common site for an osteoporotic vertebral fracture is?

- (A) Dorsolumbar spine
- (B) Cervical spine
- (C) Lumbosacral spine
- (D) Dorsal spine

Correct Answer: (A) Dorsolumbar spine

SOLUTION:

Step 1: In osteoporosis the bone mass falls but its chemical composition stays normal, so the marker that gives it away clinically is a low-trauma fracture rather than a blood test (calcium, phosphate and ALP are unremarkable).

Step 2: The vertebral bodies, being rich in trabecular bone, are the earliest and commonest to crush. The peak load in the spinal column falls where the stiff chest segment meets the supple lower back.

Step 3: That meeting point is the thoracolumbar or dorsolumbar junction, which is why most osteoporotic wedge and compression fractures, and the resulting back pain, are found there.

Step 4: The wrist (Colles) and hip (femoral neck) round out the classic fragility-fracture trio, but the question asks specifically about vertebrae.

Dorsolumbar spine

Quick Tip: Think of the thoracolumbar junction, where the stiff thoracic spine meets the mobile lumbar spine.

• • •

164. Froment's sign is positive in cases of weakness of?

- (A) Thumb adduction
- (B) Thumb abduction
- (C) Thumb flexion
- (D) Thumb extension

Correct Answer: (A) Thumb adduction

SOLUTION:

Step 1: The adductor pollicis pulls the thumb toward the palm and is one of the small hand muscles run by the ulnar nerve. Froment's sign is simply a clinical way of catching its failure.

Step 2: Ask the person to clamp a piece of paper between thumb and the radial border of the index finger and then tug it. A healthy adductor pollicis keeps the thumb straight while gripping.

Step 3: When the ulnar nerve is out of action, this adductor cannot generate the pinch. The brain recruits the flexor pollicis longus, which is fed by the median nerve, to do the job instead.

Step 4: That substitution bends the tip of the thumb at the IP joint, and this tell-tale flexion is the positive test. So the underlying weakness lies in adduction of the thumb.

Thumb adduction (ulnar nerve / adductor pollicis)

Quick Tip: It signals ulnar nerve palsy, paralysing the adductor pollicis so the thumb flexes to grip.

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165. CASPAR criteria are used in the diagnosis of?

- (A) Psoriatic arthritis
- (B) Rheumatoid arthritis
- (C) Ankylosing spondylitis
- (D) Reactive synovitis

Correct Answer: (A) Psoriatic arthritis

SOLUTION:

Step 1: Reading the acronym makes the answer obvious - CASPAR is built from the words Classification criteria for Psoriatic Arthritis, pointing directly to psoriatic arthropathy.

Step 2: The rule requires inflammatory disease of a joint, the spine or an enthesitis, and then a tally of 3 or more points drawn from a short checklist.

Step 3: Points are earned for psoriasis (present or by history), psoriatic nail changes, a negative rheumatoid factor, sausage-like dactylitis, and X-ray evidence of new bone near the joints of the hand or foot.

Step 4: Because rheumatoid arthritis and ankylosing spondylitis have their own separate criteria sets, CASPAR belongs squarely to psoriatic arthritis.

Psoriatic arthritis

Quick Tip: Read the acronym - Classification criteria for Psoriatic ARthritis.

• • •

166. The development of chondrosarcoma is related with?

- (A) Maffucci syndrome
- (B) Felty syndrome
- (C) Both a and b
- (D) None of the above

Correct Answer: (A) Maffucci syndrome

SOLUTION:

Step 1: A chondrosarcoma that grows out of an earlier benign cartilage tumour is termed secondary, and the usual seedbeds are enchondromas and osteochondromas.

Step 2: When enchondromas are multiple, as in Ollier disease, and especially when paired with vascular malformations, as in Maffucci syndrome, the chance of one of them turning cancerous climbs to around a quarter to a third of patients.

Step 3: This dwarfs the risk from a single osteochondroma (about 2%), underlining why Maffucci syndrome is the classic answer for chondrosarcoma association.

Step 4: Felty syndrome is a haematological and rheumatological entity, namely rheumatoid arthritis with a big spleen and low neutrophil count, and carries no cartilage-tumour link, so it is excluded.

Maffucci syndrome

Quick Tip: Multiple enchondromas with haemangiomas carry a high malignant change risk; Felty is an RA triad.



167. Infection of the index finger spreads to which space?

- (A) Thenar space
- (B) Mid palmar space
- (C) Hypothenar space
- (D) Flexion space

Correct Answer: (A) Thenar space

SOLUTION:

Step 1: Beneath the flexor tendons the palm is split by a septum into a radial pocket (thenar space) and an ulnar pocket (mid palmar space).

Step 2: Each digit drains pus into a specific pocket along its lumbrical canal. The index finger lies on the radial side and therefore links with the thenar space.

Step 3: The middle, ring and little fingers sit on the ulnar side and drain to the mid palmar space, which is the key contrast to remember.

Step 4: Since the question concerns the index finger, the infection travels to the thenar space. The hypothenar option is a distractor with no such communication.

Thenar space

Quick Tip: Index finger drains radially to the thenar space; middle, ring and little drain to mid palmar.

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168. The amniotic fluid volume is maximum at?

- (A) 32 weeks
- (B) 34 weeks
- (C) 36 weeks
- (D) 40 weeks

Correct Answer: (C) 36 weeks

SOLUTION:

Step 1: Liquor amnii is produced and reabsorbed continuously, and its net amount tracks an inverted curve across gestation - climbing first, then receding.

Step 2: The curve crests close to 1 litre in the early third trimester, specifically near 36 weeks of pregnancy.

Step 3: From that crest onward the volume tapers, so by the time of full term at 40 weeks it has already fallen to about 600 to 800 mL.

Step 4: This is precisely why post-dated pregnancies are watched for low fluid (oligohydramnios). The peak therefore sits at 36 weeks.

36 weeks

Quick Tip: The liquor peaks near 1 litre in the early third trimester, then falls before term.

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169. Beta hCG is detected earliest in serum by which day of conception?

- (A) 8 days
- (B) 15 days
- (C) 21 days
- (D) 30 days

Correct Answer: (A) 8 days

SOLUTION:

Step 1: The hormone tested in pregnancy is human chorionic gonadotropin, made by the syncytiotrophoblast layer of the early conceptus. Its beta subunit is specific and is what assays measure.

Step 2: Trophoblastic tissue starts releasing hCG into the maternal bloodstream right after the blastocyst implants. Sensitive serum immunoassays pick it up at roughly 8 to 9 days post conception.

Step 3: Because the hormone must accumulate before it spills into urine, home urine kits turn positive only around 2 weeks after conception. So serum always wins on timing.

Step 4: Comparing the choices, 8 days matches the earliest serum threshold, while 15, 21 and 30 days are far beyond the first detectable point.

8 days

Quick Tip: Serum picks up hCG before urine does - think roughly a week after conception.

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170. Which of the following is true about the expected date of delivery (EDD)?

- (A) Less than 10% of deliveries occur on EDD
- (B) Less than 20% of deliveries occur on EDD
- (C) 80% of the deliveries occur on EDD
- (D) 90% of the deliveries occur on EDD

Correct Answer: (A) Less than 10% of deliveries occur on EDD

SOLUTION:

Step 1: EDD is a predicted date 280 days from the first day of the last period. Since gestation length varies between women, it cannot reliably pinpoint the actual day of birth.

Step 2: Data show only a small minority, well under 5%, deliver precisely on that predicted date. Most babies arrive within a week before or after it.

Step 3: Preterm births account for about 13% and post term for roughly 5 to 7%, which further spreads deliveries away from the single predicted day.

Step 4: Therefore the only accurate choice is that under 10% deliver on the EDD; claims of 80% or 90% are far too high.

Less than 10

Quick Tip: The EDD is just an estimate - very few babies actually arrive on that exact day.

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171. What is the most common cause of tenth day (secondary) postpartum bleeding?

- (A) Retained bits of membrane or placenta
- (B) Infection
- (C) Endometritis
- (D) Blood coagulopathy

Correct Answer: (A) Retained bits of membrane or placenta

SOLUTION:

Step 1: Bleeding on day ten falls into the secondary postpartum hemorrhage window, which runs from one day after birth up to about six weeks postpartum.

Step 2: When products of conception such as placental fragments or membranes stay behind in the uterus, the uterine cavity cannot involute fully and the placental bed keeps bleeding. This is the leading reason for late bleeding.

Step 3: Genital tract infection and endometritis usually develop on top of these retained products, so they are associated factors rather than the prime cause.

Step 4: Clotting disorders rarely present this late. So the most frequent culprit is retained membrane or placental tissue.

Retained bits of membrane

Quick Tip: Late postpartum bleeding usually means something was left behind in the uterus.

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172. Which of the following is true about luteoma of pregnancy?

- (A) Usually bilateral
- (B) It is a benign self limiting condition
- (C) It consists of luteinized cells
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: A pregnancy luteoma is a hormone-driven, benign ovarian overgrowth seen in gestation, fueled by the high hCG of pregnancy rather than being a true cancer.

Step 2: On examination or imaging it commonly shows up in both ovaries as solid, multinodular swellings, confirming the bilateral nature.

Step 3: Under the microscope the ovarian stroma is taken over by sheets of luteinized cells, which matches the cellular description in the options.

Step 4: Because it shrinks on its own once the baby is delivered and requires no surgery, it is benign and self limiting. With every individual statement valid, the combined choice is right.

All of the above

Quick Tip: Bilateral, luteinized, and resolves after delivery - all the listed features apply.

• • •

173. The investigation of choice for the diagnosis of pelvic inflammatory disease (PID) is?

- (A) Laparoscopy
- (B) Colposcopy
- (C) Hysteroscopy
- (D) Ultrasonography

Correct Answer: (A) Laparoscopy

SOLUTION:

Step 1: PID involves the uterus, tubes and surrounding pelvic structures. Since symptoms and signs overlap with many conditions, a direct-look test gives the most certain diagnosis.

Step 2: By inserting a laparoscope, the surgeon can actually see inflamed, reddened and swollen fallopian tubes with purulent material, and can take samples for culture. This direct confirmation is why it is the reference investigation.

Step 3: Colposcopy is aimed at cervical pathology and hysteroscopy at the endometrial cavity, neither of which reliably reveals tubal disease.

Step 4: Ultrasound helps detect collections like an abscess but cannot definitively diagnose early PID. Hence laparoscopy stands out.

Laparoscopy

Quick Tip: Think of the test that lets you directly see the inflamed tubes.

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174. All of the following are true regarding the management of intrauterine fetal death EXCEPT?

- (A) In 50% of cases spontaneous expulsion occurs in 2 weeks
- (B) Fibrinogen levels should be checked weekly
- (C) Delivery by medical induction is preferred if spontaneous expulsion does not occur
- (D) Caesarean section has a limited place in the management of intrauterine fetal death

Correct Answer: (A) In 50% of cases spontaneous expulsion occurs in 2 weeks

SOLUTION:

Step 1: Because the stem asks for the statement that is NOT true, we evaluate each option about handling a dead fetus retained in utero and pick the incorrect one.

Step 2: Most women go into labour on their own after fetal demise; roughly four out of five deliver within a couple of weeks. Saying only half expel in two weeks is too low, marking option A as the inaccurate choice.

Step 3: Retained dead products can trigger a consumptive coagulopathy, so serial fibrinogen checks are appropriate, making that statement correct. Likewise, when labour does not start, induction with uterotonic agents is the favored approach.

Step 4: Operative delivery by caesarean is generally avoided and kept for selected cases, so its limited role is a true statement. The odd one out is the 50% figure.

In 50

Quick Tip: Most women (about 80%) go into labour spontaneously within a couple of weeks - the 50% figure is the wrong one.

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175. Mediolateral episiotomy is preferred because it?

- (A) Reduces damage to the anal sphincter and anal canal
- (B) Causes less blood loss
- (C) Is easy to suture
- (D) Is an easy technique

Correct Answer: (A) Reduces damage to the anal sphincter and anal canal

SOLUTION:

Step 1: When the perineum is incised to widen the birth outlet, the surgeon can angle the cut either straight down (midline) or off to the side (mediolateral).

Step 2: By angling the incision laterally, the line of cutting moves away from the anal opening. This protects the anal sphincter and anal canal from being torn during a difficult delivery, which is the main benefit.

Step 3: The trade-off is that the mediolateral cut bleeds a bit more and is somewhat trickier to stitch, so options about less blood loss and easy suturing actually favor the midline approach instead.

Step 4: Hence the correct rationale for choosing mediolateral is sparing the anal sphincter and canal from injury.

Reduces damage to anal sphincter and anal canal

Quick Tip: The angled cut keeps the incision away from the anus, protecting the sphincter.



176. The following are causes of oligohydramnios EXCEPT?

- (A) IUGR
- (B) Postmaturity
- (C) Maternal dehydration
- (D) Labetolol

Correct Answer: (D) Labetolol

SOLUTION:

Step 1: Frame the question around fetal kidneys. After the first half of pregnancy, the volume of liquor depends mainly on how much urine the fetus makes. Low liquor (oligohydramnios) therefore points to reduced fetal urine, impaired placental flow, or maternal fluid loss.

Step 2: Check each listed option. IUGR has placental insufficiency, which diverts blood from the fetal kidneys and drops urine output. Postmaturity carries a failing placenta, so fluid declines as the pregnancy passes term. Maternal dehydration lowers the mother's circulating volume and is a quick, correctable trigger of low liquor.

Step 3: Now test Labetalol. It is an alpha plus beta adrenergic blocker chosen for pregnancy hypertension. It does not impair fetal renal perfusion the way ACE

inhibitors, ARBs or NSAIDs do, so it does not lower amniotic fluid.

Step 4: The drug that is NOT linked with oligohydramnios is therefore Labetalol, which is the requested exception.

Labetalol

Quick Tip: Think which antihypertensive is safe in pregnancy versus ACE inhibitors and NSAIDs that drop fetal urine.

• • •

177. The most common breech presentation in a primigravida is?

- (A) Flexed breech
- (B) Frank breech
- (C) Footling presentation
- (D) Incomplete breech

Correct Answer: (B) Frank breech

SOLUTION:

Step 1: Recall the three faces of breech. Frank breech keeps the legs straight and flexed only at the hips. Complete breech folds both the hips and knees. Footling or incomplete breech presents a foot first.

Step 2: Tie the type to uterine tone. A first pregnancy gives a tight, firm uterus and a snug abdominal wall, which holds the fetal legs stretched out flat. That stretched-leg position is exactly the frank breech.

Step 3: By contrast, the loose uterus of a woman who has had several babies lets the knees bend, so complete and footling types appear more often in multiparas, not in a first-time mother.

Step 4: Therefore the breech variety expected in a primigravida is the frank (extended-leg) breech.

Frank breech

Quick Tip: A firm primigravid uterus keeps the fetal legs extended.

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178. The most common malignant ovarian tumor is?

- (A) Serous cystadenocarcinoma
- (B) Mucinous cystadenocarcinoma
- (C) Malignant teratoma
- (D) Sarcoma

Correct Answer: (A) Serous cystadenocarcinoma

SOLUTION:

Step 1: Start by sorting ovarian cancers into their three big families - epithelial, germ cell and sex cord stromal. The epithelial family dominates and supplies most malignant ovarian tumors.

Step 2: Inside the epithelial family, the serous subtype outnumbers the mucinous, endometrioid and clear cell subtypes. Its cancerous version, the serous cystadenocarcinoma, frequently appears in both ovaries and can show calcified psammoma bodies under the microscope.

Step 3: The other choices rank lower. Mucinous cystadenocarcinoma is a less common epithelial cancer, malignant teratoma belongs to the rarer germ cell line, and sarcoma of the ovary is distinctly uncommon.

Step 4: So the leading malignant tumor of the ovary is the serous

cystadenocarcinoma.

Serous cystadenocarcinoma

Quick Tip: Surface epithelial serous type leads, often bilateral with psammoma bodies.

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179. The first line treatment of infertility in PCOS is?

- (A) Clomiphene
- (B) FSH
- (C) GnRH
- (D) Assisted reproductive techniques

Correct Answer: (A) Clomiphene

SOLUTION:

Step 1: Identify the core problem in PCOS-related infertility, which is failure to ovulate. Fixing fertility here means kick-starting ovulation.

Step 2: Clomiphene citrate fits this need. As an anti-estrogen at the hypothalamus, it tricks the brain into sensing low estrogen, which boosts the pituitary release of FSH and LH and drives a follicle to mature and release an egg.

Step 3: Its oral route, low cost and good ovulation rates make it the standard opening drug once weight loss and lifestyle steps are addressed.

Step 4: The remaining options - injectable FSH, GnRH and assisted reproduction like IVF - are second or third line steps used only when clomiphene fails. So the first line choice is clomiphene.

Clomiphene

Quick Tip: An oral anti-estrogen that induces ovulation comes first.

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180. A patient presents with discharge per urethra and microscopy shows the presence of intracytoplasmic gram negative cocci. What is the most probable diagnosis?

- (A) Gonorrhea
- (B) Donovanosis
- (C) Bacterial vaginosis
- (D) Syphilis

Correct Answer: (A) Gonorrhea

SOLUTION:

Step 1: Read the two anchors in the stem - a pus-like discharge from the male urethra and a smear showing gram negative cocci sitting inside the cells. Together they describe an organism that lives within neutrophils.

Step 2: That organism is *Neisseria gonorrhoeae*, a kidney-bean shaped gram negative diplococcus famous for being engulfed by pus cells. Its trademark presentation is acute urethritis with a thick purulent discharge, exactly as described.

Step 3: Rule the others out. Donovanosis is recognised by Donovan bodies in tissue, not by urethral diplococci. Bacterial vaginosis is a vaginal complaint with clue cells, irrelevant to a male urethra. Syphilis comes from a spirochete and starts as a painless ulcer, not a discharge.

Step 4: The picture of intracellular gram negative cocci plus purulent urethral discharge confirms gonorrhea.

Gonorrhea

Quick Tip: Gram negative diplococci inside neutrophils plus urethral pus.

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181. The treatment of nodulocystic acne is?

- (A) Erythromycin
- (B) Tetracycline
- (C) Isotretinoin (Retinoic acid)
- (D) Steroids

Correct Answer: (C) Isotretinoin (Retinoic acid)

SOLUTION:

Step 1: Grade the acne first. Nodulocystic acne sits at the top of the severity scale, with painful deep cysts and nodules that leave scars and shrug off ordinary therapy.

Step 2: The agent that controls this severe grade is oral isotretinoin, a vitamin A derivative. It tackles all four drivers of acne at once - it dries up the oil glands, cuts sebum, smooths the blocked follicle lining and lowers the acne bacteria.

Step 3: The other choices fall short. Erythromycin and tetracycline only handle milder inflammatory acne, and corticosteroids have no role as the standard treatment of plain acne.

Step 4: So nodulocystic acne is treated with isotretinoin, remembering its strong teratogenic risk that mandates pregnancy precautions.

Isotretinoin (Retinoic acid)

Quick Tip: Severe scarring acne needs the oral vitamin A derivative.

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182. Alopecia areata is a/an?

- (A) Autoimmune disorder
- (B) Allergic disorder
- (C) Anaphylactic disorder
- (D) Bacterial infection

Correct Answer: (A) Autoimmune disorder

SOLUTION:

Step 1: Picture the lesion - smooth, coin-shaped bald patches that appear quickly without scarring, sometimes ringed by tapering exclamation mark hairs.

Step 2: The mechanism behind these patches is immune. The hair follicle normally enjoys immune privilege, but in alopecia areata that protection breaks down and cytotoxic T cells swarm the follicle bulb, switching off active hair growth. This is an autoimmune attack.

Step 3: Supporting evidence is its frequent company with thyroid autoimmunity, vitiligo and pernicious anemia, and the fact that hair can regrow because the follicles survive.

Step 4: Since there is no allergic, anaphylactic or bacterial cause, alopecia areata is classed as an autoimmune disorder.

Autoimmune disorder

Quick Tip: T cells attack hair follicles, linked with thyroid disease and vitiligo.

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183. Groove sign of Greenblatt is seen in?

- (A) LGV
- (B) Donovanosis
- (C) Chancroid
- (D) Genital Herpes

Correct Answer: (A) LGV

SOLUTION:

Step 1: This question tests recognition of an STI sign. The groove sign points directly to Lymphogranuloma venereum (LGV), a chlamydial infection (serovars L1 to L3).

Step 2: Anatomy explains the finding. The inguinal ligament of Poupart crosses over the swollen lymph node mass. Because nodes above and below the ligament both enlarge, the ligament indents them, carving out a groove between the inguinal and femoral node groups. This is a near-diagnostic clue for LGV.

Step 3: Ruling out the rest: granuloma inguinale gives painless granulomatous ulcers, chancroid gives tender ragged ulcers with painful nodes, and herpes gives recurrent painful vesicular clusters. None create the Poupart-ligament groove.

LGV

Quick Tip: Think of the STI where Poupart's ligament splits enlarged inguinal nodes.

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184. Post spinal headache lasts for?

- (A) 10 min
- (B) 1 hr
- (C) 10 days
- (D) 1 week

Correct Answer: (C) 10 days

SOLUTION:

Step 1: The complaint described is the classic post dural puncture headache after spinal anaesthesia. Its mechanism is continued CSF escape from the needle hole at a rate faster than the body can replace it, dropping intracranial pressure.

Step 2: Low CSF volume lets the brain sag and pulls on the dura and tentorium, giving a postural frontal or occipital headache that flares when upright and eases when supine. Cranial nerve traction, especially the sixth nerve, can cause diplopia.

Step 3: Timing matters for the answer. The headache typically begins 1 to 3 days after the tap and resolves over roughly a week to ten days with conservative care, or sooner with an epidural blood patch. Among the choices, the 7 to 10 day duration matches 10 days.

10 days

Quick Tip: Self-limiting postural headache from a CSF leak resolves in about a week to ten days.

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185. False about local anesthetics?

- (A) Prilocaine is less toxic than lignocaine
- (B) Lignocaine is used as an antiarrhythmic
- (C) Mixture of lignocaine and prilocaine is known as eutectic
- (D) Lidocaine is shorter acting than bupivacaine

Correct Answer: (A) Prilocaine is less toxic than lignocaine

SOLUTION:

Step 1: We must spot the incorrect claim. Three statements are textbook-true and one is the trap. Start by validating the easy ones.

Step 2: Lignocaine doubles as a class Ib antiarrhythmic for ventricular arrhythmias - true. EMLA cream is the eutectic mixture of lignocaine plus prilocaine that melts to a single liquid phase at room temperature - true. Bupivacaine is long acting whereas lidocaine is intermediate, so lidocaine being shorter acting than bupivacaine is true.

Step 3: That leaves the prilocaine statement as the answer. Prilocaine is metabolised to ortho-toluidine, which oxidises haemoglobin and produces methaemoglobinaemia, a hazard lignocaine does not carry. So the sweeping statement that prilocaine is simply less toxic than lignocaine is false in this context.

Prilocaine is less toxic than lignocaine

Quick Tip: Which amide local anaesthetic uniquely causes methaemoglobinaemia?

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186. Anesthetic agent or agents which have a tocolytic effect are?

- (A) Halothane
- (B) Enflurane
- (C) Isoflurane
- (D) All the above

Correct Answer: (D) All the above

SOLUTION:

Step 1: The key word is tocolytic, meaning the agent relaxes uterine muscle and reduces contractions. We need to decide whether one or all of the listed inhalational agents do this.

Step 2: Halothane, enflurane and isoflurane belong to the halogenated volatile anaesthetic group. A shared class effect of these agents is dose-dependent relaxation of uterine smooth muscle, cutting both the strength and frequency of contractions.

Step 3: Because the uterine-relaxing action is a property of the whole halogenated group rather than a single drug, every option individually qualifies, making All the above correct. Clinically this is exploited for intrapartum uterine relaxation.

All the above

Quick Tip: Halogenated volatile anaesthetics share a dose-dependent uterine relaxing effect.

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187. Shortest acting non depolarizing muscle relaxant is?

- (A) Mivacurium
- (B) Doxacurium
- (C) Pipecuronium
- (D) Vecuronium

Correct Answer: (A) Mivacurium

SOLUTION:

Step 1: We are restricted to the non depolarizing class and asked for the briefest acting member. Duration depends largely on how fast the body clears the drug.

Step 2: Mivacurium stands out because it is broken down by plasma pseudocholinesterase, the same enzyme that destroys succinylcholine. This metabolic clearance gives it the shortest action among competitive blockers.

Step 3: Comparing the rest: doxacurium and pipecuronium are long acting, and vecuronium is intermediate acting, so none are shorter than mivacurium. Succinylcholine is shorter still but is depolarizing and therefore excluded here.

Mivacurium

Quick Tip: Which competitive blocker is metabolised by plasma pseudocholinesterase?

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188. Henry's law states that?

- (A) At a constant temperature gas dissolves in solution in proportion to its partial pressure
- (B) At a constant pressure gas dissolves in solution in proportion to its temperature
- (C) At a constant temperature gas dissolves in solution in proportion to its fat solubility
- (D) At a constant pressure gas dissolves in solution in proportion to its fat solubility

Correct Answer: (A) At a constant temperature gas dissolves in solution in proportion to its partial pressure

SOLUTION:

Step 1: The task is to recall the precise statement of Henry's law, a gas-solubility principle relevant to anaesthetic gas uptake.

Step 2: The law fixes temperature and then links dissolved gas to pressure: the concentration of a dissolved gas is directly proportional to its partial pressure above the liquid. In symbols, $C = kP$, so doubling the partial pressure doubles the dissolved amount at the same temperature.

Step 3: Checking the wrong choices, temperature and fat solubility are not the variables Henry's law uses to define dissolution at constant temperature. Only the statement tying dissolved gas to partial pressure at constant temperature is correct.

At a constant temperature gas dissolves in proportion to its partial pressure

Quick Tip: At fixed temperature, dissolved gas tracks its partial pressure.

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189. Radiocontrast is contraindicated in all of the following conditions except?

- (A) Renal failure
- (B) Patient on metformin
- (C) Dehydration
- (D) Obesity

Correct Answer: (D) Obesity

SOLUTION:

Step 1: This is an except question, so three options are genuine contraindications and one is safe. The recurring theme is renal safety with iodinated contrast.

Step 2: Renal failure already strains the kidneys, so adding nephrotoxic contrast is dangerous. Dehydration reduces renal blood flow and amplifies contrast nephropathy. Metformin is held before and after contrast because falling renal function can trap the drug and trigger lactic acidosis. All three are valid contraindications or cautions.

Step 3: Obesity does not share this renal hazard. Body weight alone does not bar the use of radiocontrast, so it is the odd one out and the correct answer.

Obesity

Quick Tip: Which option carries no renal or lactic-acidosis risk with contrast?

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190. Radiological features of coarctation of aorta is/are -

- (A) Reverse figure of 3 sign
- (B) Rock sign
- (C) Double aortic knuckle
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: In coarctation of aorta the aortic lumen is constricted, so imaging shows both the pinch point and the changes that develop around it from altered haemodynamics.

Step 2: On the chest film the aortic shadow forms two convexities separated by a

notch. Read together they look like a reversed number 3, which is why this is named the reverse figure of 3 sign; the same paired convexities account for the double aortic knuckle appearance.

Step 3: Chronic shunting of blood through enlarged intercostal collateral vessels scallops the undersurface of the ribs. This rib notching, described as the rock or Dock sign in this context, is another hallmark of long-standing coarctation.

Step 4: Because each listed sign is genuinely associated with the lesion, no single option can be excluded.

All of the above

Quick Tip: Think of the aortic contour, rib changes, and the reversed 3 outline together.

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191. Best view for sphenoid sinus is -

- (A) Water's view
- (B) Caldwell view
- (C) Basal view
- (D) Towne's view

Correct Answer: (C) Basal view

SOLUTION:

Step 1: Imaging of the paranasal sinuses uses dedicated projections; picking the right one depends on where the sinus sits within the skull.

Step 2: The sphenoid sinus is positioned centrally and low at the cranial base, so a beam directed upward from beneath the chin to the top of the head is needed. That projection is the submentovertical or basal view, which displays the sphenoid

air cell free of superimposition.

Step 3: By contrast, the occipito-mental projection (Water's) targets the maxillary antra, the occipito-frontal projection (Caldwell) targets the frontal sinus, and Towne's projection is reserved for posterior cranial structures.

Step 4: Matching the sphenoid sinus to its ideal projection leaves only one choice.

Basal view

Quick Tip: Submentovertical projection reaches the deep skull-base sinus.

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192. Which of the following is/are radiological features of fluorosis?

- (A) Osteosclerosis
- (B) Cortical thickening
- (C) Enthesopathy
- (D) All the above

Correct Answer: (D) All the above

SOLUTION:

Step 1: In long-standing fluoride toxicity the bone-forming cells are over-driven, so the skeleton becomes denser and structurally disordered, and this is what the radiograph captures.

Step 2: The most striking change is a marked rise in bone density, the axial skeleton turning chalk-white; this is the osteosclerosis component.

Step 3: Additional bone is laid down on the inner cortical surface, thickening the cortex and narrowing the marrow space, while ossification spreads into ligaments and tendon insertions to create the enthesopathy and bridging osteophytes typical

of the disease.

Step 4: Every option names a true radiological finding, so none can be singled out.

All the above

Quick Tip: Dense bone, thick cortex, and ligament ossification all coexist.

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193. Best imaging modality in patients with breast implants is:

- (A) MRI scan
- (B) CT scan
- (C) Mammography
- (D) Radionuclide scan

Correct Answer: (A) MRI scan

SOLUTION:

Step 1: When a prosthetic implant sits within the breast, any technique that depends on penetrating X-rays struggles because the implant casts a dense shadow over the parenchyma that must be assessed.

Step 2: Magnetic resonance imaging sidesteps this problem entirely. It produces high contrast pictures of soft tissue using magnetic fields rather than radiation, and the implant does not obscure the surrounding glandular tissue or the implant shell itself.

Step 3: This makes MRI the modality of choice both for screening the augmented breast and for telling apart fibrous scar from recurrent malignancy after conservation surgery.

Step 4: The remaining options either are blocked by the implant or give insufficient anatomical resolution.

MRI scan

Quick Tip: No radiation, superb soft-tissue contrast, not blocked by the prosthesis.

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194. Obsessive attention by an individual towards another person is called?

- (A) Stalking
- (B) Perceiving
- (C) Following
- (D) Pressurizing

Correct Answer: (A) Stalking

SOLUTION:

Step 1: The scenario centres on one person fixating on and repeatedly intruding upon the life of another against that person's wishes.

Step 2: Psychiatry labels this fixated, harassing conduct stalking. It encompasses trailing the victim, watching or monitoring them, and other intimidating acts that together form a sustained campaign of unwanted attention.

Step 3: Because it causes fear and distress, many legal systems treat stalking as a defined crime, reinforcing it as the precise term for the behaviour described.

Step 4: The other options name single neutral actions and miss the obsessive, threatening quality of the conduct.

Stalking

Quick Tip: Persistent, unwanted, harassing fixation on another person.

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195. A woman firmly and persistently feels her husband is cheating on her and she refuses to accept any proof given in the husband's support. The other family members do not support her belief. This is an example of -

- (A) Illusion
- (B) Delusion
- (C) Hallucination
- (D) Perversion

Correct Answer: (B) Delusion

SOLUTION:

Step 1: To classify the symptom, identify whether the disturbance lies in belief or in perception. This case is about a conviction the patient will not give up.

Step 2: She is certain of her husband's infidelity, dismisses every piece of contrary evidence, and her family does not share the idea. A rigidly held, false, culturally unshared belief of this kind is by definition a delusion, and a jealousy theme makes it a delusion of infidelity.

Step 3: It is not an illusion (a real stimulus misread) nor a hallucination (a perception with no stimulus at all), and perversion concerns abnormal behaviour rather than belief.

Step 4: The disorder of thought content, not of perception, fixes the diagnosis.

Delusion

Quick Tip: Fixed false belief held despite contrary proof equals a disorder of thought content.



196. All the following are true regarding pseudocyesis, EXCEPT:

- (A) The patients usually have an intense desire to have children
- (B) Change in the breast may be present
- (C) There may be considerable increase in the size of the abdomen
- (D) The labour pain invariably continues to persist even if she is told that she is not pregnant

Correct Answer: (D) The labour pain invariably continues to persist even if she is told that she is not pregnant

SOLUTION:

Step 1: Phantom pregnancy is a psychosomatic state where a woman who is not pregnant nonetheless manifests pregnancy features, usually driven by a strong wish for a child or by hormonal and psychological factors, classically around menopause.

Step 2: Genuine-appearing features support several options: the breasts may change, and the belly may visibly enlarge, though here the swelling comes from fat accumulation rather than a fetus. The intense longing for children is also a recognised trigger.

Step 3: Crucially, because the whole picture is psychological, firmly informing the woman that she is not pregnant typically causes the false labour pains to cease abruptly. The statement that such pains continue regardless is incorrect, making it the exception sought.

Step 4: The false option is the one to mark.

Labour pain invariably continues even after she is told she is not pregnant

Quick Tip: The phantom labour pains usually stop once she is convinced she is not pregnant.

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197. Which is the most common type of persistent delusional disorder?

- (A) Delusion of persecution
- (B) Somatic delusion
- (C) Delusion of jealousy
- (D) Delusion of grandeur

Correct Answer: (A) Delusion of persecution

SOLUTION:

Step 1: A persistent delusional disorder is defined by a long-standing, encapsulated false belief that the person holds despite contrary evidence, while the rest of mental functioning stays largely intact.

Step 2: Clinicians classify these delusions by their theme. The themes seen are persecutory, jealous (Othello), erotomanic, grandiose, somatic, and mixed varieties.

Step 3: Epidemiological data place the persecutory theme at the top of the list as the single most frequently encountered presentation, in which the individual is convinced of being targeted, harmed, or plotted against.

Step 4: By comparison, somatic, jealous, and grandiose themes are each less common, so they cannot be the correct response.

Persecutory theme = highest frequency

Delusion of persecution

Quick Tip: Think of the paranoid theme - being targeted or conspired against.

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198. Following are the major symptoms of obsessive compulsive disorder?

- (A) Contamination
- (B) Pathological doubts
- (C) Intrusive thoughts
- (D) All the above

Correct Answer: (D) All the above

SOLUTION:

Step 1: OCD presents through a small set of recurring obsessional themes, each commonly paired with a matching compulsion that the patient uses to relieve distress.

Step 2: The four well-described patterns are: fear of contamination (paired with washing), doubting whether actions were completed (paired with checking), purely mental intrusive thoughts that are repugnant to the patient, and a need for symmetry or exactness (paired with slowness).

Step 3: Reviewing the options, contamination, pathological doubts, and intrusive thoughts each appear individually as genuine OCD symptom clusters, so no single one can be excluded.

Step 4: Because every listed item is a true major symptom of OCD, the inclusive choice is correct.

Contamination + Doubts + Intrusive thoughts ⇒ all valid

All the above

Quick Tip: Each option is a recognised major OCD symptom pattern.

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199. Mania is characterized by:

- (A) Paranoid delusion
- (B) Loss of orientation
- (C) High self esteem
- (D) All

Correct Answer: (C) High self esteem

SOLUTION:

Step 1: In a manic episode the central disturbance is an abnormally elevated mood combined with a heightened sense of one's own importance and capability.

Step 2: This grandiose, inflated self-worth is one of the diagnostic hallmarks, sitting alongside decreased sleep need, rapid speech, racing thoughts, and impulsive behaviour.

Step 3: Orientation to time, place, and person stays intact in pure mania because consciousness is not clouded, so loss of orientation is not a manic feature and the all-inclusive choice fails. Paranoid delusions are only an occasional add-on in psychotic mania, not a defining trait.

Step 4: The most reliable characteristic among the choices is the patient's exaggerated self-esteem.

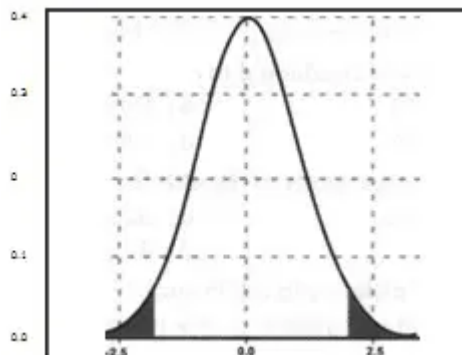
Mania $\Rightarrow$ grandiosity / high self esteem

High self esteem

Quick Tip: Grandiosity is core; disorientation points to delirium, not mania.

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200.



What percentage of the normal distribution curve is represented by the shaded area?

- (A) 1%
- (B) 3%
- (C) 5%
- (D) 7%

Correct Answer: (C) 5%

SOLUTION:

Step 1: A normal curve is bell shaped and symmetric, and the proportion of observations under any portion of it is fixed by how many standard deviations away from the mean that portion lies.

Step 2: Standard reference values give 68.3% of the area within $\mu \pm 1\sigma$, 95.5% within $\mu \pm 2\sigma$, and 99.7% within $\mu \pm 3\sigma$.

Step 3: The shaded extremes lie beyond the two standard deviation marks. The combined tail area is found by subtracting the central 95% from the whole.

$$100\% - 95\% = 5\%$$

Step 4: So the two shaded tails together account for roughly five percent of all observations under the curve.

5%

Quick Tip: Area outside mean plus or minus 2 SD equals 100% minus 95%.