



General Instructions

- (i) This booklet contains 295 questions, each provided with a complete, step-by-step solution.
- (ii) It comprises 295 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. Nerves of the branchial (pharyngeal) arch are derived from:

- (A) Mesoderm
- (B) Endoderm
- (C) Neural crest
- (D) Neuroectoderm

Correct Answer: (C) Neural crest

SOLUTION:

Step 1: Frame the question by tracing each germ layer contribution in a pharyngeal arch. The arch has three coverings and a core: outer ectoderm, inner endoderm, and a central mesodermal mass that is heavily invaded by migrating cells.

Step 2: The decisive migrating population is the cranial neural crest. These cells detach from the dorsal neural tube margin and travel into the arches, where they are called ectomesenchyme and supply connective tissue, cartilage, bone and, critically, the neural elements.

Step 3: Because the arch nerves grow from this crest-derived neural population

(peripheral neurons and glia), the embryonic source of the branchial arch nerves is the neural crest, so option c is selected.

Step 4: Eliminating alternatives: mesoderm is responsible for arch musculature and aortic arch vessels; endoderm lines the pharyngeal pouches; neuroectoderm builds the brain and spinal cord, not the peripheral arch nerves. The single best match remains the neural crest.

Neural crest

Quick Tip: Think which migrating ectodermal cell population builds the peripheral nervous system and ectomesenchyme of the arches.

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2. The hard palate contains:

- (A) Keratinised epithelium, submucosa, minor salivary gland
- (B) Keratinised epithelium, absent submucosal layer, minor salivary gland
- (C) Non-keratinised epithelium, submucosal layer, minor salivary gland
- (D) Non-keratinised epithelium, absent submucosa, minor salivary gland

Correct Answer: (A) Keratinised epithelium, submucosa, minor salivary gland

SOLUTION:

Step 1: Approach by classifying oral mucosa. The hard palate and gingiva are masticatory mucosa, which is always keratinised, in contrast to lining mucosa (cheek, floor of mouth) which is non-keratinised.

Step 2: Apply this rule. As masticatory mucosa, the hard palate shows keratinising stratified squamous epithelium firmly anchored to the periosteum of the maxilla and palatine bones, so any "non-keratinised" choice is discarded immediately.

Step 3: Assess the deep layer. Laterally and toward the back, the hard palate has a submucosa that houses the palatine minor salivary glands; centrally near the raphe it is mucoperiosteal with minimal submucosa, but a submucosa with glands is the defining feature being tested.

Step 4: The only option combining keratinised epithelium, a submucosa, and minor salivary glands is option a; option b wrongly denies the submucosa.

Keratinised, submucosa, minor salivary gland

Quick Tip: The hard palate is masticatory mucosa - so think keratinised, with posterolateral glands.

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3. What is the tensor of the vocal cords?

- (A) Cricothyroid
- (B) Lateral cricoarytenoid
- (C) Thyroarytenoid
- (D) Posterior cricoarytenoid

Correct Answer: (A) Cricothyroid

SOLUTION:

Step 1: Tabulate intrinsic laryngeal muscle actions and find the one that tightens the folds. Abduction = posterior cricoarytenoid; adduction = lateral cricoarytenoid plus the transverse and oblique arytenoids; relaxation = thyroarytenoid; tension = cricothyroid.

Step 2: The cricothyroid rocks the thyroid cartilage anteriorly relative to the cricoid, elongating the vocal ligaments and thereby tensing them, which is exactly the tensor role being asked for.

Step 3: By exclusion, the lateral cricoarytenoid closes the cords, the thyroarytenoid shortens and relaxes them, and the posterior cricoarytenoid opens them - none of these tense the cords. A useful nerve cue is that the cricothyroid is the only intrinsic muscle not supplied by the recurrent laryngeal nerve.

Cricothyroid

Quick Tip: Which intrinsic muscle is supplied by the external laryngeal nerve and stretches the folds?

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4. The ureteric bud develops from:

- (A) Mesonephros
- (B) Metanephros
- (C) Pronephros
- (D) Genital sinus

Correct Answer: (A) Mesonephros

SOLUTION:

Step 1: Separate the two embryonic sources of the definitive kidney so the bud's parent is clear. Nephrons, from the proximal tubule through the distal tubule, arise out of metanephric mesenchyme, while the duct system spanning ureter through collecting ducts arises out of the ureteric bud.

Step 2: Trace the ureteric bud's origin. It sprouts as a diverticulum from the lower end of the mesonephric (Wolffian) duct near its entry into the cloaca. Because that duct belongs to the mesonephros, the bud is grouped under a mesonephric origin in this question.

Step 3: Reciprocal induction follows - the bud induces the metanephric cap to form nephrons, and the cap induces the bud to branch into pelvis, calyces and collecting tubule.

Step 4: Rule out the rest: metanephros yields only the excretory nephron units, the pronephros degenerates entirely, and the urogenital (genital) sinus is unrelated to the bud.

Mesonephros (mesonephric duct)

Quick Tip: The bud sprouts off the mesonephric (Wolffian) duct - so trace it to the mesonephros.

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5. Regarding Weber's syndrome, which statement is INCORRECT?

- (A) Contralateral hemiplegia
- (B) Ipsilateral oculomotor nerve palsy
- (C) Contralateral parkinsonism
- (D) Anterior cerebral peduncle

Correct Answer: (D) Anterior cerebral peduncle

SOLUTION:

Step 1: Build the picture of an alternating midbrain syndrome. "Alternating" means a cranial nerve sign on one side and a long-tract motor sign on the other. Weber's is the prototype at the level of the cerebral peduncle.

Step 2: Confirm the true features: the lesion catches CN III fibres as they emerge, giving an ipsilateral third-nerve palsy and it catches the corticospinal tract before it crosses, giving contralateral hemiplegia, substantia nigra involvement may add contralateral parkinsonism. These map to options a, b and c, all correct.

Step 3: Since three statements are correct, the odd one out is the answer. The recall key marks "anterior cerebral peduncle" as the incorrect option, so option d is chosen.

Step 4: Remember the contrast set - Benedikt's adds a red nucleus tremor, Claude's adds cerebellar ataxia, while pure Weber's stays with CN III palsy plus crossed hemiplegia.

Anterior cerebral peduncle

Quick tip: Three options describe true Weber's features - pick the odd statement out.

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6. Regarding Sibson's fascia, which statement is INCORRECT?

- (A) Attached to the inner border of the 2nd rib
- (B) Covers the apical part of the lung
- (C) Is a part of the scalenus anterior muscle
- (D) Vessels pass above the fascia

Correct Answer: (A) Attached to the inner border of the 2nd rib

SOLUTION:

Step 1: Recall the suprapleural membrane as a tent over the lung apex. Knowing its bony anchors is the key to spotting the wrong statement.

Step 2: The membrane fans out from the tip of the C7 transverse process to the inner border of the FIRST rib, forming a firm roof that resists the upward thrust of the pleura during respiration. It is a flattened tendon of the scalenus minimus muscle.

Step 3: Check the options against fact: it does cover the apical lung (true), it is muscularly related to the scalene group (true), and the subclavian vessels run above/over it (true). Only the claim of attachment to the inner border of the second rib is false, since the real attachment is the first rib.

Step 4: The question wants the incorrect statement, so option a is the answer.

Attached to the inner border of 2nd rib (false - it is the 1st rib)

Quick Tip: Sibson's fascia anchors to the FIRST rib and C7 transverse process - find the option that says otherwise.

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7. Thrombosis of the posterior inferior cerebellar artery causes:

- (A) Lateral medullary syndrome
- (B) Weber syndrome
- (C) Medial medullary syndrome
- (D) None

Correct Answer: (A) Lateral medullary syndrome

SOLUTION:

Step 1: Match artery to brainstem territory. PICA, branching from the vertebral artery, feeds the lateral medulla and posteroinferior cerebellum, so its occlusion must produce a lateral medullary picture.

Step 2: Name the syndrome. Loss of the dorsolateral medulla gives Wallenberg (lateral medullary) syndrome, hallmarked by crossed sensory loss, ipsilateral Horner's, ataxia, vertigo and bulbar signs like hoarseness and dysphagia.

Step 3: Contrast with the distractors. The medial medullary syndrome comes from the anterior spinal/vertebral supply and shows contralateral hemiparesis with tongue deviation, while Weber syndrome is a midbrain event with CN III palsy and crossed hemiplegia - neither is caused by PICA.

Step 4: Therefore PICA thrombosis maps cleanly to the lateral medullary syndrome.

Lateral medullary syndrome (Wallenberg)

Quick Tip: PICA supplies the lateral medulla - which eponymous medullary syndrome follows?

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8. Broca's area is situated in:

- (A) Inferior frontal gyrus
- (B) Superior temporal gyrus
- (C) Angular gyrus
- (D) None of the above

Correct Answer: (A) Inferior frontal gyrus

SOLUTION:

Step 1: The question asks where the motor centre that programs speech production sits. Recall that language has separate production and comprehension hubs in the dominant hemisphere. **Step 2:** The production hub, named after

Pierre Paul Broca, occupies the posterior part of the inferior frontal gyrus, corresponding to Brodmann areas 44 and 45 (pars opercularis and pars triangularis). So the answer points to the inferior frontal gyrus. **Step 3:** A clinical clue: a lesion here gives halting, telegraphic speech with intact understanding, (expressive aphasia), confirming a frontal motor seat rather than a temporal or parietal one. **Step 4:** Eliminating the rest, the superior temporal gyrus is Wernicke's comprehension area and the angular gyrus serves reading and writing, neither of which generates speech.

Inferior frontal gyrus

Quick Tip: Motor speech area named after Broca lies in the dominant frontal lobe.

9. Acute tonsillitis affects which nerve?

- (A) Glossopharyngeal nerve
- (B) Facial nerve
- (C) Trigeminal nerve
- (D) Vagus nerve

Correct Answer: (A) Glossopharyngeal nerve

SOLUTION:

Step 1: Frame this by the territory of the tonsillar bed. The palatine tonsil and the adjoining posterior third of the tongue share a common sensory supplier, and that link is the key to the answer. **Step 2:** Cranial nerve IX, the glossopharyngeal nerve, sends tonsillar branches into the tonsil and then continues to give general and gustatory sensation to the posterior one-third of the tongue. Inflammation of the tonsil therefore irritates CN IX, producing the throat pain often referred to the ear. **Step 3:** Surgical correlation reinforces this: during tonsillectomy the glossopharyngeal nerve in the tonsillar bed can be bruised, after which patients report dulled taste and touch at the back of the tongue. **Step 4:** Ruling out the others, the facial nerve handles taste of the anterior tongue, the trigeminal

contributes only minor palatine sensation, and the vagus serves the lower pharynx and larynx.

Glossopharyngeal nerve

Quick Tip: Same nerve that gives sensation to the posterior third of the tongue.

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10. Which of the following structures does NOT pass through the aortic opening of the diaphragm?

- (A) Azygos vein
- (B) Aorta
- (C) Thoracic duct
- (D) Vagus

Correct Answer: (D) Vagus

SOLUTION:

Step 1: List the contents of each diaphragmatic aperture by vertebral level. The caval opening at T8 transmits the IVC and right phrenic; the oesophageal hiatus at T10 transmits the oesophagus and vagal trunks; the aortic hiatus at T12 transmits the midline great vessel plus lymph and venous channels. **Step 2:** At T12 the trio passing through is the aorta, the thoracic duct, and the azygos vein. That accounts for three of the four options as structures that DO pass through. **Step 3:** The vagus, by contrast, hugs the oesophagus as anterior and posterior vagal trunks and enters the abdomen through the T10 oesophageal hiatus. It never traverses the aortic hiatus. **Step 4:** The question asks for the exception, so the vagus is the structure that does not pass through the aortic opening.

Vagus

Quick Tip: Aortic hiatus carries aorta, azygos and thoracic duct; the vagus goes with the oesophagus.

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11. What value of BMI is considered "lethal" in men?

- (A) 12
- (B) 18
- (C) 13
- (D) 14

Correct Answer: (C) 13

SOLUTION:

Step 1: Recall that BMI grades nutrition from morbid obesity at the top to severe wasting at the bottom, using $BMI = \frac{W}{H^2}$ with weight in kilograms and height in metres. The question targets the extreme lower threshold compatible with life.

Step 2: Classic nutrition teaching gives a sex-specific minimum survivable BMI. For men this floor is 13 kg/m² below which death from starvation becomes the expected outcome. **Step 3:** The corresponding figure for women is about 11 kg/m²; women endure lower BMIs because their baseline adipose stores are greater, providing a longer energy buffer. **Step 4:** Matching the male lethal threshold to the choices, the answer is 13, not 12 or 14.

13

Quick Tip: Men cannot survive below this BMI; women tolerate down to about 11.

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12. Which receptors are blocked in Myasthenia Gravis?

- (A) Acetylcholine (ACh) receptors
- (B) Ca^{++} receptors
- (C) Na^{2+} receptors
- (D) Opioid receptors

Correct Answer: (A) Acetylcholine (ACh) receptors

SOLUTION:

Step 1: Approach this from the immunology of the neuromuscular junction. Myasthenia gravis is an antibody-mediated disease, so identify the protein the autoantibodies attack. **Step 2:** The target is the nicotinic acetylcholine receptor on the muscle side of the synapse. Circulating anti-AChR antibodies reduce the number of functional receptors and flatten the post-synaptic folds, leaving transmission unable to keep up with repeated firing. **Step 3:** Clinically this explains the hallmark fatigability and the dramatic, if brief, improvement when an anticholinesterase floods the cleft with extra acetylcholine, partly overcoming the receptor shortage. **Step 4:** None of calcium, sodium or opioid receptors fits this autoimmune picture, so the blocked receptor is the acetylcholine receptor.

Acetylcholine receptors

Quick Tip: Autoantibodies attack the post-synaptic nicotinic receptors at the NMJ.

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13. What is the characteristic pattern seen in Brown-Sequard syndrome?

- (A) Contralateral loss of joint sense and position
- (B) Contralateral loss of pain
- (C) Ipsilateral loss of complete sensory functions
- (D) Contralateral motor functions

Correct Answer: (B) Contralateral loss of pain

SOLUTION:

Step 1: Map the three long tracts and where they decussate, then apply a one-sided cord lesion. This is the cleanest way to predict Brown-Sequard findings.

Step 2: Corticospinal fibres and the dorsal-column fibres for vibration and joint position have already crossed in the brainstem, so cutting one half of the cord drops motor power and proprioception on the SAME side as the lesion, below it.

Step 3: Pain and temperature travel in the spinothalamic tract, which crosses just one or two segments after entering. A hemisection therefore abolishes pain and temperature on the OPPOSITE side, starting a few segments under the lesion level.

Step 4: So the trademark contralateral sign is loss of pain sensation, matching option (b); the other choices misassign the side of proprioceptive or motor loss.

Contralateral loss of pain

Quick Tip: Spinothalamic crosses early, so pain and temperature loss is on the opposite side.

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14. When is the ventilation-perfusion ratio (V_a/Q) infinity?

- (A) Partial pressure of CO_2 becomes zero
- (B) No exchange of O_2 and CO_2
- (C) Partial pressure of CO_2 alone becomes zero
- (D) Partial pressure of both CO_2 and O_2 remain normal

Correct Answer: (B) No exchange of O_2 and CO_2

SOLUTION:

Step 1: Think of the two extremes of the ventilation-perfusion spectrum. The ratio $\frac{V_a}{Q}$ goes to infinity when its denominator, the perfusion Q , falls to zero while ventilation V_a persists.

Step 2: Physiologically this is dead-space ventilation: fresh air enters the alveolus but no capillary blood arrives to pick up

oxygen or unload carbon dioxide. **Step 3:** Because no blood contacts the alveolar membrane, the alveolar air ends up identical to humidified inspired air, with PO_2 near 149 mmHg and PCO_2 near 0 mmHg, and crucially no net transfer of gases occurs. **Step 4:** The key consequence asked for is that gas exchange ceases, so the correct choice is that there is no exchange of O_2 and CO_2 .

No exchange of O_2 and CO_2

Quick Tip: Infinite V_a/Q means ventilation without perfusion - alveolar dead space.

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15. The 'c' wave of the jugular venous pulse (JVP) is seen during which phase of the cardiac cycle?

- (A) Isovolumetric contraction
- (B) Slow filling at end of diastole
- (C) End of systole
- (D) Start of diastole

Correct Answer: (A) Isovolumetric contraction

SOLUTION:

Step 1: Map each JVP wave to its mechanical trigger. The atrial pressure tracing shows *a* (atrial systole), *c* (early ventricular systole), and *v* (late ventricular systole) peaks.

Step 2: Focus on what happens immediately after the tricuspid valve shuts. As the right ventricle begins to contract with all valves closed, intraventricular pressure climbs rapidly while volume stays fixed - this is the isovolumetric contraction phase.

Step 3: That rising pressure shoves the dome of the closed tricuspid valve upward into the right atrium, transiently raising atrial pressure and inscribing the *c* wave.

Step 4: Cross-check the distractors. End of systole gives the *v* wave from venous return piling up behind the shut valve; start of diastole begins the *y* descent as

the valve reopens; the slow end-diastolic filling does not generate a positive deflection. Hence the timing of the c wave is isovolumetric contraction.

Isovolumetric contraction

Quick Tip: The closed tricuspid valve bulges into the right atrium as ventricular pressure spikes.

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16. Alpha waves on the electroencephalogram (EEG) are seen during which state?

- (A) Sleep
- (B) REM movements
- (C) Relaxed state
- (D) Active state

Correct Answer: (C) Relaxed state

SOLUTION:

Step 1: Think of EEG frequency as inversely tied to arousal - the calmer the cortex, the slower and more synchronized the wave.

Step 2: Alpha sits in the 8-13 Hz band with amplitude near 50-100 microvolts and is best seen posteriorly over the occiput.

Step 3: The hallmark trigger is wakeful rest with eyes shut - a quiet, relaxed, lightly inattentive mind. Open the eyes or concentrate on a task and alpha is blocked, replaced by fast beta.

Step 4: Eliminate the rest: an active focused state shows beta, light to deep sleep shows theta then delta, and REM gives a paradoxically fast, awake-like trace. So the correct association is the relaxed waking state.

Relaxed state

Quick Tip: Awake, eyes closed, resting quietly - that is the classic alpha rhythm.

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17. In hypovolemic shock, which of the following renal vascular changes occurs?

- (A) Afferent arteriolar constriction
- (B) Efferent arteriolar constriction
- (C) Increased blood flow to kidney
- (D) Normal cardiac output

Correct Answer: (A) Afferent arteriolar constriction

SOLUTION:

Step 1: Start from the central problem in hypovolemic shock - the tank is empty, so venous return, stroke volume, and cardiac output all drop.

Step 2: Baroreceptor unloading triggers a massive sympathetic surge plus activation of renin-angiotensin. The aim is to defend perfusion of the brain and heart by clamping down everywhere else, raising systemic vascular resistance.

Step 3: Within the renal circulation this intense catecholamine drive constricts the afferent arteriole, cutting renal blood flow and protecting the rest of the circulation - the limbs go cold and shut down.

Step 4: Rule out the alternatives: renal flow goes down not up, cardiac output is depressed rather than normal, and isolated efferent constriction is the GFR-sparing mechanism of moderate hypovolemia, not the hallmark of established shock.

Afferent arteriolar constriction

Quick Tip: Sympathetic and angiotensin surge clamps the inflow arteriole to the glomerulus.

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18. The components responsible for the counter-current mechanism in the kidney include all of the following EXCEPT:

- (A) Sodium outflow in thick ascending limb
- (B) Water outflow in thin descending limb
- (C) Sodium outflow in thin ascending limb
- (D) Flow of tubular fluid from PCT to DCT

Correct Answer: (C) Sodium outflow in thin ascending limb

SOLUTION:

Step 1: Reframe the task: list the true ingredients of the renal counter-current multiplier, then the leftover statement is the answer.

Step 2: The engine of the multiplier is the thick ascending limb, which actively extrudes Na^+ (with K^+ and Cl^-) while staying impermeable to water. The thin descending limb does the opposite - it lets water exit passively, concentrating the luminal fluid. Urea cycling from the inner medullary collecting duct and the orderly downstream flow of filtrate complete the picture.

Step 3: Now test the choices. Sodium outflow from the thick ascending limb is correct; water outflow from the thin descending limb is correct; fluid moving from PCT to DCT is correct. The thin ascending limb, however, is water-impermeable and is not the active sodium-extruding segment, so 'sodium outflow in thin ascending limb' does not belong in the defining list.

Step 4: Being the EXCEPT question, the statement that is not a true counter-current component is the one to mark.

Sodium outflow in thin ascending limb

Quick Tip: Which limb does the active sodium pumping - thick or thin? Pick the EXCEPT.

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19. Glucose is absorbed across the intestinal epithelium into the blood (at the basolateral membrane) by which mechanism?

- (A) Secondary active transport
- (B) Facilitated diffusion
- (C) Simple diffusion
- (D) Primary active transport

Correct Answer: (B) Facilitated diffusion

SOLUTION:

Step 1: Separate the journey of glucose into entry and exit across the gut cell. The lumen-to-cell step and the cell-to-blood step use different machinery.

Step 2: The exit into blood relies on the GLUT2 transporter on the basolateral side. GLUT carriers are passive uniporters - they bind glucose and flip it across the membrane following the concentration gradient with no ATP and no ion coupling.

Step 3: That carrier-mediated, gradient-driven, energy-independent transport of a polar molecule is the textbook definition of facilitated diffusion, the same route used for amino acid exit.

Step 4: Discard the rest: a polar sugar will not slip through the bilayer by simple diffusion; primary active transport burns ATP directly and is reserved for pumps; secondary active transport is the apical SGLT1 sodium-glucose entry, not the absorption step into the bloodstream.

Facilitated diffusion

Quick Tip: Apical entry is SGLT1 cotransport, but exit into blood via GLUT2 is carrier-mediated and passive.

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20. Insulin-like growth factor (IGF-1, somatomedin C) is secreted mainly by which organ?

- (A) Liver
- (B) Pituitary gland
- (C) Pancreas
- (D) Adrenal glands

Correct Answer: (A) Liver

SOLUTION:

Step 1: Trace the growth-hormone signaling chain. The anterior pituitary releases GH, but GH largely works by inducing a second messenger hormone in a target organ.

Step 2: That target is the hepatocyte. GH binding to the liver drives synthesis and release of the somatomedin family of peptides, whose insulin-mimicking activity earns them the name insulin-like growth factors.

Step 3: Somatomedin C, or IGF-1, is the dominant member and is poured into the blood mainly from the liver. Bound to a plasma carrier protein, it persists for roughly 20 hours versus about 20 minutes for GH, and its concentration tracks GH output, so most of GH's bone-growth effect is actually delivered through hepatic IGF-1.

Step 4: Knock out the wrong organs: the pituitary makes GH, the pancreas makes insulin and glucagon, and the adrenals make steroids and catecholamines. The liver is the answer.

Liver

Quick Tip: Growth hormone acts on this organ to make somatomedins (IGF-1).

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21. What is prosopagnosia?

- (A) Impairment of consciousness
- (B) Being unaware of one's problems
- (C) Difficulty in identifying known faces
- (D) Failure to identify objects

Correct Answer: (C) Difficulty in identifying known faces

SOLUTION:

Step 1: Decode the Greek roots: *prosopon* means face and *agnosia* means loss of knowing. Put together, the word names a specific recognition failure for faces.

Step 2: A patient with prosopagnosia can see a face perfectly well but cannot match it to a known identity - even close relatives or their own reflection may seem unfamiliar. The lesion classically involves the fusiform face area in the ventral occipitotemporal cortex.

Step 3: Sort it from the confusables. Lack of awareness of one's own illness is anosognosia; inability to name or recognize objects is object agnosia; a drop in arousal is impairment of consciousness. Each maps to a different option, leaving 'difficulty in identifying known faces' as the unique match.

Step 4: Therefore prosopagnosia equals the selective inability to recognize familiar faces.

Difficulty in identifying known faces

Quick Tip: 'Prosop-' means face; this is selective face-recognition failure.

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22. Tyrosinosis is caused due to deficiency of which enzyme?

- (A) Fumarylacetoacetate hydrolase
- (B) p-hydroxy phenylpyruvate dehydrogenase
- (C) Tyrosine transaminase
- (D) Tyrosine ligase

Correct Answer: (A) Fumarylacetoacetate hydrolase

SOLUTION:

Step 1: Map the tyrosine degradation route in order: tyrosine → p-hydroxyphenylpyruvate → homogentisate → maleylacetoacetate → fumarylacetoacetate → fumarate + acetoacetate.

Step 2: Each tyrosinemia type corresponds to a defect at one position. Type I (classic tyrosinosis) sits at the very last hydrolytic split, performed by fumarylacetoacetate hydrolase.

Step 3: When this terminal enzyme fails, succinylacetoacetate accumulates and is hepatotoxic and nephrotoxic, producing the liver-failure phenotype that defines the severe disease. So the deficient enzyme must be the one ending the pathway.

Step 4: By elimination, transaminase loss gives the milder eye-and-skin form (type II) and the dehydrogenase/dioxygenase loss gives type III, while a "ligase" has no role here.

Fumarylacetoacetate hydrolase

Quick Tip: Think of the terminal enzyme of tyrosine catabolism whose loss causes liver failure (type I tyrosinemia).

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23. Lesch-Nyhan syndrome is caused by deficiency of which enzyme?

- (A) Orotate phosphoribosyltransferase
- (B) Uracil phosphoribosyltransferase
- (C) Quinolate phosphoribosyltransferase
- (D) Hypoxanthine-guanine phosphoribosyltransferase (HGPRT)

Correct Answer: (D) Hypoxanthine-guanine phosphoribosyltransferase (HGPRT)

SOLUTION:

Step 1: Recall the two ways cells obtain purine nucleotides: a costly de-novo route and an economical salvage route. Salvage of the purine bases hypoxanthine and guanine is done by one enzyme - HGPRT.

Step 2: Total loss of HGPRT removes the salvage option entirely, so the substrate PRPP that salvage would have used is spared and instead pushes the de-novo machinery into overdrive.

Step 3: The net result is excess purine turnover and a flood of uric acid, explaining the gout, renal stones, and hyperuricemia, while CNS involvement adds intellectual disability and compulsive self-injury.

Step 4: The distractors act on pyrimidine (orotate, uracil) or NAD precursor (quinolinate) handling, none of which links to this salvage-defect syndrome.

HGPRT

Quick Tip: Self-mutilation plus hyperuricemia points to a defect in the purine salvage enzyme.

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24. Fish odor syndrome is caused by deficiency of which enzyme?

- (A) Fumarylacetoacetate hydrolase
- (B) Methane monooxygenase
- (C) Flavin monooxygenase 3 (FMO3)
- (D) D-amino acid oxidase

Correct Answer: (C) Flavin monooxygenase 3 (FMO3)

SOLUTION:

Step 1: The disease is named for its smell, so the offending molecule is trimethylamine (TMA), which is produced in the gut from dietary choline and carnitine.

Step 2: A healthy liver detoxifies TMA by adding an oxygen to make odourless TMAO; the enzyme that performs this N-oxidation is flavin-containing

monooxygenase 3 (FMO3).

Step 3: If FMO3 is genetically deficient (autosomal recessive), TMA escapes oxidation and spills into sweat, urine, and breath, giving the characteristic rotting-fish odor; the oxidation ratio $TMAO/(TMAO + TMA) \times 100\%$ confirms the impaired conversion.

Step 4: None of the other listed enzymes participate in amine detoxification of this type, so only FMO3 fits.

FMO3

Quick Tip: Which liver monooxygenase converts smelly trimethylamine into odourless TMAO?

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25. Classic galactosemia is due to deficiency of which enzyme?

- (A) Galactose-1-phosphate uridyltransferase
- (B) HGPRT
- (C) Galactokinase
- (D) Epimerase

Correct Answer: (A) Galactose-1-phosphate uridyltransferase

SOLUTION:

Step 1: Trace galactose entry into glycolysis: galactose → (galactokinase) → galactose-1-phosphate → (GALT) → glucose-1-phosphate, with epimerase interconverting UDP sugars.

Step 2: The term "classic galactosemia" specifically labels the GALT block, the commonest and most dangerous form, where galactose-1-phosphate piles up and poisons liver, brain, and lens.

Step 3: The clinical neonatal picture - failure to thrive, jaundice, cataracts, and gram-negative sepsis after milk feeds - is the GALT phenotype, so the deficient enzyme is the uridyltransferase.

Step 4: Galactokinase loss gives an isolated-cataract milder disease, epimerase

loss is rarest, and HGPRT is from a different (purine) pathway, leaving GALT as the answer.

Galactose-1-phosphate uridylyltransferase

Quick Tip: The classic, severe galactosemia is the GALT (uridylyltransferase) defect, not galactokinase.

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26. Which of the following is the most abundant end product of fatty acid synthesis?

- (A) Oleic acid
- (B) Palmitic acid
- (C) Arachidonic acid
- (D) Glucose

Correct Answer: (B) Palmitic acid

SOLUTION:

Step 1: Picture the fatty acid synthase cycle: it adds malonyl-derived 2-carbon units repeatedly until the new chain reaches 16 carbons, then thioesterase cleaves it off.

Step 2: A 16-carbon fully saturated chain is palmitate, so the immediate and most plentiful output of the synthase is palmitic acid.

Step 3: Longer or unsaturated species such as stearate, oleate, and arachidonate are made only afterward by separate elongase and desaturase systems, so they are secondary, not the main end product.

Step 4: Glucose is a carbohydrate and cannot be an output of lipogenesis, which eliminates it outright.

Palmitic acid

Quick Tip: Fatty acid synthase stops at 16 carbons - which saturated acid is that?

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27. About DNA polymerase I, which one of the following statements is correct?

- (A) Not required in bacteria
- (B) Repairs any damage within DNA
- (C) Involved in Okazaki fragment processing
- (D) Participates in DNA replication

Correct Answer: (A) Not required in bacteria

SOLUTION:

Step 1: List what DNA polymerase I actually does in prokaryotes: 5' → 3' exonuclease removal of RNA primers, gap filling between Okazaki fragments, and excision-repair synthesis.

Step 2: Notice that options (b) repair, (c) Okazaki involvement, and (d) participation in replication are each genuinely true of Pol I, so the examiner needs a statement that singles out Pol I against the main replicase.

Step 3: The principal replicative enzyme in bacteria is DNA polymerase III; Pol I is dispensable for the bulk of chromosome copying, which is the sense behind the chosen "not required" option in the recall key.

Step 4: Following the printed key, option (a) is taken as the intended answer that distinguishes Pol I from the essential Pol III.

Not required in bacteria

Quick Tip: The main bacterial replicase is Pol III; recall what is said to be "not required" of Pol I.

...

28. What do chaperones assist in?

- (A) Protein cleavage
- (B) Protein folding
- (C) Protein degradation
- (D) Protein modification

Correct Answer: (B) Protein folding

SOLUTION:

Step 1: Define a chaperone as a folding-assistant protein that shields hydrophobic stretches of a nascent chain so it can fold without clumping.

Step 2: Because folding in the crowded cytoplasm is error-prone, chaperones such as Hsp70 and the chaperonin (GroEL/GroES) machine guide the polypeptide toward its functional conformation, often using ATP.

Step 3: They neither cut, tag-for-destruction, nor chemically alter the protein - those tasks belong to proteases, the ubiquitin-proteasome system, and modifying enzymes respectively.

Step 4: Hence the single role attributed to chaperones is assisting correct protein folding.

Protein folding

Quick Tip: Heat-shock proteins guide a new polypeptide into its native shape - which process is that?

...

29. Fishy odour occurs due to deficiency of which vitamin from the diet?

- (A) Biotin
- (B) Thiamine
- (C) Riboflavin
- (D) Vitamin A

Correct Answer: (C) Riboflavin

SOLUTION:

Step 1: Link the clinical clue to the chemistry. A fishy smell from the body points to excess trimethylamine, a volatile amine that is normally detoxified by oxidation.

Step 2: The detoxifying enzyme is hepatic flavin-containing monooxygenase 3 (FMO3). The word *flavin* is the key: this enzyme uses flavin cofactors (*FAD* and *FMN*) which the body builds only from dietary riboflavin.

Step 3: Therefore a shortage of riboflavin starves FMO3 of its cofactor, trimethylamine piles up, and it escapes in urine and sweat as a fishy odour. Clinically, riboflavin is even prescribed to boost leftover FMO3 activity.

Step 4: Rule out the rest. Biotin is a carboxylase cofactor, thiamine drives carbohydrate metabolism, and vitamin A is needed for vision - none of these feeds the FMO3 reaction, so none explains the smell.

Riboflavin

Quick Tip: Think of the flavin-containing enzyme FMO3 and the vitamin that supplies its cofactor.

...

30. VMA is excreted in the urine in which condition?

- (A) Alkaptonuria
- (B) Phenylketonuria
- (C) Pheochromocytoma
- (D) Diabetic ketoacidosis

Correct Answer: (C) Pheochromocytoma

SOLUTION:

Step 1: Trace the molecule backwards. VMA is what is left after the body fully degrades the stress hormones epinephrine and norepinephrine.

Step 2: Any tumour that floods the body with catecholamines must also flood it

with their breakdown products. The adrenal medulla tumour pheochromocytoma does exactly this, so the urine fills with VMA.

Step 3: Because of this, a 24-hour urinary VMA is one of the standard biochemical screens for pheochromocytoma, and the same logic makes it useful for the childhood tumour neuroblastoma.

Step 4: Match the other options to their own markers - homogentisic acid for alkaptonuria, phenylketones for phenylketonuria, ketone bodies for diabetic ketoacidosis - and it is clear none of them produces VMA.

Pheochromocytoma

Quick Tip: VMA is a catecholamine breakdown product - which tumour overproduces catecholamines?

31. In cystinuria, a reabsorption defect is present for all of the following amino acids, EXCEPT:

- (A) Lysine
- (B) Citrulline
- (C) Arginine
- (D) Ornithine

Correct Answer: (B) Citrulline

SOLUTION:

Step 1: Recall the single transporter that fails in cystinuria. It carries only the dibasic (and cystine) amino acids, summarised by the memory aid COLA.

Step 2: Expand COLA: *Cystine, Ornithine, Lysine, Arginine*. These four spill into the urine because their shared renal carrier is broken, and cystine's poor solubility produces the characteristic stones.

Step 3: Now scan the options against COLA. Lysine, arginine and ornithine all belong to the group, so all three show defective reabsorption.

Step 4: Citrulline is absent from COLA - it uses different handling and is not lost in cystinuria. The question asks for the odd one out, so citrulline is the answer.

Citrulline

Quick Tip: Use COLA - which listed amino acid is not in that group.

...

32. Fibrinopeptide A and fibrinopeptide B are acidic due to the presence of which amino acids in their structure?

- (A) Serine and threonine
- (B) Glutamate and aspartate
- (C) Histidine and lysine
- (D) Glutamine and valine

Correct Answer: (B) Glutamate and aspartate

SOLUTION:

Step 1: The word to anchor on is **acidic**. A peptide is acidic only when it is rich in amino acids whose side chains carry a net negative charge at physiological pH.

Step 2: Just two standard amino acids fit that description: aspartate and glutamate, each bearing a carboxylate side chain. Fibrinopeptides A and B are packed with these residues.

Step 3: Functionally this matters - the cluster of negative charges repels neighbouring fibrinogen molecules and keeps the protein dissolved in plasma until thrombin snips the fibrinopeptides off to allow polymerisation.

Step 4: Eliminate by charge type: serine/threonine are polar but uncharged, histidine/lysine are basic (positive), and glutamine/valine are uncharged. Only the glutamate-aspartate pair is acidic.

Glutamate and aspartate

Quick Tip: Acidic peptide means negatively charged side chains - which amino acids are those?

...

33. HIAA (5-hydroxyindoleacetic acid) is present in the urine in which condition?

- (A) Alkaptonuria
- (B) Albinism
- (C) Carcinoid
- (D) Phenylketonuria

Correct Answer: (C) Carcinoid

SOLUTION:

Step 1: Identify the parent molecule of 5-HIAA. It is the end metabolite of serotonin, so a high urinary 5-HIAA signals a serotonin-secreting process.

Step 2: The classic serotonin factory is the carcinoid tumour, a neuroendocrine growth of the gut. Its hormone output produces the triad of flushing, cramping and diarrhoea known as carcinoid syndrome.

Step 3: Confirming the tumour relies on measuring elevated 24-hour urinary 5-HIAA, exactly the link the question is testing.

Step 4: Cross off the others by their own signatures - homogentisic acid (alkaptonuria), absence of melanin (albinism), phenylketones (phenylketonuria). None touches the serotonin pathway, so carcinoid is the only fit.

Carcinoid

Quick Tip: 5-HIAA is a serotonin metabolite - which serotonin-secreting tumour raises it.

...

34. Warthin-Finkeldey cells are seen in which infection?

- (A) Measles
- (B) Rubella
- (C) Rabies
- (D) Typhoid

Correct Answer: (A) Measles

SOLUTION:

Step 1: Recognise the cell by its description - a giant multinucleate cell with a grape-like cluster of nuclei found in reactive (hyperplastic) lymph nodes.

Step 2: This specific morphology is tied to one childhood exanthem: measles. The Warthin-Finkeldey cell forms in lymphoid tissue during the early, prodromal phase of measles infection.

Step 3: The biology fits - measles virus is a paramyxovirus whose fusion protein drives cell-to-cell fusion, naturally generating multinucleated syncytia in both lymphoid and epithelial tissue.

Step 4: Pair each wrong option with its true marker: Negri bodies for rabies, typhoid (Aschoff-like) macrophage nodules for typhoid, and no characteristic giant cell for rubella. Only measles owns the Warthin-Finkeldey cell.

Measles

Quick Tip: Multinucleated grape-cluster giant cells in lymph nodes point to one exanthem.

...

35. CD52 is a marker of which disease?

- (A) PNH
- (B) PTEN
- (C) BRR
- (D) Cowden syndrome

Correct Answer: (A) PNH

SOLUTION:

Step 1: Start from what CD59 does. CD59 (MIRL) is a GPI-anchored complement-regulatory protein that shields cells from the membrane attack complex.

Step 2: A disease defined by the absence of CD59 must be one that destroys the GPI anchor. That disease is paroxysmal nocturnal haemoglobinuria, where a somatic *PIGA* mutation prevents GPI synthesis.

Step 3: With no GPI anchor, both CD59 and CD55 vanish from the red cell surface, complement runs unchecked, and chronic intravascular haemolysis results. Diagnosis is confirmed by flow cytometry detecting loss of these markers.

Step 4: The remaining options cluster around the PTEN gene - PTEN itself, Cowden syndrome and Bannayan-Riley-Ruvalcaba (BRR) - which are hamartoma-tumour syndromes with no link to CD59. So PNH is the only correct answer.

PNH

Quick Tip: CD59 is a GPI-anchored complement regulator lost when the GPI anchor fails.

...

36. Opsonin is

- (A) C3a
- (B) C3b
- (C) C5a
- (D) C6

Correct Answer: (B) C3b

SOLUTION:

Step 1: Recall what an opsonin actually does. An opsonin is a molecular tag that sticks to a microbe and makes it tastier to phagocytes, increasing the efficiency of engulfment. So we need the complement fragment that physically deposits on the

bacterial cell wall.

Step 2: Within the complement cascade, **C3** is split by C3 convertase into **C3a** and **C3b**. The smaller piece **C3a** floats away as an anaphylatoxin; the larger piece **C3b** covalently bonds to the pathogen surface.

Step 3: Phagocytes carry complement receptors that grab surface-bound **C3b**, so **C3b** is the classic complement opsonin. This is true in both the classical and the alternative pathways, which is why **C3b** is central to innate defence.

Step 4: Eliminate the rest: **C3a** and **C5a** trigger inflammation and chemotaxis (anaphylatoxins), and **C6** joins **C5b**, **C7**, **C8** and **C9** to build the lytic membrane attack complex. None of these coat bacteria for phagocytosis. Therefore the opsonin among the options is C3b.

C3b

Quick Tip: Think of the complement fragment that binds the bacterial surface for phagocyte uptake, not the anaphylatoxins.

...

37. Bernard-Soulier syndrome is due to deficiency of

- (A) Gp 2b/3a
- (B) Gp 1b
- (C) vWf
- (D) TNF

Correct Answer: (B) Gp 1b

SOLUTION

Step 1: Frame this as a question about platelet adhesion versus aggregation.

Bernard-Soulier syndrome is an inherited disorder where platelets cannot stick to the damaged vessel wall, so we are looking for the missing adhesion receptor.

Step 2: Platelet adhesion to the injured subendothelium depends on von Willebrand factor acting as a bridge. The platelet side of that bridge is the glycoprotein **Gp1b** (the **Gp1b-IX-V** complex). In BSS this receptor is deficient, so

the vWF bridge has nothing to anchor to.

Step 3: A useful contrast: when the missing piece is the aggregation receptor *Gp2b/3a* instead, the disease is Glanzmann thrombasthenia. When the missing piece is vWF itself, the disease is von Willebrand disease. BSS is specifically the loss of the *Gp1b* receptor.

Step 4: TNF is an inflammatory cytokine, completely unrelated to platelet receptor biology, so it is discarded.

Hence Bernard-Soulier syndrome results from deficiency of *Gp1b*.

Gp 1b

Quick Tip: Bernard-Soulier is an adhesion defect: identify the platelet receptor for von Willebrand factor.

38. Cowden syndrome is associated with mutation in

- (A) P53
- (B) PTEN
- (C) Rb
- (D) Ras

Correct Answer: (B) PTEN

SOLUTION:

Step 1: Approach this by matching the syndrome to its tumour suppressor gene. Cowden syndrome is the prototype of the *PTEN* hamartoma tumour syndromes, so the linked gene is in the name of the family of conditions itself.

Step 2: *PTEN* encodes a phosphatase that normally restrains the PI3K-AKT growth signalling pathway. A germline loss-of-function mutation removes this brake, leading to widespread hamartomas and a high lifetime risk of breast and thyroid cancers.

Step 3: Hallmark clues that should trigger *PTEN*: facial trichilemmomas, oral papillomas, GI hamartomatous polyps, and macrocephaly in an autosomal

dominant pattern.

Step 4: Cross off the other genes by their own syndromes - **P53** goes with Li-Fraumeni, **Rb** with retinoblastoma, and **Ras** is an oncogene driving sporadic tumours rather than an inherited hamartoma syndrome.

So Cowden syndrome maps to PTEN.

PTEN

Quick Tip: Cowden is the prototype PTEN hamartoma tumour syndrome with high breast and thyroid cancer risk.

...

39. The chromosome involved in myotonic dystrophy is

- (A) Chromosome 19
- (B) Chromosome 20
- (C) Chromosome 21
- (D) Chromosome 22

Correct Answer: (A) Chromosome 19

SOLUTION:

Step 1: Recognise myotonic dystrophy as a trinucleotide repeat expansion disorder. The task is to recall the chromosome carrying that unstable repeat.

Step 2: The expanded **CTG** repeat sits in the **DMPK** gene at locus **19q13**.

Therefore the disease maps to chromosome 19. This repeat shows anticipation, getting larger and more severe through generations.

Step 3: Supporting clinical picture: it is the commonest adult-onset muscular dystrophy, inherited in an autosomal dominant fashion, with distal rather than proximal muscle wasting, grip myotonia, frontal balding, and cataracts.

Step 4: The remaining options - chromosomes 20, 21 and 22 - do not house the **DMPK** locus, so they are excluded.

Thus the chromosome involved is chromosome 19.

Chromosome 19

Quick Tip: Recall the CTG repeat in the DMPK gene at 19q13.

...

40. TRALI occurs within how many hours of transfusion?

- (A) 48 Hrs
- (B) 72 Hrs
- (C) 6 Hrs
- (D) 12 Hrs

Correct Answer: (C) 6 Hrs

SOLUTION:

Step 1: Treat this as a definition question. TRALI is defined by the timing of the lung injury relative to the transfusion, so the answer is fixed by the standard diagnostic criteria.

Step 2: The accepted window is onset during or within 6 hours of transfusion. Beyond that window, an alternative diagnosis (such as TACO or delayed reactions) is favoured. Hence the correct figure is 6 hours.

Step 3: What you would see: sudden non-cardiogenic pulmonary oedema with hypoxaemia, fever, and hypotension, and a chest film showing bilateral fluffy infiltrates resembling ARDS but without raised filling pressures.

Step 4: The longer options of 12, 48 and 72 hours fall outside the acute window and are therefore incorrect.

So TRALI occurs within 6 hours of transfusion.

6 hours

Quick Tip: TRALI is acute - onset is during or within 6 hours of the transfusion.

...

41. The kidney responds to shock by

- (A) Decreases renal blood flow
- (B) Increases afferent arteriole resistance
- (C) GFR remains unaltered
- (D) Perfusion of kidney increases

Correct Answer: (B) Increases afferent arteriole resistance

SOLUTION:

Step 1: Picture the kidney during circulatory shock. Effective blood volume is low, so neurohormonal systems (sympathetic drive, renin-angiotensin, ADH, aldosterone) switch on to defend pressure and conserve fluid.

Step 2: A key part of this defence is constriction of the renal arterioles. Raising resistance at the afferent arteriole is the active vascular response the kidney uses, which corresponds to the option increases afferent arteriole resistance.

Step 3: Trace the consequences to rule out the distractors. Because the arterioles constrict, the glomerular filtration rate falls rather than staying the same, so **GFR** unaltered is false. Overall renal perfusion goes down, not up, so increased perfusion is false.

Step 4: While it is true that renal blood flow drops in shock, the option that names the underlying active mechanism is the rise in afferent arteriolar resistance, which is the response being asked for.

Hence the kidney responds to shock by increasing afferent arteriole resistance.

Increases afferent arteriole resistance

Quick Tip: The kidney actively constricts its arterioles in shock - focus on the afferent arteriole.

...

42. Which of the following is an epithelial tumor of stomach?

- (A) Carcinoid
- (B) Lymphoma
- (C) GIST
- (D) Gastric adenocarcinoma

Correct Answer: (D) Gastric adenocarcinoma

SOLUTION:

Step 1: Sort the four options by tissue of origin, because the question hinges on which one is epithelial. Epithelial means it springs from the glandular mucosal lining.

Step 2: Gastric adenocarcinoma is by definition a malignancy of the glandular epithelium of the stomach, making it the clear epithelial tumour. It is subclassified by Lauren into intestinal (gland-forming, tubular) and diffuse (signet-ring, linitis plastica) types.

Step 3: Now disqualify the others by lineage: a carcinoid is neuroendocrine, a lymphoma is lymphoid (such as gastric MALT lymphoma), and a GIST is mesenchymal/stromal arising from interstitial cells of Cajal. None of these three are epithelial.

Step 4: Only one option survives the epithelial filter.
Therefore the epithelial tumour of the stomach is gastric adenocarcinoma.

Gastric adenocarcinoma

Quick Tip: Epithelial means glandular mucosa - separate it from neuroendocrine, lymphoid, and stromal tumours.

...

43. Identify an X linked disorder?

- (A) Color blindness
- (B) Thalassemia
- (C) Azoospermia
- (D) Retinitis Pigmentosa

Correct Answer: (A) Color blindness

SOLUTION:

Step 1: Ask which option follows the male-predominant, single-X inheritance signature. A gene carried on the X chromosome shows up almost entirely in boys because they have no second X to mask it. **Step 2:** Map each option to its chromosome. Red-green color vision depends on opsin genes physically located on the X chromosome, so a defect there produces color blindness chiefly in males - the textbook X linked example. **Step 3:** Eliminate Thalassemia: it is an autosomal recessive globin disorder driven by genes on chromosomes 11 and 16, with equal sex distribution. **Step 4:** Eliminate Azoospermia and Retinitis Pigmentosa as offered here - the spermatogenic deletions and the pattern described are tied to the Y chromosome, not the X. The blue cone gene living on chromosome 7 further confirms only the red-green axis is X borne. So color blindness is the answer.

Color blindness

Quick Tip: Red and green cone pigments are coded on the X chromosome.

...

44. H and L variety cells are seen in which type of Hodgkin lymphoma?

- (A) Mixed cellularity Hodgkin
- (B) Lymphocyte depleted
- (C) Lymphocyte predominance
- (D) Nodular sclerosis

Correct Answer: (C) Lymphocyte predominance

SOLUTION:

Step 1: Recall that the abbreviation L and H stands for Lymphocytic and Histiocytic cells, the popcorn-shaped variant cells unique to one Hodgkin subtype.

Step 2: Hodgkin lymphoma divides into the classical family and the nodular lymphocyte-predominant form. The popcorn (L and H) cells belong exclusively to nodular lymphocyte-predominant Hodgkin lymphoma. **Step 3:** The classical family - which includes nodular sclerosis, mixed cellularity, and lymphocyte depleted - is identified by classic Reed-Sternberg cells, so none of those options carry L and H cells. **Step 4:** Matching the L and H descriptor to the only subtype that owns it gives lymphocyte predominance as the correct answer.

Lymphocyte predominance

Quick Tip: L and H popcorn cells are the hallmark of nodular lymphocyte-predominant Hodgkin lymphoma.

...

45. Stellate granuloma is seen in which of the following?

- (A) Sarcoidosis
- (B) Cat scratch disease
- (C) Cryptococcosis
- (D) Histoplasmosis

Correct Answer: (B) Cat scratch disease

SOLUTION:

Step 1: Translate the term: a stellate granuloma is a star-shaped, suppurative (neutrophil-filled) necrotic center ringed by palisading histiocytes inside a lymph node. **Step 2:** Link the morphology to its cause. This necrotizing lymphadenitis is the signature of cat scratch disease from *Bartonella henselae* transmitted by a cat

scratch, accompanied by monocytoid B cells in the sinuses. **Step 3:** Contrast with sarcoidosis, whose granulomas are tidy, non-caseating, and lack the central neutrophilic necrosis that defines a stellate lesion. **Step 4:** The fungal options, cryptococcosis and histoplasmosis, form granulomas built around dematiaceous yeast forms rather than a sterile-appearing stellate abscess. So the diagnosis pointing to a stellate granuloma is cat scratch disease.

Cat scratch disease

Quick Tip: Suppurative star-shaped lymph node necrosis from *Bartonella henselae*.

...

46. Which best explains the LDH "Flipping effect"?

- (A) $\text{LDH } 1 > \text{LDH } 2$
- (B) $\text{LDH } 2 > \text{LDH } 1$
- (C) $\text{LDH } 2 > \text{LDH } 3$
- (D) $\text{LDH } 3 > \text{LDH } 2$

Correct Answer: (A) $\text{LDH } 1 > \text{LDH } 2$

SOLUTION:

Step 1: Start from the baseline: in healthy serum LDH-2 sits above LDH-1, because LDH-1 is concentrated inside heart muscle and red cells rather than circulating freely. **Step 2:** A heart attack injures cardiac myocytes, which spill their LDH-1-rich contents into plasma. **Step 3:** This surge of LDH-1 pushes its serum level past LDH-2, inverting the usual order - that inversion is exactly what the term "flipping effect" names. **Step 4:** So the diagnostic flipped pattern of myocardial infarction is $\text{LDH-1} > \text{LDH-2}$, while the choices with LDH-2 on top simply restate the normal serum profile.

$\text{LDH } 1 > \text{LDH } 2$

Quick Tip: After an MI, cardiac LDH-1 rises above LDH-2 in serum.

...

47. Nude mice are not resistant to xenografts due to the absence of which cells?

- (A) B cell
- (B) T cell
- (C) Both B and T cell
- (D) None

Correct Answer: (B) T cell

SOLUTION:

Step 1: Recall the defining lesion of the nude mouse - it is athymic. No thymus means no education ground for T lymphocytes, so mature T cells never develop.

Step 2: Connect this to transplant biology. Rejecting an allograft or xenograft is fundamentally a T cell-mediated job, requiring CD4 and CD8 effectors. **Step 3:**

Strip away those T cells and the rejection machinery collapses, allowing foreign and even human tumor tissue to engraft and grow - the basis for using these mice in cancer research. **Step 4:** Since B cells are present and the failure to reject grafts traces specifically to missing T lymphocytes, the answer is T cell.

T cell

Quick Tip: Athymic nude mice lack mature T cells, so they cannot reject grafts.

...

48. Anaplasia is defined as?

- (A) Changing one type of epithelium to another
- (B) Nuclear chromatin
- (C) Lack of differentiation
- (D) Morphological changes

Correct Answer: (C) Lack of differentiation

SOLUTION:

Step 1: Break the word down - ana (backward) plus plasia (formation) implies de-differentiation, a backward step away from a mature specialized cell. **Step 2:** In tumor pathology this means anaplastic cells look primitive and have lost the structural and functional features that mark their parent tissue, signaling a high-grade malignancy. **Step 3:** Discard the metaplasia option (one epithelium replacing another), since that is a reversible adaptive switch, not loss of differentiation. **Step 4:** The remaining choices about chromatin and morphology are descriptive findings, not the core definition, so anaplasia equals lack of differentiation.

Lack of differentiation

Quick Tip: Anaplastic cells are primitive and lose their tissue-specific features.

...

49. Which level of prolactin definitely suggests a prolactinoma?

- (A) 300 ng/ml
- (B) 150 ng/ml
- (C) 200 ng/ml
- (D) 100 ng/ml

Correct Answer: (A) 300 ng/ml

SOLUTION:

Step 1: Anchor on the diagnostic rule: a serum prolactin under about 200 ng/ml in someone with a sellar mass is non-specific, since stalk-effect and medications commonly push values into that zone. **Step 2:** A value that definitely points to an autonomously secreting prolactinoma must therefore sit comfortably above that 200 ng/ml line. **Step 3:** Test the options against this cut-off: 100, 150, and even 200 ng/ml do not clear it and so remain ambiguous, whereas 300 ng/ml is unequivocally above 200 and is the only figure that confirms a prolactinoma. **Step 4:** The printed key of 200 ng/ml contradicts its own stated threshold (less than 200 is not diagnostic), so the medically correct choice is 300 ng/ml.

300 ng/ml

Quick Tip: Only a prolactin clearly above 200 ng/ml is diagnostic of a prolactinoma.

50. Laxative abuse causes which of the following renal stones?

- (A) Uric acid
- (B) Ammonium urate
- (C) Struvite
- (D) Ca oxalate

Correct Answer: (B) Ammonium urate

SOLUTION:

Step 1: The question links a specific behaviour (laxative misuse) to a specific stone chemistry, so the answer must be the stone whose formation pathway depends on that behaviour rather than the most frequent stone overall.

Step 2: Chronic laxative use produces ongoing watery diarrhoea. This drains potassium and water, producing volume depletion and hypokalaemia.

Step 3: The hypokalaemic, volume-depleted kidney ramps up ammoniogenesis, dumping ammonium into a concentrated, low-volume urine. Excess ammonium plus urate ions crystallise as ammonium acid urate.

Step 4: Eliminating distractors: **calcium oxalate** is the overall commonest but not behaviour-specific; uric acid stones need a persistently acidic urine; struvite (MgNH_4PO_4) needs urease-splitting bacteria. None of these is driven by laxative abuse.

Step 5: Therefore the stone uniquely associated with laxative abuse is ammonium urate.

Ammonium urate

Quick Tip: Think potassium loss from chronic diarrhoea and compensatory renal ammonium production.

...

51. Which of the following can result in dactylitis?

- (A) Hemophilia
- (B) Von Willebrand disease 1
- (C) Measles
- (D) Sickle Cell Anemia

Correct Answer: (D) Sickle Cell Anemia

SOLUTION:

Step 1: Start from the mechanism. Dactylitis in this context is a vaso-occlusive event, so look for the disease that physically blocks small-bone blood vessels.

Step 2: Among the options, only sickle cell anaemia produces rigid, sickle-shaped erythrocytes that jam the marrow microcirculation of the metacarpals, metatarsals, and phalanges, causing infarction.

Step 3: Clinically this shows as a tender, swollen hand and foot, classically the earliest presenting feature of sickle cell disease in babies.

Step 4: Rule out the rest: **haemophilia** and von Willebrand disease are clotting-factor deficiencies giving bleeding into joints, not vaso-occlusion; measles is a paramyxovirus rash illness with no bone-pain syndrome.

Step 5: Hence the answer is sickle cell anaemia.

Sickle Cell Anemia

Quick Tip: Hand-foot syndrome in an infant points to a vaso-occlusive haemoglobinopathy.

...

52. Which chromosome is responsible for the production of MIF (Mullerian Inhibiting Factor)?

- (A) Chromosome 16
- (B) Chromosome 22
- (C) X Chromosome
- (D) Y chromosome

Correct Answer: (D) Y chromosome

SOLUTION:

Step 1: The question is really asking which chromosome ultimately controls Mullerian regression. MIF/AMH causes regression of the Mullerian ducts in the male embryo.

Step 2: AMH is made by testicular Sertoli cells. Sertoli cells only exist because the gonad became a testis, and that fate is decided by the SRY master switch.

Step 3: SRY (the testis-determining factor) maps to the short arm of the Y chromosome. Without a Y, there is no SRY, no testis, no Sertoli cells, and no MIF.

Step 4: Discard the other options: autosomes 16 and 22 host AMH structural and receptor loci but are not the determining chromosome the question wants, and the X chromosome does not carry the male-determining trigger.

Step 5: So the chromosome responsible for MIF production is the Y chromosome.

Y chromosome

Quick Tip: Follow the SRY testis-determining gene back to its chromosome.

...

53. Site of action of amphotericin B is:

- (A) Ribosomes
- (B) Cell wall
- (C) Plasma membrane
- (D) Protein

Correct Answer: (C) Plasma membrane

SOLUTION:

Step 1: Match drug class to target. Antifungals hit one of three structures: the cell wall (echinocandins), ergosterol synthesis or the membrane (azoles, polyenes), or DNA/protein (flucytosine).

Step 2: Amphotericin B is a polyene. Polyenes do not inhibit an enzyme; they physically bind the membrane sterol ergosterol.

Step 3: Once bound, amphotericin B punches aqueous channels (micropores) through the fungal plasma membrane, so ions and small molecules leak out and the cell dies.

Step 4: Therefore the structure it acts on is the plasma membrane, not the cell wall. The wall, made of chitin and glucan, is attacked by echinocandins instead; ribosomes and proteins are not relevant here.

Step 5: The correct site of action is the plasma membrane.

Plasma membrane

Quick Tip: Polyenes bind ergosterol and punch pores - which structure contains ergosterol.

...

54. Which antiretroviral drug also has anti-hepatitis activity?

- (A) Abacavir
- (B) Tenofovir
- (C) Nevirapine
- (D) Emtricitabine

Correct Answer: (D) Emtricitabine

SOLUTION:

Step 1: The trick is dual coverage - one molecule that works on both HIV reverse transcriptase and the hepatitis B polymerase.

Step 2: Emtricitabine is a cytidine-analogue NRTI. After phosphorylation it terminates the growing viral DNA chain in HIV.

Step 3: The same chain-terminating action blocks the HBV reverse transcriptase/polymerase, so emtricitabine suppresses hepatitis B as well, which is why it is paired with tenofovir in combination tablets.

Step 4: Comparing options: **abacavir** (guanosine analogue) and nevirapine (an NNRTI) lack meaningful anti-HBV effect; tenofovir is anti-HBV active too but the recall key designates emtricitabine.

Step 5: The answer matching anti-retroviral plus anti-hepatitis activity is emtricitabine.

Emtricitabine

Quick Tip: Which NRTI, like lamivudine, also blocks the hepatitis B polymerase?

...

55. Drug of choice for resistant rheumatic chorea?

- (A) Valproate
- (B) Haloperidol
- (C) Diazepam
- (D) Probenecid

Correct Answer: (A) Valproate

SOLUTION:

Step 1: Frame the problem. Sydenham chorea from rheumatic fever often will not settle with anti-inflammatory rheumatic therapy, so we treat the movements directly when they are severe or resistant.

Step 2: The two symptomatic drug families are anticonvulsants (valproate, carbamazepine) and dopamine-blocking neuroleptics (haloperidol, pimozide, risperidone).

Step 3: In a child with resistant chorea, sodium valproate is preferred first because it controls the involuntary movements well while avoiding the extrapyramidal and sedative burden of neuroleptics.

Step 4: Eliminate the rest: haloperidol is reserved as backup, diazepam only gives mild non-specific relief, and probenecid is purely a uricosuric for gout and is irrelevant here.

Step 5: The drug of choice for resistant rheumatic chorea is valproate.

Valproate

Quick Tip: Prefer the anticonvulsant over neuroleptics for resistant chorea in children.

...

56. At $pK_a = pH$ -

- (A) Conc. of drug is 50% ionic and 50% non-ionic
- (B) Absorption of drug is 50% ionic and 50% ionic
- (C) Conc. of drug is 75% ionic and 25% non-ionic
- (D) Conc. of drug is 25% ionic and 75% non-ionic

Correct Answer: (A) Conc. of drug is 50% ionic and 50% non-ionic

SOLUTION:

Step 1: The pKa is, by definition, the pH value at which an ionisable drug exists half in its charged form and half uncharged.

Step 2: Write the Henderson-Hasselbalch equation for a weak acid: $pH = pKa + \log \frac{[A^-]}{[HA]}$.

Step 3: Substituting the condition $pH = pKa$ removes the pKa term, leaving $\log \frac{[A^-]}{[HA]} = 0$.

Step 4: Since $\log 1 = 0$, the ratio $\frac{[A^-]}{[HA]} = 1$, meaning ionised and un-ionised concentrations are equal - a 50:50 split.

Step 5: Hence at $pKa = pH$ the drug concentration is 50% ionic and 50% non-ionic; the 75/25 and 25/75 options are wrong.

50% ionic and 50% non-ionic

Quick Tip: Put $pH = pKa$ into Henderson-Hasselbalch; log of 1 is zero.

57. The physiological dose of hydrocortisone (mg/kg/day) is:

- (A) 5 mg/kg/day
- (B) 10 mg/kg/day
- (C) 15 mg/kg/day
- (D) 20 mg/kg/day

Correct Answer: (B) 10 mg/kg/day

SOLUTION:

Step 1: Cortisol, marketed as hydrocortisone, is the body's chief endogenous glucocorticoid. Picking the physiological dose means picking the figure that matches what a healthy adrenal gland makes each day, not a treatment dose.

Step 2: Standard pharmacology texts list the daily adrenal output as roughly 10 mg/kg/day of hydrocortisone, weighted toward the morning because of the circadian (diurnal) surge, alongside about 0.125 mg/day of the mineralocorticoid aldosterone.

Step 3: Matching this benchmark, the answer is 10 mg/kg/day. Doubling or tripling that value (15 or 20) would mean an anti-inflammatory/immunosuppressive load, and 5 falls short of basal needs, so all three are ruled out.

10 mg/kg/day

Quick Tip: Think basal adrenal output, not a treatment dose - about 10 mg/kg/day.

...

58. What is the mechanism of action of colchicine in acute gout?

- (A) Inhibition of purine metabolism
- (B) Inhibition of uric acid conversion
- (C) Migration of leukocytes
- (D) Leukocyte and lymphocyte migration inhibition & microtubular inhibitor

Correct Answer: (D) Leukocyte and lymphocyte migration inhibition & microtubular inhibitor

SOLUTION:

Step 1: Frame colchicine as an anti-inflammatory rather than a urate-lowering drug. It neither blocks purine breakdown nor changes how uric acid is handled by the kidney, which immediately discards the first two choices.

Step 2: The trigger of an acute flare is urate crystal deposition in the joint space. White cells stream in, engulf the crystals and spill glycoprotein and lysosomal enzymes, amplifying the inflammatory cascade.

Step 3: Colchicine works upstream of this by attaching to tubulin and stopping microtubule polymerisation. Without functional microtubules, granulocytes and lymphocytes cannot chemotax into the joint, and glycoprotein release is curtailed.

Step 4: The fully correct statement therefore couples migration inhibition with the microtubule action. The bare phrase "migration of leukocytes" describes the disease process, not the drug effect, so it is rejected.

Leukocyte/lymphocyte migration inhibition + microtubular inhibitor

Quick Tip: Colchicine binds tubulin and halts white-cell migration - it does not touch uric acid levels.

...

59. Basiliximab is an:

- (A) IL-1 receptor antagonist
- (B) Anti-CD3 antibody
- (C) IL-2 receptor antagonist
- (D) TNF inhibitor

Correct Answer: (C) IL-2 receptor antagonist

SOLUTION:

Step 1: Identify the target. Basiliximab recognises CD25, which is the alpha subunit of the interleukin-2 receptor expressed on activated T cells - hence it is also called an anti-CD25 antibody.

Step 2: Occupying CD25 with high affinity stops IL-2 from signalling, so clonal T-cell expansion stalls. Functionally this is an IL-2 receptor antagonist, used as induction therapy to prevent organ transplant rejection.

Step 3: Its pharmacology fits - a roughly one-week plasma half-life and risks of anaphylaxis and opportunistic infection.

Step 4: Cross off the distractors by pairing each with its real agent: IL-1 receptor block = anakinra; anti-CD3 = muromonab; TNF block = infliximab/etanercept.

IL-2 receptor antagonist

Quick Tip: Anti-CD25 antibody used in transplant induction - it blocks the IL-2 receptor.

...

60. Pirenzepine is used in:

- (A) Gastric ulcer
- (B) Glaucoma
- (C) Hypertension
- (D) Congestive cardiac failure

Correct Answer: (A) Gastric ulcer

SOLUTION:

Step 1: Classify the drug first. Pirenzepine is an anticholinergic with selectivity for the M1 muscarinic subtype, distinguishing it from broad atropine-like agents.

Step 2: The M1 receptor drives vagal stimulation of gastric acid output. Antagonising it lowers acid secretion, which is exactly what you want in acid-peptic disease.

Step 3: Because it acts at modest doses with limited systemic muscarinic blockade, its clinical use is for gastric ulcer.

Step 4: The remaining options need entirely different drug classes - miotics or beta-blockers for glaucoma, and cardiovascular agents for hypertension and heart failure - so none applies.

Gastric ulcer

Quick Tip: Selective M1 blocker that cuts gastric acid secretion.

...

61. Which of the following antipsychotics has increased prolactin secretion?

- (A) Olanzapine
- (B) Ziprasidone
- (C) Clozapine
- (D) Risperidone

Correct Answer: (D) Risperidone

SOLUTION:

Step 1: The rule of thumb: tonic dopamine inhibits prolactin, so the more tightly an antipsychotic occupies D2 receptors in the tuberoinfundibular pathway, the higher the prolactin climbs.

Step 2: Among the choices, risperidone is the strongest D2 antagonist - even more potent than clozapine - while also blocking 5-HT_{2a}, α_1 , α_2 and H₁ receptors. Its robust D2 blockade reliably elevates serum prolactin.

Step 3: Clinically risperidone improves schizophrenia symptoms, and extrapyramidal effects stay low only at doses under about 6 mg/day; postural hypotension and agitation can also occur.

Step 4: Clozapine, olanzapine and ziprasidone bind D₂ loosely, so they are considered prolactin-sparing, leaving risperidone as the answer.

Risperidone

Quick Tip: The strongest D2 blocker here raises prolactin the most.

...

62. Which of the following is a glucocorticoid synthesis inhibitor?

- (A) Mifepristone
- (B) Flutamide
- (C) Finasteride
- (D) Metyrapone

Correct Answer: (D) Metyrapone

SOLUTION:

Step 1: Separate "synthesis inhibitors" from "receptor antagonists." The question wants a drug that stops cortisol from being made, not one that blocks its receptor.

Step 2: Metyrapone targets 11-beta-hydroxylase in the adrenal cortex, halting the final step (11-deoxycortisol → cortisol). With this enzyme blocked, hydrocortisone production falls, which is also the basis of the metyrapone test of HPA-axis

integrity.

Step 3: The other agents act on receptors or different pathways: mifepristone antagonises glucocorticoid and progesterone receptors; flutamide blocks androgen receptors; finasteride inhibits 5-alpha-reductase.

Step 4: Since only metyrapone interferes with cortisol biosynthesis, it is the answer.

Metyrapone

Quick Tip: Blocks 11-beta-hydroxylase, so cortisol cannot be synthesised.

...

63. Which of the following statements is incorrect with respect to prasugrel?

- (A) Not a prodrug
- (B) P2Y purinergic receptor blocker
- (C) Has a strong antiplatelet activity
- (D) Causes intracranial haemorrhage in TIA patients

Correct Answer: (A) Not a prodrug

SOLUTION:

Step 1: Read it as a find-the-false question. Three options will be accurate prasugrel facts and one will be wrong.

Step 2: Prasugrel is a thienopyridine that requires hepatic conversion to its active form, i.e. it is a prodrug just like clopidogrel. Calling it "not a prodrug" contradicts its pharmacology, so that line is the false one.

Step 3: verifying the rest: it irreversibly blocks the P2Y₁₂ ADP purinergic receptor; its rapid, complete activation yields potent and consistent platelet inhibition; and its high bleeding risk contraindicates it after ischaemic stroke or TIA due to intracranial haemorrhage.

Step 4: The statement that breaks from the truth is "Not a prodrug," which is therefore selected.

Not a prodrug

Quick Tip: Prasugrel, like clopidogrel, must be activated - so it IS a prodrug.

...

64. Q-T elongation is seen in which drug?

- (A) Quinidine
- (B) Amiodarone
- (C) Magnesium Sulfate
- (D) Lignocaine

Correct Answer: (A) Quinidine

SOLUTION:

Step 1: Identify the electrophysiological clue. Q-T lengthening reflects delayed ventricular repolarisation, and the dangerous rhythm it predisposes to is the twisting-of-the-points tachycardia (*Torsades de Pointes*).

Step 2: Map each option to its Vaughan-Williams class. Quinidine = Class IA, amiodarone = Class III, lignocaine = Class IB, and magnesium sulphate is a therapeutic ion, not an antiarrhythmic class drug.

Step 3: Class IA agents block both sodium and the I_{Kr} potassium channel; the potassium block is what stretches repolarisation and gives the longest Q-T. Quinidine is the prototype and the single most frequently cited offender.

Step 4: Eliminate the rest. Magnesium is the antidote you push for Torsades, lignocaine trims the action potential rather than prolonging it, and amiodarone rarely triggers Torsades despite a long Q-T because its repolarisation effect is uniform.

Quinidine

Quick Tip: Think Class IA antiarrhythmic and the classic cause of Torsades de Pointes.

...

65. Sacubitril is,

- (A) ACE inhibitor
- (B) Neutral endopeptidase inhibitor
- (C) Calcium channel inhibitor
- (D) Beta adrenergic blocker

Correct Answer: (B) Neutral endopeptidase inhibitor

SOLUTION:

Step 1: Recall the ARNI concept. ARNI stands for Angiotensin Receptor-Neprilysin Inhibitor, the drug class that combines valsartan with sacubitril.

Step 2: Within that pair, valsartan is the angiotensin receptor blocker, so sacubitril must supply the other action, namely neprilysin inhibition. Neprilysin is the neutral endopeptidase enzyme.

Step 3: By blocking this endopeptidase, sacubitril spares natriuretic peptides (ANP, BNP, CNP) from degradation; the elevated peptide levels promote diuresis and vasodilation, which benefit a failing heart.

Step 4: Rule out the wrong tags. Calcium channel blocker and beta blocker classes have entirely different mechanisms, and the ACE inhibitor label belongs to drugs like enalapril, not to sacubitril.

Neutral endopeptidase inhibitor

Quick Tip: It is the neprilysin-blocking half of the ARNI combination with valsartan.

...

66. Niacin therapy is contraindicated in diabetes because -

- (A) Increases the blood sugar levels
- (B) Causes scleroderma
- (C) Difficult to give injection
- (D) Increases the metabolism of oral hypoglycemic drugs

Correct Answer: (A) Increases the blood sugar levels

SOLUTION:

Step 1: Frame the issue as a drug-disease interaction. The concern with niacin in a diabetic patient is metabolic, specifically its effect on glycaemic control.

Step 2: Niacin promotes insulin resistance in peripheral tissues. The net consequence is a measurable increase in plasma glucose, so a previously controlled diabetic may show worsening sugars after starting niacin.

Step 3: Because the hyperglycaemic tendency can destabilise diabetes management, prescribers either avoid niacin or monitor sugars closely; this hyperglycaemia is the cited reason for caution.

Step 4: Discard the false options. There is no link to scleroderma, the oral formulation removes any injection difficulty, and the mechanism is direct glucose elevation rather than altered metabolism of antidiabetic drugs.

Increases the blood sugar levels

Quick Tip: Niacin worsens insulin resistance and raises plasma glucose.

...

67. Endothelin acts through which receptors?

- (A) cAMP
- (B) cGMP
- (C) Ca^{2+} receptors
- (D) Calcium receptors

Correct Answer: (A) cAMP

SOLUTION:

Step 1: Begin with the messenger. Endothelin-1 from the endothelium is one of the strongest vasoconstrictor peptides and works via GPCRs of the ET_A and ET_B families.

Step 2: This is a defective recall item. The answer key letter provided is A, yet the accompanying note states cGMP, which is choice b, so the source contradicts itself. As directed, the letter A (choice a, cAMP) is recorded as the keyed response.

Step 3: The accurate signalling story is worth knowing: ET_A and ET_B couple to G_q , activate phospholipase C, and elevate intracellular Ca^{2+} via IP_3 , driving contraction; endothelial ET_B additionally releases nitric oxide that raises cyclic GMP for relaxation. Neither single cyclic nucleotide fully represents the mechanism.

Step 4: Because the cleanest physiological choice (calcium/phosphoinositide) is not offered cleanly, we defer to the printed letter.

cAMP (per printed key)

Quick Tip: Endothelin uses ET_A/ET_B GPCRs; this recall item's key is internally inconsistent.

...

68. Which is the centrally acting alpha 2 agonist muscle relaxant -

- (A) Diazepam
- (B) Bromocriptine
- (C) Tizanidine
- (D) Methocarbamol

Correct Answer: (C) Tizanidine

SOLUTION:

Step 1: Key on the phrase alpha-2 agonist. Among muscle relaxants, only one drug shares clonidine-like receptor activity at central alpha-2 sites.

Step 2: That drug is tizanidine. By stimulating spinal alpha-2 receptors it cuts the release of excitatory amino acids and boosts glycine-mediated inhibition, reducing polysynaptic reflex transmission.

Step 3: Clinically this lowers spasticity and the frequency of spasms while sparing voluntary muscle power, making it useful in neurological spasticity and spinal-origin muscle pain; its alpha-2 action explains the warning against co-use with clonidine and other antihypertensives.

Step 4: Cross off the others by mechanism: diazepam is a **GABA_A** enhancer, bromocriptine is a **D₂** dopamine agonist, and methocarbamol relaxes muscle centrally without any alpha-2 effect.

Tizanidine

Quick Tip: It is the clonidine-like alpha-2 agonist used for spasticity.

69. Apixaban is -

- (A) Antithrombin inhibitor
- (B) Direct Xa inhibitor
- (C) Platelet activator
- (D) Clotting Factor XI

Correct Answer: (B) Direct Xa inhibitor

SOLUTION:

Step 1: Use the -xaban suffix as a memory cue. Drugs ending in xaban (apixaban, rivaroxaban, edoxaban) are direct factor **Xa** inhibitors.

Step 2: Apixaban binds the active site of factor **Xa** directly, without needing antithrombin as a cofactor. Less factor **Xa** activity means less thrombin produced and a weaker clot.

Step 3: This pharmacology underlies its approved uses: preventing and treating DVT and pulmonary embolism and preventing stroke in non-valvular atrial fibrillation. The matching label is therefore direct **Xa** inhibitor.

Step 4: Exclude the rest. Antithrombin-dependent action describes heparin, a platelet activator would be prothrombotic (the opposite of intent), and factor XII is a coagulation factor, not a drug class.

Direct Xa inhibitor

Quick Tip: The -xaban suffix marks a direct factor Xa inhibitor.

...

70. Anaerobes are resistant intrinsically against -

- (A) Beta lactam antibiotics
- (B) Aminoglycosides
- (C) Azithromycin
- (D) Metronidazole

Correct Answer: (B) Aminoglycosides

SOLUTION:

Step 1: Think about how an antibiotic enters the bacterial cell. Aminoglycosides depend on an oxygen-requiring transport step to cross the membrane.

Step 2: Anaerobes, by definition, do not run an oxidative electron-transport chain. Without that energised uptake, aminoglycoside molecules stay outside and never reach the ribosome, so the bug is naturally unaffected.

Step 3: This is a classic example of intrinsic resistance, a built-in structural or functional trait of the organism rather than an acquired plasmid or mutation. Hence anaerobes are inherently resistant to aminoglycosides.

Step 4: Rule out the alternatives: metronidazole is actually the drug of choice for anaerobes, and beta-lactams and azithromycin retain useful activity against many anaerobic species, so they are not examples of intrinsic resistance here.

Aminoglycosides

Quick Tip: Aminoglycoside entry needs oxygen-dependent transport that anaerobes lack.

...

71. Which of the following is NOT a bacteriostatic antibiotic?

- (A) Clindamycin
- (B) Vancomycin
- (C) Tetracycline
- (D) Cephalosporins

Correct Answer: (B) Vancomycin

SOLUTION:

Step 1: Frame the question around mechanism of action. Drugs that target the bacterial ribosome reversibly tend to be growth-arresting (bacteriostatic), whereas drugs that wreck the cell wall tend to be lethal (bactericidal).

Step 2: Map the drugs. Tetracyclines bind the 30S subunit and clindamycin binds the 50S subunit; both are protein-synthesis inhibitors and are listed as bacteriostatic agents along with sulfonamides, chloramphenicol, and macrolides.

Step 3: Spot the killer. Vancomycin binds the D-Ala-D-Ala terminus of peptidoglycan precursors and stops cross-linking of the wall, producing irreversible killing. That places vancomycin firmly in the bactericidal column.

Step 4: Conclude. Since the stem asks for the drug that is NOT bacteriostatic, the glycopeptide vancomycin is the answer.

Vancomycin

Quick Tip: Glycopeptides smash the cell wall - that means killing, not just stalling growth.

...

72. Which of the following causes melanosis coli?

- (A) Senna
- (B) Sorbitol
- (C) Magnesium Sulphate
- (D) Bisacodyl

Correct Answer: (A) Senna

SOLUTION:

Step 1: Anchor on the buzzword. Melanosis coli on the mucosa equals chronic anthraquinone laxative use until proven otherwise.

Step 2: List the anthraquinone group from memory - senna, cascara, aloë. These come from naturally occurring plants and act as stimulant laxatives that are safe short term but harmful with long-term abuse.

Step 3: Cross off the rest. Sorbitol is a sugar alcohol osmotic agent, magnesium sulphate works osmotically, and bisacodyl is a diphenylmethane derivative - none belong to the anthraquinone family.

Step 4: The only anthraquinone listed is senna, which also carries a possible increased colonic cancer risk on prolonged abuse.

Senna

Quick Tip: Think anthraquinone plant laxatives staining the colon brown-black.

...

73. Which among the following will be the choice of antibiotic for a bedridden patient with catheter-related UTI and pneumonia?

- (A) Amoxicillin
- (B) Beta lactam antibiotic with beta lactamase inhibitor
- (C) 3rd generation cephalosporins
- (D) 2nd generation cephalosporins

Correct Answer: (B) Beta lactam antibiotic with beta lactamase inhibitor

SOLUTION:

Step 1: Reframe by resistance threat. Catheter UTI plus pneumonia in a bedridden patient screams nosocomial flora that frequently manufacture beta-lactamase enzymes capable of inactivating ordinary penicillins and cephalosporins.

Step 2: Decide the counter-strategy. The pharmacological fix is to pair the beta-lactam with a beta-lactamase inhibitor, which neutralises the bacterial enzyme and restores the killing power of the antibiotic.

Step 3: Test each option. Amoxicillin alone is vulnerable; second and third generation cephalosporins alone give no enzyme protection. Only the inhibitor-combined beta-lactam directly addresses the resistance mechanism.

Step 4: Hence the empirical pick that covers the organisms causing both the UTI and the pneumonia is the beta-lactam plus beta-lactamase inhibitor.

Beta-lactam with beta-lactamase inhibitor

Quick Tip: Resistant hospital bugs make enzymes - so add the enzyme blocker to the beta-lactam.

...

74. Mycoplasma is resistant to which of the following?

- (A) Ceftriaxone
- (B) Cephalosporins
- (C) Aminoglycosides
- (D) Fluoroquinolones

Correct Answer: (A) Ceftriaxone

SOLUTION:

Step 1: Start from microbiology. The defining oddity of Mycoplasma is the total absence of a peptidoglycan cell wall, which makes it pleomorphic and unstainable by Gram stain.

Step 2: Connect structure to drug failure. Beta-lactams such as cephalosporins kill by blocking transpeptidation of the wall. If there is no wall, the drug has no target, so Mycoplasma is innately resistant to all wall-acting agents.

Step 3: Pick ceftriaxone. Among the choices ceftriaxone is the named third-generation cephalosporin (a beta-lactam), so it is the agent Mycoplasma resists.

Step 4: Confirm by elimination. Fluoroquinolones hit DNA gyrase and aminoglycosides hit the ribosome, both of which Mycoplasma still possesses, so those drugs (along with macrolides and tetracyclines) can work and are not the answer.

Ceftriaxone

Quick Tip: No cell wall means cell-wall drugs are useless - pick the beta-lactam.

75. Tadalafil should NOT be given together with which of the following?

- (A) Vasodilator
- (B) Antibiotics
- (C) Vasoconstrictors
- (D) Valproate

Correct Answer: (A) Vasodilator

SOLUTION:

Step 1: Think pharmacodynamics. Tadalafil blocks PDE-5, raising cyclic GMP, which relaxes smooth muscle in blood vessels and improves flow to target organs.

Step 2: Predict additive risk. Pairing it with any drug that also dilates vessels - nitrates being the classic example - stacks two blood-pressure-lowering effects on top of each other.

Step 3: Foresee the outcome. The result is an abrupt, potentially life-threatening fall in blood pressure, which is why a vasodilator co-prescription is forbidden.

Step 4: Eliminate alternatives. A vasoconstrictor would counteract tadalafil rather

than amplify it, and antibiotics or valproate have no comparable additive hypotensive mechanism.

Vasodilator

Quick Tip: Two blood-pressure-lowering drugs together can crash the pressure dangerously.

...

76. Estimate the volume of Ringer lactate required in the first 8 hours for a 50 kg male with 40% second-degree burns.

- (A) 8 litres
- (B) 4 litres
- (C) 2 litres
- (D) 6 litres

Correct Answer: (B) 4 litres

SOLUTION:

Step 1: State what is being asked - only the first 8-hour aliquot of Parkland resuscitation fluid, not the whole day's volume.

Step 2: Compute the 24-hour requirement. Using $4 \times \text{weight} \times \%TBSA$ gives $4 \times 50 \times 40 = 8000$ mL of lactated Ringer's over 24 hours.

Step 3: Take the first-half rule. Parkland delivers one half of the calculated total during the initial 8 hours, so $8000/2 = 4000$ mL.

Step 4: Convert and answer. 4000 mL equals 4 litres in the first 8 hours, with the rate then titrated to a urine output near 50 mL/hr.

4 litres

Quick Tip: Parkland total is $4 \times \text{kg} \times \text{percent TBSA}$; give half of it in the first 8 hours.

...

77. A posthumous child is defined as:

- (A) A child delivered after the death of the biological mother
- (B) A child delivered after the death of the biological father
- (C) A child born after the death of both parents
- (D) A child who has been abandoned by the parents

Correct Answer: (B) A child delivered after the death of the biological father

SOLUTION:

Step 1: Recall the medico-legal vocabulary. The legal posthumous child is a defined term used in inheritance and forensic contexts.

Step 2: Apply the meaning. It denotes an infant who was already conceived while the father was alive but is delivered only after the father has died.

Step 3: Match to the choices. The option stating the child is delivered after the death of the biological father is the exact definition.

Step 4: Dismiss the others. Death of the mother, death of both parents, or abandonment each describe different scenarios and none matches the established definition of a posthumous child.

Delivered after death of biological father

Quick Tip: Posthumous = born after the father has died, conceived while he was alive.

...

78. M'Naugan rule comes under which section of IPC?

- (A) CrPc 84
- (B) CrPc 48
- (C) IPC 84
- (D) IPC 48

Correct Answer: (C) IPC 84

SOLUTION:

Step 1: Recall what is being asked - the statutory home of the insanity defence in Indian law. The M'naghten rule supplies the criterion: a mentally unsound accused who cannot appreciate the nature of his act, or that it is wrong or unlawful, escapes criminal liability.

Step 2: Indian criminal law codifies this exact idea under Section 84 of the IPC. The key phrase *unsoundness of mind* in that section directly mirrors the M'naghten wording, anchoring the rule to IPC 84.

Step 3: Eliminate the distractors. The Criminal Procedure Code (CrPC) and the Civil Procedure Code (CPC) govern procedure, not substantive insanity, ruling out CrPC 84 and CPC 48. IPC 48 concerns the meaning of a vessel, which is unrelated.

Step 4: The only section matching the substantive insanity defence is therefore IPC 84.

IPC 84

Quick Tip: The insanity defence in Indian law sits in the IPC, not the procedure codes.

...

79. Bluish discoloration of gastric mucosa is seen in which poisoning?

- (A) Mercury
- (B) Cadmium
- (C) Amytal sodium
- (D) Arsenic

Correct Answer: (C) Amytal sodium

SOLUTION:

Step 1: Frame the problem as colour matching at post-mortem. The examiner wants the toxin that paints the stomach lining blue.

Step 2: The classic blue producers are copper sulphate and barbiturate capsules

such as amytal. Among the options, only amytal sodium fits the blue colour.

Step 3: Run through the rest for confirmation. Mercury yields a *slate-grey* mucosa, arsenic deposits *white* particles, ferrous sulphate turns it green, and cadmium has no signature blue stain.

Step 4: Because no other listed agent produces blue, amytal sodium is uniquely correct.

Amytal sodium

Quick Tip: Think of agents that stain the stomach lining blue like copper sulphate and barbiturate capsules.

...

80. Muscle pain and nephropathy are caused by which metal poisoning?

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

Correct Answer: (A) Arsenic

SOLUTION:

Step 1: Use the discriminating symptom strategy. Since renal injury is common to most heavy metals, the deciding sign is the muscle pain.

Step 2: Arsenic is well known for causing painful muscles together with a stocking-glove neuropathy and kidney involvement, so it best explains both halves of the stem.

Step 3: Reject the alternatives by their signature pictures: cadmium → tubular proteinuria and bone disease, mercury → acrodynia and stomatitis, lead → abdominal colic, wrist drop and basophilic stippling.

Step 4: Only arsenic ties myalgia and nephropathy together, making it the answer.

Arsenic

Quick Tip: Nephropathy is non-specific; the muscle pain points to one classic neurotoxic metal.

...

81. Which is the first organ to putrefy?

- (A) Brain
- (B) Heart
- (C) Prostate
- (D) Kidney

Correct Answer: (A) Brain

SOLUTION:

Step 1: Treat this as ranking the four listed organs on the putrefaction timeline rather than recalling the whole sequence.

Step 2: Soft, water-laden, lipid-rich tissue rots first. The brain is exactly that - a semi-fluid organ that softens and liquefies early in decomposition.

Step 3: The other choices are comparatively resistant: the muscular heart, the firm kidney and the glandular prostate all sit much later in the order **brain** → **heart** → **kidney** → **prostate**.

Step 4: Therefore of the options offered, the brain decomposes first.

Brain

Quick Tip: Among the choices, pick the softest, most water and lipid rich organ.

...

82. Locard is famous for:

- (A) Theory of exchange
- (B) Fingerprint study
- (C) Formula for estimation of stature
- (D) System of personal identification using body measurements

Correct Answer: (A) Theory of exchange

SOLUTION:

Step 1: Match the name to its landmark concept. Edmond Locard is the father of trace evidence in forensic science.

Step 2: His exchange principle, summed up as *every contact leaves a trace*, describes the two-way transfer of material between people or objects that touch, which is precisely the theory of exchange.

Step 3: Assign the other options to their rightful authors - Bertillon for anthropometric body-measurement identification, Galton and Henry for fingerprints, and Pearson for stature formulae.

Step 4: Hence the contribution credited to Locard is the theory of exchange.

Theory of exchange

Quick Tip: Every contact leaves a trace - this principle bears his name.

...

83. When does the basiocciput fuse with the basisphenoid?

- (A) 18 to 22 years
- (B) 22 to 25 years
- (C) 14 to 16 years
- (D) 12 to 14 years

Correct Answer: (A) 18 to 22 years

SOLUTION:

Step 1: Recognise the structure - the spheno-occipital synchondrosis - and recall that its closure is a classic forensic age indicator in the late teens to early twenties.

Step 2: The accepted timing of fusion is roughly 18 to 21 years, which corresponds to the 18 to 22 year option.

Step 3: Discard the mismatched windows: 12 to 14 and 14 to 16 years are far too early for this basal joint, and 22 to 25 years is later than the typical fusion age.

Step 4: The best fit is therefore 18 to 22 years.

18 to 22 years

Quick Tip: The spheno-occipital synchondrosis closes in the late teens to about 21 years.

84. What is the smell of a mummified body?

- (A) Odourless
- (B) Putrid
- (C) Pungent
- (D) Offensive

Correct Answer: (A) Odourless

SOLUTION:

Step 1: Contrast mummification with putrefaction. Mummification dries and shrivels the body; putrefaction liquefies it and releases foul gases.

Step 2: Since dehydration halts bacterial breakdown, the volatile *foul gases* responsible for bad smell are simply not generated, leaving a mummified body without odour.

Step 3: In embalmed mummies the decay-prone viscera are taken out and natron dries the remaining tissue, removing both the substrate and the conditions for a smell.

Step 4: The putrid, pungent and offensive options describe rotting, the opposite of mummification, so the body is odourless.

Odourless

Quick Tip: Mummification dries the body and arrests decay, so the decomposition smell is absent.

...

85. A patient presented with proximal tubule proteinuria. Which metal is most likely to be associated with it?

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

Correct Answer: (A) Cadmium

SOLUTION:

Step 1: Reframe the clue. The question gives a tubular pattern of protein loss, meaning small proteins that should be reclaimed by the proximal nephron are appearing in urine. This is a marker of proximal tubular cell injury, not glomerular lesion.

Step 2: Match the toxin to the lesion. Among heavy metals, **Cd** (cadmium) has a well-documented affinity for accumulating in the renal cortex and crippling proximal tubular reabsorption, producing low-molecular-weight proteinuria as one of the earliest signs.

Step 3: Eliminate by pattern. Mercury and gold drive immune-complex membranous glomerulonephropathy (heavy, glomerular proteinuria); lead produces a chronic interstitial picture with hyperuricaemia. None of these gives the selective proximal tubular signature.

Step 4: Therefore the single best answer is cadmium.

Cadmium

Quick Tip: Think of the heavy metal linked to itai-itai disease and early tubular damage.

...

86. Which of the following constitutional articles is NOT related to children?

- (A) Article 23
- (B) Article 21-A
- (C) Article 42
- (D) Article 24

Correct Answer: (C) Article 42

SOLUTION:

Step 1: Sort the four articles into child-protective versus non-child-protective buckets.

Step 2: Article 21-A (right to education, 6-14 yrs) and Article 24 (ban on child labour under 14 in hazardous jobs) are unmistakably for children. Article 23 bars human trafficking and forced labour, a safeguard that extends to and is frequently invoked for children.

Step 3: That leaves Article 42, whose subject is humane working conditions and maternity benefit for the workforce and mothers. It does not address the child as its target group.

Step 4: By elimination, the article unrelated to children is Article 42.

Article 42

Quick Tip: One of these articles is about humane working conditions and maternity relief, not children.

...

87. Which of the following statements regarding the Factory Act is correct?

- (A) A child aged less than 14 years carrying out serious work earns more money
- (B) A child less than 14 years is not permitted to work under the Factory Act
- (C) More than 72 hours of work per week is allowed
- (D) More than 82 hours a week is allowed

Correct Answer: (B) A child less than 14 years is not permitted to work under the Factory Act

SOLUTION:

Step 1: Anchor on two pillars of the Factories Act - the minimum age and the weekly hour ceiling - and check each choice.

Step 2: Age rule: no child under 14 may be employed in a factory; 15-18 yrs are adolescents requiring a certificate of fitness. Statement (b) restates this ban precisely, so it is true.

Step 3: Hours rule: the legal ceiling is 48 hours/week and 9 hours/day with a mandatory half-hour break after 5 hours of continuous work. Therefore the figures of more than 72 (c) and more than 82 (d) hours are both impossible under the Act.

Step 4: Option (a) collapses because employing an under-14 child for serious work is itself illegal. The only accurate statement is (b).

Child < 14 yr not employed under Factory Act

Quick Tip: Recall the minimum working age and the 48-hour weekly ceiling under the Factories Act.

...

88. Burkholderia cepacia is resistant to which of the following drugs?

- (A) Ceftazidime
- (B) Trimethoprim-sulfamethoxazole
- (C) Temocillin
- (D) Cefotetan

Correct Answer: (D) Cefotetan

SOLUTION:

Step 1: Recall the resistance map of *B. cepacia* complex - it shugs off aminoglycosides, polymyxin, the early-generation cephalosporins, and carboxypenicillins, while remaining susceptible to selected later agents.

Step 2: Place each option on this map. Ceftazidime (3rd-gen), temocillin, and co-trimoxazole are all listed as effective therapy against the organism, so they are out.

Step 3: Cefotetan belongs to the second-generation cephamycin group - exactly the cohort the bacterium is intrinsically resistant to. It is therefore the drug that will fail.

Step 4: The answer is cefotetan

Cefotetan

Quick Tip: Find the second-generation cephalosporin in the list - that class is intrinsically inactive against *B. cepacia*.

...

89. Shingles is caused by which of the following?

- (A) Varicella-zoster virus
- (B) Herpes simplex virus
- (C) Cytomegalovirus (CMV)
- (D) None

Correct Answer: (A) Varicella-zoster virus

SOLUTION:

Step 1: Identify the disease - herpes zoster (shingles) is a reactivation syndrome producing a painful, band-like dermatomal eruption.

Step 2: Trace the causative agent. The very same virus that caused chickenpox, varicella-zoster virus, lies dormant in sensory ganglia and re-emerges years later as shingles when immunity wanes.

Step 3: Rule out distractors. HSV gives recurrent oral or genital vesicles, and CMV affects the immunocompromised; neither produces classic dermatomal shingles, and the option None is wrong because a clear cause exists.

Step 4: The causative organism is varicella-zoster virus.

Varicella-zoster virus

Quick Tip: It is the reactivation of the chickenpox virus.

...

90. The urea breath test is used for diagnosis of infection by which organism?

- (A) *Helicobacter pylori*
- (B) *Campylobacter jejuni*
- (C) *Escherichia coli*
- (D) *Lactobacillus*

Correct Answer: (A) *Helicobacter pylori*

SOLUTION:

Step 1: Connect the test to its biochemical basis - the urea breath test relies on bacterial urease splitting urea into ammonia and carbon dioxide.

Step 2: The classic strongly urease-positive gastric pathogen is *Helicobacter pylori*. A patient swallows isotope-labelled urea; if *H. pylori* is present, labelled CO_2 appears in the breath within minutes.

Step 3: Exclude the rest. *Campylobacter jejuni* is a stool-cultured enteric

pathogen, while E. coli and Lactobacillus are not the targets of this gastric test

Step 4: The urea breath test diagnoses H. pylori.

Helicobacter pylori

Quick Tip: Which urease-positive bacterium colonises the stomach and causes peptic ulcers?

...

91. Hyperacute graft rejection occurs after how much time following transplantation?

- (A) 24 hours
- (B) 2 weeks
- (C) Within minutes
- (D) Years

Correct Answer: (C) Within minutes

SOLUTION:

Step 1: Lay out the rejection timeline. Hyperacute is immediate, acute is days-to-weeks, and chronic is months-to-years; the prefix hyper signals the most rapid response.

Step 2: Hyperacute rejection is driven by pre-existing antibodies (typically from ABO incompatibility), that are ready to strike the moment blood flows into the graft, so the organ blanches and thromboses within minutes, often visible during surgery itself.

Step 3: Therefore 24 hours, 2 weeks, and years all describe slower categories and are incorrect for hyperacute rejection.

Step 4: The correct timing is within minutes.

Within minutes

Quick Tip: Pre-formed antibodies act the instant blood perfuses the graft - think operating table.

...

92. Australian antigen for hepatitis B is?

- (A) HBsAg
- (B) HBeAg
- (C) HBcAg
- (D) HBV DNA

Correct Answer: (A) HBsAg

SOLUTION:

Step 1: Recall the naming history. In 1965, Blumberg detected a novel serum protein in an Australian aboriginal patient; this discovery later earned a Nobel Prize and the protein kept the nickname *Australia antigen*.

Step 2: Subsequent work tied that protein to the outer envelope of the hepatitis B virion, i.e. its surface coat, also revealed HBsAg.

Step 3: Among the choices, only HBsAg represents the viral envelope protein, so it equals the Australia antigen.

Step 4: Eliminate the rest - HBeAg reflects active replication, HBcAg sits inside the nucleocapsid and is not free in plasma, and HBV DNA is quantified by PCR for viral load. None carries the Australia label.

HBsAg

Quick Tip: Australia antigen was the very first HBV marker described, found on the viral coat.

...

93. Which fungus is most commonly associated with orbital cellulitis in patients with diabetic ketoacidosis?

- (A) *Candida*
- (B) *Mucor*
- (C) *Aspergillus*
- (D) *Rhizopus*

Correct Answer: (B) *Mucor*

SOLUTION:

Step 1: Map the host. A patient in diabetic ketoacidosis has acidosis, hyperglycemia and abundant free iron - a niche almost custom-built for the bread-mould fungi of the order Mucorales.

Step 2: These moulds (*Mucor*, *Rhizopus*) possess ketone reductase and an active iron-uptake system, so the acidotic ketotic blood actually accelerates their growth, unlike most other fungi.

Step 3: Clinically this produces rhino-orbital-cerebral mucormycosis: broad aseptate hyphae invade arteries, thrombose them and cause an ischemic black eschar with fulminant proptosis - a surgical and antifungal emergency.

Step 4: Cross off the others - *Candida* gives candidemia and mucosal disease, *Aspergillus* favours neutropenic transplant hosts, and although *Rhizopus* is itself a Mucorales mould, the answer this stem expects for the DKA association is *Mucor*.

Mucor

Quick Tip: Acidotic, ketotic, iron-rich blood favours the angioinvasive bread-mould fungi.

...

94. Sabin Feldman dye test is used for diagnosis of which of the following conditions?

- (A) Botulism
- (B) Toxoplasmosis
- (C) Sarcoidosis
- (D) Yellow fever

Correct Answer: (B) Toxoplasmosis

SOLUTION:

Step 1: Decode the eponym. The Sabin-Feldman dye test is named for its developers and is the gold-standard serology for the protozoan *Toxoplasma gondii*.

Step 2: Mechanism - viable tachyzoites are mixed with patient serum and complement. Specific antibodies lyse the parasite so its damaged membrane will not absorb methylene blue; unstained organisms therefore mean a positive test.

Step 3: A positive result confirms exposure to *Toxoplasma*, so the condition diagnosed is toxoplasmosis.

Step 4: Discard the rest - botulism needs toxin assay, sarcoidosis is a biopsy/ACE diagnosis, and yellow fever is a flavivirus picked up by serology or PCR. None relies on dye uptake by a living parasite.

Toxoplasmosis

Quick Tip: A dye exclusion serology for a protozoan whose live organisms stop staining when antibody is present.

...

95. Acute hemorrhagic conjunctivitis is caused by which enterovirus type?

- (A) 69
- (B) 63
- (C) 70
- (D) 71

Correct Answer: (C) 70

SOLUTION:

Step 1: Picture the disease - a sudden red, swollen, bleeding-looking conjunctiva spreading fast through a community. That clinical entity is acute hemorrhagic conjunctivitis.

Step 2: Its viral causes are Coxsackievirus A24 variant and Enterovirus 70. Since A24 is not in the list, the answer must be the enterovirus serotype, **EV 70**.

Step 3: EV70 is famous for epidemic eye outbreaks and an uncommon delayed lumbosacral radiculomyelitis, both useful clues linking the number 70 to the eye.

Step 4: Rule out the neighbours - 68 is a respiratory virus tied to acute flaccid myelitis, 71 drives hand-foot-and-mouth disease and CNS disease, and 69 is not the conjunctivitis agent.

70

Quick Tip: The epidemic red-eye enterovirus shares its number with a milestone birthday and can cause a polio-like sequel.

...

96. *Echinococcus granulosus* is commonly seen in which of the given animals?

- (A) Dog
- (B) Cat
- (C) Fox
- (D) Pig

Correct Answer: (A) Dog

SOLUTION:

Step 1: Identify the parasite by its nicknames - *hydatid worm* and *dog tapeworm* - which already point to its principal animal.

Step 2: In its life cycle the adult worm needs a carnivore gut. For *E. granulosus* that definitive host is the domestic dog, which then contaminates pasture with eggs.

Step 3: Grazing animals like sheep swallow the eggs and grow hydatid cysts; humans get the same cysts accidentally, classically in liver and lung.

Step 4: Eliminate the rest - the cat is not the standard host, the fox is the reservoir for the related *E. multilocularis*, and the pig is an intermediate host for Taenia rather than the definitive host wanted here.

Dog

Quick Tip: Its common name literally tells you the definitive host that carries the adult tapeworm.

...

97. An anaerobe causing multiple abscesses with discharging sinuses, demonstrating sulphur granules in pus is?

- (A) Actinomyces
- (B) Nocardia
- (C) Salmonella
- (D) Tularemia

Correct Answer: (A) Actinomyces

SOLUTION:

Step 1: Lock onto the buzzwords - *sulphur granules* plus sinus tracts plus an anaerobe equals one disease: actinomycosis.

Step 2: The organism is *Actinomyces israelii*, a branching gram-positive filamentous bacterium that grows anaerobically/microaerophilically and is NOT acid-fast.

Step 3: Those yellow granules are tangled colonies of the bacterium wrapped in a polysaccharide-protein shield that blocks phagocytosis, which is why the infection becomes chronic with discharging sinuses.

Step 4: Rule out distractors using oxygen and acid-fastness - Nocardia is aerobic and partially acid-fast (no true sulphur granules), while Salmonella and the tularemia agent Francisella are unrelated systemic pathogens.

Actinomyces

Quick Tip: Yellow sulphur granules plus sinus tracts plus an anaerobe equals one branching gram-positive bug.

...

98. Whole blood is used as a sample for which test?

- (A) Bacteria
- (B) IGRA
- (C) GeneXpert
- (D) Virus

Correct Answer: (B) IGRA

SOLUTION:

Step 1: Ask which listed test needs living immune cells. The Interferon-Gamma Release Assay (IGRA) measures cytokine output from a patient's own T cells, so it cannot work on serum or a swab.

Step 2: Procedure - fresh *whole blood* is mixed with TB-specific peptides (ESAT-6, CFP-10); memory T cells, previously primed by *M. tuberculosis* pour out interferon-gamma, which the assay quantifies.

Step 3: Since the read-out depends on intact, responsive lymphocytes, whole blood collected in special tubes is mandatory, and the result is unaffected by BCG status.

Step 4: The rest fail the whole-blood criterion - generic bacterial and viral testing uses cultures or molecular swabs, and TB GeneXpert is a sputum-based PCR, not a whole-blood assay.

IGRA

Quick Tip: Which TB test needs live T cells to pump out interferon-gamma against TB antigens?

...

99. Which organism causes acute bacterial prostatitis?

- (A) Enterococcus
- (B) Streptococcus viridans
- (C) Peptostreptococcus
- (D) E. coli

Correct Answer: (D) E. coli

SOLUTION:

Step 1: Think of where the bug comes from. The prostate gets infected when urethral or bladder flora track up the prostatic ducts, so the culprit is a typical urinary tract organism. **Step 2:** The dominant uropathogen everywhere is the gram-negative rod *Escherichia coli*, which alone is responsible for the majority (about 50-80%) of acute bacterial prostatitis. **Step 3:** Rank the distractors: Enterococcus contributes a small fraction, while Streptococcus viridans (mouth flora, endocarditis) and the anaerobe Peptostreptococcus essentially never seed the prostate by this route. **Step 4:** Pick the classic gram-negative uropathogen.

E. coli

Quick Tip: Think of the commonest uropathogen ascending into the prostate.

...

100. Which of the following organisms releases histamine and causes scombroid fish poisoning?

- (A) Salmonella
- (B) Staphylococcus
- (C) P. aeruginosa
- (D) Weissella

Correct Answer: (C) P. aeruginosa

SOLUTION:

Step 1: Reframe the disease: scombroid is essentially histamine toxicity, not an infection. Spoiled, warm-stored scombroid fish accumulate histamine when bacteria convert the amino acid histidine. **Step 2:** The bacteria that carry *histidine decarboxylase* are surface and gut gram-negative enterics of the fish - the textbook example is *Morganella morganii*, with *Pseudomonas aeruginosa*, *E. coli* and *Klebsiella* also implicated. **Step 3:** Scan the choices for any of those: Salmonella (no), Staphylococcus (no, gram-positive), Weissella (no), *Pseudomonas aeruginosa* (yes). **Step 4:** The only matching histamine-producing gram-negative listed wins.

P. aeruginosa

Quick Tip: Pick the gram-negative enteric that makes histidine decarboxylase among the options.

...

101. Who is the father of microbiology?

- (A) A. V. Leeuwenhoek
- (B) Robert Brown
- (C) J. C. Bose
- (D) Pasteur

Correct Answer: (A) A. V. Leeuwenhoek

SOLUTION:

Step 1: The question asks who founded microbiology, meaning who first revealed microbes themselves. **Step 2:** That credit goes to *Antonie van Leeuwenhoek*, who ground his own lenses and, in the 1670s, became the first human to visualize bacteria and protozoa - earning the title Father of Microbiology. **Step 3:** Beware the trap: Pasteur is repeatedly called the father of MODERN microbiology for germ theory and vaccines, but that is a different title. **Step 4:** Robert Brown and J. C. Bose belong to physics/botany, not bacteriology, so eliminate them and choose Leeuwenhoek.

A. V. Leeuwenhoek

Quick Tip: The lens-maker who first saw animalcules, not Pasteur.

102. Cutaneous larva migrans is caused by which organism?

- (A) Strongyloides
- (B) Toxocara canis
- (C) Ancylostoma braziliense
- (D) Necator americanus

Correct Answer: (C) Ancylostoma braziliense

SOLUTION:

Step 1: Picture the lesion: a slowly advancing, snake-like itchy line on the foot or buttock of someone who walked barefoot on contaminated sandy soil. That is creeping eruption, the hallmark of cutaneous larva migrans. **Step 2:** It arises when larvae of a non-human hookworm enter the skin and crawl aimlessly because they reach a dead-end host. The prototypical agent is the cat/dog hookworm *Ancylostoma braziliense*. **Step 3:** Separate the look-alikes - human hookworm *Necator/Ancylostoma duodenale* go on to the intestine, *Strongyloides* gives the rapid larva currens, and *Toxocara canis* travels through viscera and the eye. **Step 4:** Only the animal hookworm fits the wandering skin track.

Ancylostoma braziliense

Quick Tip: The dog/cat hookworm that dead-ends in human skin causes creeping eruption.

...

103. After kidney transplantation, infection with which organism is most likely to occur?

- (A) CMV
- (B) Klebsiella
- (C) Streptococcus
- (D) Staphylococcus

Correct Answer: (A) CMV

SOLUTION:

Step 1: The key is the type of immune defect after a kidney transplant - drug-induced suppression of cell-mediated immunity, which uncovers latent viruses.

Step 2: The classic opportunist that emerges is *Cytomegalovirus*, the most frequent viral infection of renal transplant recipients, peaking around 1-4 months post-transplant. **Step 3:** Recognise its syndrome: fever as the leading sign, plus leukopenia, hepatosplenomegaly and myalgias/arthralgias. **Step 4:** The bacterial options (Klebsiella, Streptococcus, Staphylococcus) are ordinary nosocomial bugs, not the signature transplant pathogen, so CMV is selected.

CMV

Quick Tip: Think latent virus reactivating under T-cell suppression.

...

104. The incidence of a disease is 4 per 1000 of population with a duration of 2 years. Calculate the prevalence.

- (A) 8/1000
- (B) 4/1000
- (C) 2/1000
- (D) 6/1000

Correct Answer: (A) 8/1000

SOLUTION:

Step 1: Recall the bridge between the two epidemiological measures: when a disease is stable over time, the pool of existing cases equals the inflow rate times how long each case lasts. In symbols, $P = I \times D$. **Step 2:** Read off the data - incidence rate $I = 4/1000$ and mean duration $D = 2$ years. **Step 3:** Multiply directly:

$$P = \frac{4}{1000} \times 2 = \frac{8}{1000}$$

Step 4: A longer-lasting disease accumulates more prevalent cases, so doubling the duration doubles prevalence relative to incidence, giving 8 per 1000.

8/1000

Quick Tip: Prevalence equals incidence multiplied by duration.

...

105. Disposal of cytotoxic and expired drugs is done by which method?

- (A) Dumping
- (B) Autoclave
- (C) Landfill
- (D) Burning

Correct Answer: (C) Landfill

SOLUTION:

Step 1: Map the waste to its colour code. Discarded medicines, cytotoxic drugs and incineration ash fall in the **black bag** chemical/cytotoxic group. **Step 2:** The defined treatment for that black-bag group is placement in a secured landfill, an engineered site designed to contain hazardous chemical residue. **Step 3:** Contrast with the other coloured streams - autoclave/microwave handles infectious, soiled and sharps waste (red/blue), so autoclaving the drugs is incorrect. **Step 4:** Crude dumping and uncontrolled burning are not the approved disposal routes, leaving secured landfill as the answer.

Landfill

Quick Tip: Black-bag chemical and cytotoxic waste goes to secured landfills.

106. For the Net Reproduction Rate (NRR) to be equal to 1, the couple protection rate should be at least?

- (A) 50%
- (B) 60%
- (C) 55%
- (D) 75%

Correct Answer: (B) 60%

SOLUTION:

Step 1: Frame the demographic goal. $NRR = 1$ is the textbook marker for a population that just replaces itself - one daughter per woman surviving to reproductive age. National family planning programmes use the Couple Protection Rate as the operational lever to reach this goal.

Step 2: Define the indicator. CPR measures the share of eligible couples shielded from an unplanned pregnancy by an approved method (sterilization, IUD, condoms, OCPs). A higher CPR pushes fertility downward toward replacement

level.

Step 3: Pin the numeric threshold. Standard public health teaching states that NRR reaches 1 only when CPR exceeds 60%. The cut-off value asked for is therefore **60%**.

Step 4: Eliminate the rest. Values of 50% and 55% fall short of the demographic break-even, while 75% overshoots the minimum the question seeks.

60%

Quick Tip: Replacement-level fertility (NRR=1) needs CPR just above the 60% mark.

...

107. The new RNTCP online software introduced to monitor the TB control programme is?

- (A) NIKSHAY
- (B) NICHAY
- (C) E-DOTS
- (D) NIRBHAI

Correct Answer: (A) NIKSHAY

SOLUTION:

Step 1: Recall the surveillance need. The Revised National Tuberculosis Control Programme required a single digital register to follow every notified TB case nationwide. That register is NIKSHAY.

Step 2: Etymology aids recall. The term fuses the Hindi syllables NI and KSHAY, conveying the idea of wiping out tuberculosis - a built-in mnemonic for the answer.

Step 3: Operational detail. Hosted at www.nikshay.gov.in, it is a web-based platform jointly built by the Central TB Division and the National Informatics Centre and rolled out in June 2012 to give all concerned officials live access to patient data.

Step 4: Rule out alternatives. NICHAY and NIRBHAI are distractor coinages, and E-DOTS does not denote this national TB monitoring software.

NIKSHAY

Quick Tip: NI + KSHAY = end of tuberculosis; the GoI web register for TB patients.

...

108. The unit of study in an ecological study is?

- (A) Population
- (B) Patient
- (C) Community
- (D) Case

Correct Answer: (A) Population

SOLUTION:

Step 1: Classify the design. Ecological studies sit at the group level of analysis - they correlate aggregate exposure with aggregate disease frequency. This immediately tells us the analytic unit is not an individual.

Step 2: Name the unit. The observations are made on populations, so each data point represents a whole population's exposure level and disease rate.

Step 3: Practical mechanics. Researchers usually borrow ready-made population statistics, plot disease rate against average exposure across several populations, and read off the correlation.

Step 4: Discard individual-level units. Patient and case belong to studies that follow individuals; while community is tempting, the canonical answer expected here is population.

Population

Quick Tip: Ecological studies correlate at group level - the unit is the population.

...

109. In a screening test for diabetes mellitus, out of a population of 1000, 90 were positive. The gold standard test was then done, in which 100 were positive. Calculate the sensitivity of the screening test.

- (A) 90/100
- (B) 100/110
- (C) 80/100
- (D) 100/100

Correct Answer: (A) 90/100

SOLUTION:

Step 1: Anchor on the truth standard. The disease is defined by the gold standard, which labels 100 individuals as truly diabetic. Sensitivity asks: of these 100, how many did the screening test catch?

Step 2: Read off true positives. The screening test flagged 90 positives, all assumed to be among the truly diseased, so true positives $a = 90$.

Step 3: Account for the missed cases. The screening test failed to detect $100 - 90 = 10$ genuinely diseased people; these are the false negatives $c = 10$.

Step 4: Plug into the relation.

$$\text{Sensitivity} = \frac{a}{a + c} = \frac{90}{90 + 10} = \frac{90}{100}$$

The denominator is always the total truly diseased (100), confirming option (a) and ruling out the variants that misuse the count.

90/100

Quick Tip: Sensitivity = TP / all truly diseased = 90 / 100.

...

110. What is the drug of choice for mass chemoprophylaxis of meningococcal meningitis?

- (A) Rifampicin
- (B) Chloramphenicol
- (C) Tetracycline
- (D) Penicillin

Correct Answer: (A) Rifampicin

SOLUTION:

Step 1: Target the goal of prophylaxis. After a meningococcal case, close contacts must be cleared of nasopharyngeal carriage. The agent that does this and is the classic answer is rifampicin.

Step 2: Remember the schedule. Rifampicin is dosed by weight - 5 mg/kg for infants below 1 month, 10 mg/kg above - taken orally twice daily for 2 days, and avoided in pregnancy.

Step 3: List backups for special groups. When rifampicin is unsuitable, ceftriaxone given intramuscularly as a single dose (125 mg if under 15, 250 mg if over 15) or a single 500 mg oral dose of ciprofloxacin (adults over 18) can be used.

Step 4: Exclude the wrong drugs. Penicillin treats invasive disease but does not reliably eradicate carriage; chloramphenicol and tetracycline are not first-line prophylaxis here. Hence rifampicin stands.

Rifampicin

Quick Tip Rifampicin clears nasopharyngeal carriage - the prophylactic drug of choice

...

111. Which among the following is the active form of chlorine responsible for disinfection during chlorination?

- (A) Hypochlorite ion
- (B) Hydrogen chloride
- (C) Hypochlorous acid
- (D) Chloride ion

Correct Answer: (C) Hypochlorous acid

SOLUTION:

Step 1: Trace what happens in water. Chlorine reacts with water to yield two species in equilibrium - undissociated hypochlorous acid $HOCl$ and its dissociated form, the hypochlorite ion OCl^- . The germicidal punch comes from $HOCl$.

Step 2: Quantify the difference. Hypochlorous acid is about 70 to 80 times stronger as a disinfectant than the hypochlorite ion, making it the active fraction of free residual chlorine.

Step 3: Explain mechanistically. Because $HOCl$ carries no charge and is small, it slips through the microbial membrane and oxidises vital cell components, whereas the charged OCl^- is repelled.

Step 4: Knock out the rest. Hydrogen chloride and the chloride ion play no disinfecting role, and the hypochlorite ion is the weaker partner - leaving hypochlorous acid as the answer.

Hypochlorous acid

Quick Tip: Free chlorine kills mainly via uncharged hypochlorous acid ($HOCl$).

...

112. Kala-azar is found in all of the following endemic areas in India except?

- (A) West Bengal
- (B) Uttar Pradesh
- (C) Bihar
- (D) Assam

Correct Answer: (D) Assam

SOLUTION:

Step 1: Map the disease. Visceral leishmaniasis, or kala-azar, clusters in India's Gangetic eastern states where the sandfly vector flourishes. The core endemic quartet is Bihar, Jharkhand, West Bengal and Uttar Pradesh.

Step 2: Test each choice against the map. West Bengal, Bihar and Uttar Pradesh all sit firmly inside this endemic zone, so none of them can be the exception the question wants.

Step 3: Spot the outlier. Assam is the state that does not belong to this classical endemic list, so it is the correct except answer.

Step 4: Reinforce with epidemiology. The vector *Phlebotomus argentipes* breeds in the moist alluvial soil of the Bihar plains, which is why the burden is so tightly bound to that corridor rather than the northeast.

Assam

Quick Tip: Endemic belt = Bihar, Jharkhand, West Bengal, UP; Assam is the exception.

...

113. The ratio of the risk of disease among those exposed to a factor to the risk among those not exposed is defined as:

- (A) Relative risk
- (B) Odds ratio
- (C) Attributable risk
- (D) None of the above

Correct Answer: (A) Relative risk

SOLUTION:

Step 1: Read the definition carefully - it is a division of one risk by another, specifically exposed risk over non-exposed risk. A ratio of two incidence rates

points to the risk ratio, which is the relative risk. **Step 2:** Express it formally as $RR = \frac{P(\text{event} | \text{exposed})}{P(\text{event} | \text{not exposed})}$. Interpretation: a value of 1 indicates no link between exposure and disease, a value above 1 flags a harmful exposure, and a value below 1 flags a protective exposure. **Step 3:** Why not the others - the odds ratio divides odds rather than probabilities and is the natural estimate in case control designs; attributable risk subtracts the non-exposed incidence from the exposed incidence to give the absolute excess, so it is a difference and not a ratio. **Step 4:** Since the stem describes a ratio of exposed to non-exposed risk, the correct measure is the relative risk.

Relative risk

Quick Tip: A ratio (not a difference) of incidence in exposed versus non-exposed.

114. The holder (low-temperature) method of pasteurization of milk is done at:

- (A) 73 degrees C for 20 min
- (B) 63 degrees C for 30 min
- (C) 72 degrees C for 30 seconds
- (D) 63 degrees C for 30 seconds

Correct Answer: (B) 63 degrees C for 30 min

SOLUTION:

Step 1: Two classic pasteurization schedules must be recalled. The holder method (LTLT) pairs a low temperature with a long time; the flash method (HTST) pairs a high temperature with a short time. **Step 2:** For the holder method the figures are 63 degrees C (about 145 degrees F) maintained for 30 minutes, which directly matches option B. **Step 3:** For the flash/HTST method the figures are 72 degrees C (about 162 degrees F) for 15 seconds; ultra-high-temperature processing goes higher for even shorter times. **Step 4:** Comparing each option, 63 degrees C for 30 minutes is the only one that reproduces a recognised standard, so it is correct.

63 °C for 30 minutes

Quick Tip: Holder method = low temperature, long time.

...

115. When two live vaccines are not given at the same visit, the ideal minimum time gap between them is:

- (A) 2 weeks
- (B) 4 weeks
- (C) 8 weeks
- (D) 12 weeks

Correct Answer: (B) 4 weeks

SOLUTION:

Step 1: Recall the spacing rule for live vaccines - they may be co-administered on the same day, but if missed together they cannot be given just a few days apart.

Step 2: The standard recommendation is to wait at least 4 weeks (28 days) before giving the second live parenteral or intranasal vaccine, which corresponds to option B.

Step 3: The biological basis is transient interferon production triggered by the first live virus, which can blunt the replication and therefore the immunogenicity of a second live vaccine given within a few weeks.

Step 4: Therefore 2 weeks is too short and 8 or 12 weeks exceeds the needed minimum; the ideal minimum gap is 4 weeks.

4 weeks

Quick Tip: If not given the same day, space two live vaccines by at least a month.

...

116. The number of susceptible persons who develop the disease within the range of the incubation period after contact with a primary case is the:

- (A) Secondary attack rate
- (B) Case fatality rate
- (C) Primary attack rate
- (D) Tertiary attack rate

Correct Answer: (A) Secondary attack rate

SOLUTION:

Step 1: Identify the key phrases - contacts of a primary case, becoming ill within the incubation period. Disease spreading from an index case to susceptible contacts defines the secondary attack rate. **Step 2:** Its formula divides the number of contacts who fall ill within one incubation period by all susceptible contacts exposed, multiplied by 100: $SAR = \frac{\text{contacts who become cases}}{\text{susceptible contacts}} \times 100$. **Step 3:** Clinically SAR quantifies how readily an organism spreads among close contacts, so a high SAR signals high communicability. **Step 4:** Eliminating alternatives, case fatality rate is about deaths, primary attack rate is about first-generation cases in the community, and tertiary attack rate is not a recognised index, leaving the secondary attack rate as correct.

Secondary attack rate

Quick Tip: New cases among contacts of the index case within one incubation period.

...

117. Out of 100 women offered oral contraceptive pills, 10 women became pregnant when followed for 24 months. What is the Pearl Index?

- (A) 10
- (B) 5
- (C) 4
- (D) 2

Correct Answer: (B) 5

SOLUTION:

Step 1: Think in terms of woman-years. The total observation is 100 women followed for 24 months, that is $\frac{100 \times 24}{12} = 200$ woman-years of contraceptive use. **Step 2:** The Pearl Index is simply pregnancies divided by woman-years, scaled to 100 woman-years: $PI = \frac{\text{pregnancies}}{\text{woman-years}} \times 100$. **Step 3:** Plug in 10 pregnancies over 200 woman-years: $PI = \frac{10}{200} \times 100 = 5$. **Step 4:** This matches the standard formula result, confirming a Pearl index of 5 failures per 100 woman-years.

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Quick Tip: Pearl Index = pregnancies x 1200 / (women x months).

...

118. Which of the following does NOT cause hardness of water?

- (A) Calcium carbonate
- (B) Calcium sulphate
- (C) Calcium bicarbonate
- (D) Magnesium bicarbonate

Correct Answer: (A) Calcium carbonate

SOLUTION:

Step 1: The question is negative - find the salt that does NOT make water hard. Hardness needs the salt to be dissolved in water, so solubility is the deciding factor. **Step 2:** Calcium bicarbonate and magnesium bicarbonate are soluble and produce temporary hardness, while calcium sulphate is soluble and produces permanent hardness; all three genuinely cause hardness. **Step 3:** Calcium carbonate is practically insoluble in water. Because it does not dissolve, it cannot contribute hardness; instead it precipitates out, which is exactly why boiling water with temporary hardness deposits calcium carbonate scale. **Step 4:** Therefore the one option that does not cause hardness is calcium carbonate.

Calcium carbonate

Quick Tip: Hardness needs a soluble salt; carbonate of calcium is insoluble.

119. Which of the following is NOT an example of direct transmission in communicable diseases?

- (A) Transplacental (vertical)
- (B) Soil
- (C) Respiratory
- (D) STD

Correct Answer: (C) Respiratory

SOLUTION:

Step 1: Sort each option into direct versus indirect transmission. Direct transmission means the agent passes from source to host without an intermediate vehicle or vector. **Step 2:** Transplacental spread is the classic vertical (direct) route, sexual contact in STDs is direct contact, and direct contact with contaminated soil (for example tetanus or hookworm) is also classed under direct transmission. **Step 3:** Respiratory or airborne spread relies on droplet nuclei and dust particles suspended in the air, which act as a vehicle carrying the agent, so it

is categorised as indirect (airborne) transmission. **Step 4:** The only option that is not a direct route is therefore the respiratory (airborne) one.

Respiratory

Quick Tip: Airborne respiratory spread is classed as indirect transmission.

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120. Water's view is used to obtain diagnostic information of:

- (A) Maxillary sinus
- (B) Ethmoidal sinuses
- (C) Frontal sinus
- (D) Sphenoid sinus

Correct Answer: (A) Maxillary sinus

SOLUTION:

Step 1: Match each named skull view to the sinus it displays best. The occipitomental (Waters') projection tilts the head so the chin and nose touch the cassette, throwing the petrous bones downward.

Step 2: Because the petrous ridges no longer overlie the antra, the maxillary sinuses become fully visible, which is exactly why this view is ordered to look for fluid levels in acute maxillary sinusitis.

Step 3: Contrast this with Caldwell's view, which is tuned for the frontal and ethmoid air cells, and with the lateral/basal views used for the sphenoid sinus. None of those is Waters'.

Step 4: Hence Waters' view = maxillary sinus.

Maxillary sinus

Quick Tip: Occipitomental 45 degree view that clears the petrous bones off the antra.

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121. Tracheostomy indication is:

- (A) Vocal cord replacement
- (B) Pharynx replacement
- (C) Tracheomalacia
- (D) Foreign body obstructing airway

Correct Answer: (D) Foreign body obstructing airway

SOLUTION:

Step 1: Think about why a surgeon opens the windpipe: to get air past a blocked upper airway, to support long-term ventilation, or to suck out secretions in a wet lung.

Step 2: Among the choices, only an airway foreign body fits the first category. It produces sudden, life-threatening obstruction, and a tracheostomy placed below the level of the impacted object lets the patient breathe again.

Step 3: The decoys are not indications. There is no operation called vocal cord or pharyngeal replacement, and tracheomalacia is generally handled without an emergency stoma.

Step 4: So the indication listed here is a foreign body obstructing the airway.

Foreign body obstructing airway

Quick Tip: Pick the choice that causes acute upper airway obstruction needing a bypass.

...

122. Caldwell's view is used for:

- (A) Maxillary sinus
- (B) Frontal sinus
- (C) Ethmoidal sinus
- (D) All of the above

Correct Answer: (B) Frontal sinus

SOLUTION:

Step 1: Recall the pair of sinus views. Waters' is the maxillary view; Caldwell's (occipitofrontal, 20 degree tilt) is the complementary projection.

Step 2: Because the beam runs front-to-back with only a small tilt, the frontal sinuses are thrown into clear relief, which is precisely the structure Caldwell's view is named for in radiology teaching.

Step 3: Although the ethmoids are also visualised, the maxillary antra are reserved for Waters'. The single best fit demanded here is therefore the frontal sinus, not "all of the above".

Step 4: Caldwell's view = frontal sinus.

Frontal sinus

Quick Tip: Occipitofrontal 20 degree view, the partner of Waters' for the front of the skull.

...

123. Astigmatism in an emmetropic eye of an elderly person contributes to (the threshold above which laser/bioptics correction is needed):

- (A) +1D
- (B) +2D
- (C) +3D
- (D) +4D

Correct Answer: (C) +3D

SOLUTION:

Step 1: Frame this as a surgical-planning cut-off. In an older emmetrope having a presbyopia-correcting IOL, the surgeon must decide whether incisional astigmatism control will suffice.

Step 2: The literature sets the boundary at high astigmatism, meaning more than 3 dioptres. Below it, limbal relaxing incisions usually do the job, above it, a staged laser enhancement (bioptics) is planned.

Step 3: So the magnitude that defines significant pre-existing astigmatism in this scenario is **+3 D**. The other options either sit safely under the threshold (**+1 D**, **+2 D**) or beyond it (**+4 D**).

Step 4: The threshold value asked for is plus three dioptres.

+3 D

Quick Tip: The cut-off above which LRI fail and bioptics is needed.

...

124. 100 day glaucoma is seen in which of the following conditions:

- (A) Central retinal vein occlusion (CRVO)
- (B) Neovascular glaucoma
- (C) Central retinal artery occlusion (CRAO)
- (D) Steroid induced glaucoma

Correct Answer: (A) Central retinal vein occlusion (CRVO)

SOLUTION

Step 1: Decode the eponym. "100 day glaucoma" points to a glaucoma that surfaces about three months after a specific retinal vascular event.

Step 2: That event is an ischemic central retinal vein occlusion. The ischemic retina pumps out VEGF, neovascularisation reaches the iris and drainage angle, and the angle closes, spiking the pressure around day 90 to 100.

Step 3: The trap option "neovascular glaucoma" is the type of glaucoma

produced, not the underlying cause being asked. CRAO is a rare cause and steroid-induced glaucoma is a different, drug-related mechanism, so neither owns the 100-day label.

Step 4: The predisposing condition is central retinal vein occlusion.

CRVO

Quick Tip: Neovascular glaucoma at ~3 months after which retinal venous event?

...

125. Roth spots are seen in:

- (A) Uveal melanoma
- (B) Acute leukaemia
- (C) Both a & b
- (D) None of the above

Correct Answer: (B) Acute leukaemia

SOLUTION:

Step 1: Identify the lesion first. A Roth spot is a white-centred retinal hemorrhage, the pale core being fibrin, platelets, leukocytes or tumour cells trapped in the blood.

Step 2: Run through its differential: infective endocarditis, leukemia, diabetes, anemia, collagen vascular disease and severe hypertension. Hematological malignancy is a textbook trigger.

Step 3: Of the four options only acute leukaemia appears on that list. Uveal melanoma is a pigmented intraocular tumour, not a cause of white-centred hemorrhages, which knocks out options (a) and (c).

Step 4: Therefore Roth spots here = acute leukaemia.

Acute leukaemia

Quick Tip: White-centred retinal hemorrhages classically tied to a blood malignancy.

...

126. Yoke muscle of the right lateral rectus is:

- (A) Left medial rectus
- (B) Left superior rectus
- (C) Left lateral rectus
- (D) Left inferior oblique

Correct Answer: (A) Left medial rectus

SOLUTION:

Step 1: Apply the yoke-muscle rule: for any direction of gaze, one muscle in each eye works as a synergistic pair under equal innervation.

Step 2: Consider gaze to the right. The right eye abducts using its lateral rectus. For binocular alignment the left eye must adduct, and the muscle that adducts the left eye is its medial rectus.

Step 3: Thus the partner that moves with the right lateral rectus is the left medial rectus. The other listed left-eye muscles handle vertical or torsional movements and are not the horizontal yoke here.

Step 4: Right lateral rectus pairs with left medial rectus.

Left medial rectus

Quick Tip: In right gaze, which left-eye muscle adducts alongside it?

...

127. Severe (hyperacute) conjunctivitis is caused by which of the following organisms?

- (A) Neisseria
- (B) Staphylococcus
- (C) Streptococcus
- (D) Haemophilus

Correct Answer: (A) Neisseria

SOLUTION:

Step 1: Classify conjunctivitis by tempo. "Severe" here is the keyword for the hyperacute presentation, which has the most copious discharge and the fastest course.

Step 2: Among bacteria, only the Neisseria species (*Neisseria gonorrhoeae* and *N. meningitidis*) cause this hyperacute picture, typically in neonates (ophthalmia neonatorum) or sexually active adults exposed to genital secretions.

Step 3: The danger is corneal: gonococci can invade an intact cornea, so untreated cases risk ulcerative keratitis and perforation. That is why it is graded as the severe form.

Step 4: The remaining options - *Staphylococcus*, *Streptococcus* and *Haemophilus* - drive the run-of-the-mill acute conjunctivitis, which is benign and not labelled severe. Eliminating them leaves Neisseria.

Neisseria

Quick Tip: "Severe/hyperacute" purulent conjunctivitis that can perforate the cornea = gonococcus.

...

128. Which of the following spectacle prescriptions is an example of Simple Myopic Astigmatism?

- (A) Rx (+) sphere
- (B) Rx will be plano (-)
- (C) Rx will be (-) sphere
- (D) (-)(+) (+)(-) on both 90 and 180 degree axis

Correct Answer: (B) Rx will be plano (-)

SOLUTION:

Step 1: Remember the rule for "simple" astigmatism: one meridian focuses on the retina, so its spherical power is plano, and a single cylinder corrects the second meridian.

Step 2: Attach the sign to the type of error. Myopic means the errant meridian needs minus power, so simple myopic astigmatism is written as **plano/(-)cyl.**

Step 3: Match against the choices. "(+) sphere" is pure simple hyperopia and "(-) sphere" is pure simple myopia - both are spherical, non-astigmatic. The opposite-sign meridional combination **(-)(+) / (+)(-)** is mixed astigmatism.

Step 4: Only "plano (-)" fits a plano sphere with a minus cylinder, which is exactly simple myopic astigmatism.

Rx will be plano (-)

Quick Tip: Simple astigmatism = plano sphere + one cylinder; myopic means the cylinder is minus.

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129. A blow out fracture of the orbit most commonly involves the:

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

Correct Answer: (A) Floor

SOLUTION:

Step 1: Picture the mechanism: a blunt force compresses the globe, intra-orbital pressure spikes, and the pressure escapes by cracking the flimsiest bony wall - it "blows out".

Step 2: Rank the walls by strength. The lateral wall is robust, the roof is supported by frontal bone, and the medial lamina papyracea, though thin, is partly splinted by the ethmoid air-cell septa.

Step 3: The floor is the weak link because the infraorbital canal hollows it out, leaving sub-millimetre bone. That is why isolated blowout fractures land here.

Step 4: The tell-tale features - restricted upgaze from inferior rectus entrapment, sunken eye and cheek numbness - confirm a floor injury.

Floor

Quick Tip: The thinnest orbital wall, hollowed by the infraorbital canal, is the floor.

...

130. Which of the following prostanoids is the principal final mediator of fever (pyrogenesis) in the hypothalamus?

- (A) PG E2
- (B) PG D2
- (C) PGF2 alpha
- (D) PG I2

Correct Answer: (A) PG E2

SOLUTION:

Step 1: Trace the fever cascade from the start. An infectious or inflammatory trigger makes immune cells secrete cytokines - *IL-1*, *IL-6*, *TNF-α* - which are the true endogenous pyrogens.

Step 2: These cytokines reach the hypothalamus and switch on cyclo-oxygenase, so the immediate downstream product that actually raises the set point is

prostaglandin E_2 .

Step 3: Confirm by pharmacology: COX inhibitors (NSAIDs, paracetamol) cut PGE_2 and abolish fever, proving PGE_2 is the effector molecule.

Step 4: Rule out the rest by their real jobs - PGD_2 promotes sleep, $PGF_{2\alpha}$ contracts smooth muscle, and PGI_2 is a vasodilator/antiplatelet agent; none reset temperature.

PG E2

Quick Tip: Cytokines act through the prostaglandin that NSAIDs block - PGE_2 raises the hypothalamic set point.

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131. In Bartter syndrome, the genetic defect is located in the:

- (A) Defect in PCT
- (B) Defect in DCT
- (C) Defect in thick ascending limb of loop of Henle
- (D) None

Correct Answer: (C) Defect in thick ascending limb of loop of Henle

SOLUTION:

Step 1: Localise the transporter that fails. Bartter syndrome behaves like a patient chronically on a loop diuretic, and loop diuretics act on the thick ascending limb.

Step 2: The targeted machinery in the TAL is the $Na-K-2Cl$ cotransporter plus the ROMK (K^+) and $ClC-Kb$ (Cl^-) channels; an inherited defect in any of them blocks salt reabsorption at this segment.

Step 3: Downstream this gives hypokalaemic metabolic alkalosis, urinary salt and calcium loss, high renin/aldosterone but low or normal blood pressure.

Step 4: Contrast with Gitelman syndrome, which is the DCT (thiazide-type NCC) defect with hypocalciuria - that excludes option b, while the PCT is uninvolved. The answer is the thick ascending limb.

Thick ascending limb of loop of Henle

Quick Tip: Bartter mimics a loop diuretic, so the defect sits where loop diuretics act - the TAL.

...

132. Which of the following is NOT a feature of allergic bronchopulmonary aspergillosis (ABPA)?

- (A) High IgE level
- (B) Recurrent pneumonia
- (C) Occurrence in patients with old cavitory lesions
- (D) Pleural effusion

Correct Answer: (B) Recurrent pneumonia

SOLUTION:

Step 1: Anchor on the word "allergic": ABPA is an immune hypersensitivity to colonising *Aspergillus* in asthmatic or CF airways, so look for allergy markers, not infection markers.

Step 2: Run through the major criteria - asthma, fleeting infiltrates, blood eosinophilia $> 1000/\text{mL}$, positive immediate skin test, *A. fumigatus* precipitins, total *IgE* $> 1000 \text{ ng/mL}$, and proximal bronchiectasis. "High IgE" therefore IS a feature.

Step 3: ABPA can seed old lung cavities (linking to aspergilloma), and a pleural effusion may rarely accompany the inflammatory infiltrate, so options c and d are compatible.

Step 4: The mismatch is "recurrent pneumonia" - ABPA produces transient allergic infiltrates, not repeated bacterial pneumonias, so it is the feature NOT seen.

Recurrent pneumonia

Quick Tip: ABPA is an allergy with fleeting infiltrates and very high IgE - it is not a repeated bacterial pneumonia.

...

133. Pseudo P pulmonale on the ECG is associated with which electrolyte abnormality?

- (A) Hypokalemia
- (B) Hyponatremia
- (C) Hypocalcemia
- (D) Hypercalcemia

Correct Answer: (A) Hypokalemia

SOLUTION:

Step 1: Define the finding. A tall peaked P wave is "P pulmonale" of right atrial enlargement; when the same shape appears with structurally normal atria, it is termed "pseudo P pulmonale".

Step 2: Ask what metabolically mimics it. Low serum potassium changes atrial and ventricular repolarisation enough to peak the P wave without any true RA hypertrophy.

Step 3: Support this with the rest of the hypokalaemia ECG package - ST-segment depression, T-wave flattening, and prominent U waves - which travels together with the pseudo P pulmonale.

Step 4: Exclude the calcium options by their QT effects ($\downarrow \text{Ca}^{2+}$ lengthens QT, $\uparrow \text{Ca}^{2+}$ shortens it) and hyponatraemia, which gives no peaked P. That isolates hypokalemia.

Hypokalemia

Quick Tip: A tall peaked P without real RA enlargement, plus U waves and ST depression, points to low potassium.

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134. Automatic Implantable Cardioverter Defibrillator (AICD) implantation is done for which of the following conditions?

- (A) Brugada syndrome
- (B) Ventricular fibrillation
- (C) Acute coronary syndrome with low ejection fraction
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: The question asks where an AICD is appropriate. The unifying theme is a substantial risk of sudden death from ventricular arrhythmia, which is exactly what an AICD guards against by sensing and shocking dangerous rhythms.

Step 2: Reviewing each choice individually shows all of them carry that risk. Brugada syndrome is a genetic sodium-channel disorder linked to fatal ventricular tachyarrhythmias.

Step 3: Ventricular fibrillation is itself the prototype lethal arrhythmia, and any survivor needs device protection as secondary prevention.

Step 4: A failing heart after acute coronary syndrome, reflected by a depleted ejection fraction, is scar-prone and arrhythmogenic, qualifying for primary-prevention implantation. Because no single option can be excluded, the inclusive choice is correct.

All of the above

Quick Tip: Think about which rhythms or substrates carry a high risk of sudden cardiac death.

...

135. What is the line of treatment for intractable Sydenham chorea?

- (A) Haloperidol
- (B) Valproate
- (C) Warfarin
- (D) Risperidone

Correct Answer: (B) Valproate

SOLUTION:

Step 1: Recognise the diagnosis: Sydenham chorea is the neurological component of rheumatic fever, producing involuntary dance-like movements in a child. The goal of treatment is to calm the over-active movement pathway.

Step 2: Two broad drug strategies exist - increasing inhibitory GABA tone or blocking dopamine. The safer and favoured route in resistant cases is the GABA-enhancing one, and valproate is the standard GABA-acting drug used here, with benzodiazepines as a back-up.

Step 3: Eliminate the rest. Haloperidol and risperidone are dopamine blockers that work but invite extrapyramidal toxicity, making them second-line. Warfarin thins blood and is irrelevant to movement disorders. Hence valproate is the answer.

Valproate

Quick Tip: The drug of choice enhances GABA action rather than blocking dopamine.

...

136. All of the following are criteria for Neurofibromatosis type 1 EXCEPT:

- (A) Brain tumor
- (B) Acoustic neuromas
- (C) Pseudoarthrosis
- (D) Cafe-au-lait spots

Correct Answer: (B) Acoustic neuromas

SOLUTION:

Step 1: The trick is to separate NF1 from NF2. NF1 is the peripheral, skin and-bone form; its diagnostic checklist includes pigmented macules, freckling, neurofibromas, Lisch nodules, optic glioma, characteristic bone dysplasia and family history.

Step 2: Test each option against that checklist. Cafe-au-lait spots are the classic pigmentary sign, pseudarthrosis is the long-bone bony criterion, and an optic nerve glioma is the central brain tumour that counts toward NF1.

Step 3: The odd one out is the acoustic (vestibular) schwannoma. Bilateral vestibular schwannomas define NF2, the central form, and have no place in the NF1 criteria. So the exception is acoustic neuromas.

Acoustic neuromas

Quick Tip: One option is actually the defining lesion of NF2, not NF1.

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137. What is the most common site of a chronic gastric ulcer?

- (A) Pyloric antrum
- (B) Upper part of lesser curvature
- (C) Lower part of lesser curvature
- (D) Segment of large intestine

Correct Answer: (A) Pyloric antrum

SOLUTION

Step 1: Link the disease to its driver. *Helicobacter pylori* is responsible for the majority of chronic gastric ulcers, and this organism settles chiefly in the antral lining of the stomach.

Step 2: Wherever the bacterium dominates, the inflammatory and ulcerative damage concentrates. That points the lesion toward the pyloric antrum rather than the body or fundus.

Step 3: Cross off the distractors - the upper and lower lesser curvature are possible but less frequent sites, and a segment of large intestine is anatomically unrelated to gastric ulceration. The antrum wins as the commonest location.

Pyloric antrum

Quick Tip: Where does *H. pylori* preferentially colonise the stomach?

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138. The approximate time interval between HIV infection and the manifestation of AIDS is?

- (A) 7.5 years
- (B) 10 years
- (C) 12 years
- (D) 11 years

Correct Answer: (B) 10 years

SOLUTION:

Step 1: Picture the natural history of untreated HIV: an acute phase, then a prolonged asymptomatic latency, and finally AIDS once CD4 cells fall far enough. The whole span averages around a decade.

Step 2: The standard board figure for this incubation-to-AIDS interval is about 10 years, with the median quoted near 9 years in adults. Among the choices, 10 years is the one matching this teaching.

Step 3: Outliers exist - long-term non-progressors and elite controllers stay well far longer, but they are uncommon and do not redefine the average. The neighbouring values of 7.5, 11 and 12 years are simply not the conventional answer, so 10 years stands.

10 years

Quick Tip: Recall the classic median latency from HIV seroconversion to AIDS.

• • •

139. Heller's myotomy is done for which condition?

- (A) Zenker's diverticulum
- (B) Achalasia cardia
- (C) Bunions
- (D) Knee arthroscopy

Correct Answer: (B) Achalasia cardia

SOLUTION:

Step 1: Decode the eponym. Heller's myotomy specifically targets the non-relaxing lower oesophageal sphincter, so it must belong to a disease of impaired oesophageal emptying.

Step 2: That disease is achalasia cardia where the sphincter stays tight and the body of the oesophagus loses peristalsis. Cutting the muscle at the gastro-oesophageal junction relieves the obstruction and lets swallowed food drain into the stomach.

Step 3: The remaining options are unrelated - a pharyngeal pouch (Zenker), a great-toe deformity (bunion) and a knee scope procedure have nothing to do with this oesophageal operation. Achalasia is the correct match.

Achalasia cardia

Quick Tip: The operation cuts the lower oesophageal sphincter muscle.

• • •

140. A patient shows a myocardial stunning pattern that does not match the territory of the ECG changes. What is the diagnosis?

- (A) Takotsubo cardiomyopathy
- (B) Restrictive cardiomyopathy
- (C) Brugada cardiomyopathy
- (D) Pericardial disease

Correct Answer: (A) Takotsubo cardiomyopathy

SOLUTION:

Step 1: The clue is the discordance - the area of stunned, hypcontractile myocardium does not line up with the coronary territory the ECG would predict. A true coronary occlusion produces matched changes, so a mismatch suggests a non-coronary cause of stunning.

Step 2: Stress (Takotsubo) cardiomyopathy fits perfectly. It produces transient apical ballooning and reversible wall-motion abnormalities extending beyond any one vessel's supply, often after emotional or physical stress, recovering over days to weeks.

Step 3: The alternatives fail the description. Restrictive cardiomyopathy gives diastolic dysfunction, Brugada is defined by its ECG pattern not regional stunning, and pericardial disease involves the surrounding sac. The territory-ECG mismatch nails the diagnosis.

Takotsubo cardiomyopathy

Quick Tip: Reversible apical ballooning that does not respect a coronary territory.

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141. Alternative drug for cardiac arrest in place of epinephrine is?

- (A) Amiodarone infusion
- (B) Atropine
- (C) High dose vasopressin
- (D) Adenosine

Correct Answer: (C) High dose vasopressin

SOLUTION:

Step 1: Ask what epinephrine actually contributes during arrest. Its life-saving effect is vasoconstriction that pushes blood through the coronary and brain circulation. Any replacement must reproduce this pressor effect, not treat the rhythm.

Step 2: Map each choice. Amiodarone treats refractory ventricular fibrillation and pulseless VT as an antiarrhythmic. Atropine blocks vagal tone in bradycardia. Adenosine slows AV nodal conduction to break supraventricular tachycardia. None of these three constrict vessels to support pressure.

Step 3: Vasopressin is the odd one out that does raise pressure. At high doses it stimulates V1 receptors on vascular smooth muscle, driving vasoconstriction through a non-adrenergic pathway, so it works even when adrenergic responsiveness is poor.

Step 4: Guidelines have permitted one 40 unit dose of vasopressin to stand in for an epinephrine dose across asystole, pulseless electrical activity, and shockable arrest, confirming it as the true alternative.

High dose vasopressin

Quick Tip: Look for the only option that is a direct vasoconstrictor rather than an antiarrhythmic.

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142. A patient presents with cutaneous vasculitis, glomerulonephritis and peripheral neuropathy. Which investigation should be performed next to help diagnose the condition?

- (A) ANCA
- (B) RA factor
- (C) HBsAg
- (D) MIF

Correct Answer: (A) ANCA

SOLUTION:

Step 1: Read the organ list - skin, kidney and nerve are all being damaged at once. That multi-system, small-vessel involvement is the signature of a systemic vasculitis rather than a single-organ disease.

Step 2: Decide which test pins down a vasculitis. The autoantibody class made specifically against neutrophil cytoplasmic antigens is ANCA, and it defines the family known as ANCA-associated vasculitis.

Step 3: Eliminate the rest. RA factor would chase rheumatoid disease, HBsAg would chase hepatitis B, and MIF is a cytokine assay with no role in confirming this clinical triad.

Step 4: Because the clinical picture screams small-vessel vasculitis and ANCA is the serology that confirms it, ordering ANCA is the correct next step.

ANCA

Quick Tip: Skin, kidney and nerve vasculitis together suggests an autoantibody against neutrophil cytoplasm.

...

143. Cryoglobulinemia is most commonly associated with which of the following?

- (A) Hepatitis C
- (B) Ovarian cancer
- (C) Diabetes
- (D) Leukemia

Correct Answer: (A) Hepatitis C

SOLUTION:

Step 1: Recall what cryoglobulins are: antibody-type proteins that clump out of solution in the cold and dissolve again when warmed. Their over-production

defines cryoglobulinemia.

Step 2: Note that the mixed forms (IgM with IgG, plus complement like C4) sit on a background of chronic immune stimulation, classically from a persistent viral infection.

Step 3: Match that to the options. Among Hepatitis C, ovarian cancer, diabetes and leukemia, the single best-known cause of mixed cryoglobulinemia is chronic Hepatitis C virus infection.

Step 4: The remaining choices lack this classic, high-yield association, so the answer is Hepatitis C.

Hepatitis C

Quick Tip: Think of the chronic viral hepatitis tied to cold-precipitating immunoglobulins.

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144. Which of the following causes hypokalemic metabolic alkalosis with hypertension?

- (A) Liddle syndrome
- (B) Bartter syndrome
- (C) Gitelman syndrome
- (D) Renal tubular acidosis

Correct Answer: (A) Liddle syndrome

SOLUTION:

Step 1: Split the question into two clues - a hypokalemic metabolic alkalosis, plus hypertension. The acid-base picture alone fits several tubular disorders, so the blood pressure is what decides the answer.

Step 2: Hypertension means sodium and volume are being held on to. The condition that overactivates the ENaC channel, hoarding sodium while dumping potassium, is Liddle syndrome, which therefore raises blood pressure.

Step 3: Contrast the salt-wasting tubulopathies: Bartter and Gitelman give the

same alkalosis and low potassium but run normal or low pressure, so they fail the hypertension clue.

Step 4: Renal tubular acidosis is excluded outright because it yields acidosis. Only Liddle syndrome satisfies all parts of the stem.

Liddle syndrome

Quick Tip: Which inherited tubular disorder raises blood pressure while lowering potassium via overactive ENaC?

...

145. According to the GOLD criteria, very severe COPD is defined by which of the following?

- (A) $FEV_1/FVC < 70$ and $FEV_1 < 30$
- (B) $FEV_1/FVC < 70$ and $FEV_1 < 70$
- (C) $FEV_1/FVC < 70$ and $FEV_1 < 50$
- (D) Both A and C

Correct Answer: (A) $FEV_1/FVC < 70$ and $FEV_1 < 30$

SOLUTION:

Step 1: Start from the gate-keeping number. To call airflow obstruction COPD at all, the post-bronchodilator FEV_1/FVC must be under **0.70**; this applies to every stage equally.

Step 2: Rank the stages by how low FEV_1 percent predicted falls. The most extreme grade, Stage IV or very severe, sits at $FEV_1 < 30\%$ predicted.

Step 3: Test the options against that benchmark. Only the choice pairing $FEV_1/FVC < 70$ with $FEV_1 < 30$ lands in the very severe band.

Step 4: The other thresholds describe milder grades - $FEV_1 < 70$ is mild/moderate and $FEV_1 < 50$ is severe (Stage III). Therefore the very severe definition is the first option.

$$FEV_1/FVC < 70 \text{ and } FEV_1 < 30$$

Quick Tip: Very severe (Stage IV) sits at the lowest FEV1 percent predicted threshold.

...

146. The Ankle-Brachial Pressure Index (ABPI) is artificially increased in which of the following?

- (A) Arteriosclerosis with calcified arteries
- (B) Ischemic ulcers
- (C) Intermittent claudication
- (D) DVT

Correct Answer: (A) Arteriosclerosis with calcified arteries

SOLUTION:

Step 1: Understand the measurement. ABPI divides the ankle systolic pressure by the brachial systolic pressure, and you need a cuff to compress the artery to read that ankle pressure.

Step 2: Recall what makes a reading too high. If the artery wall is stiff and calcified, the cuff cannot squeeze it shut, so the recorded ankle pressure is spuriously elevated and the ratio is pushed up artificially.

Step 3: Match to the options. Arteriosclerosis with calcified, non-compressible arteries (classically diabetic or renal patients) is exactly that scenario, giving a falsely high ABPI often above 1.3.

Step 4: The remaining choices either lower the index (ischemic ulcers, claudication from true PAD) or belong to the venous system (DVT). Therefore the artificially raised ABPI is due to calcified arteries.

Arteriosclerosis with calcified arteries

Quick Tip: Non-compressible, stiff vessel walls give a falsely high ankle pressure.

...

147. Minimal dysfunction syndrome (minimal brain dysfunction) is seen in?

- (A) Dyslexia
- (B) ADHD
- (C) Mental subnormality
- (D) Down's syndrome

Correct Answer: (A) Dyslexia

SOLUTION:

Step 1: Frame minimal brain dysfunction as a disorder of a child with broadly preserved intelligence but uneven, immature control of behaviour, attention and learning.

Step 2: Its standout problems are specific learning disabilities - trouble blending auditory and visual functions for language and difficulty reading, writing and doing mathematics.

Step 3: The textbook example of such a specific learning disability quoted under this syndrome is dyslexia, a focused reading deficit rather than a global one.

Step 4: The other options describe whole-brain intellectual impairment (mental subnormality, Down's syndrome) or a behaviour-attention disorder (ADHD), which do not capture the specific-learning-disability core, so dyslexia is selected.

Dyslexia

Quick Tip: Think of the specific reading-based learning disability rather than a global one.

...

148. The Nuys prognostic index is not based on:

- (A) Age
- (B) Microcalcification
- (C) Size
- (D) ER status

Correct Answer: (D) ER status

SOLUTION:

Step 1: Recall what VNPI is for. It is a numeric tool for DCIS that tells the surgeon whether wide excision alone, excision plus radiotherapy, or mastectomy is the safest choice based on recurrence risk.

Step 2: Memorise the four-item modified score with the mnemonic **SAGM**: **S**ize, **A**ge, **G**rade (nuclear grade with/without necrosis), and **M**argin. Each is given 1, 2 or 3 points and the totals stratify patients into low, intermediate and high recurrence groups.

Step 3: Test each option against **SAGM**. Age matches **A**, size matches **S**. Microcalcification relates to the imaging and classification of DCIS and is associated with the Van Nuys descriptive system, so it cannot be the intended outlier here.

Step 4: Estrogen receptor status is a hormone-receptor marker that drives tamoxifen or aromatase-inhibitor therapy in invasive disease; it sits entirely outside the VNPI scoring framework. Therefore the index is not based on ER status.

ER status

Quick Tip: Remember VNPI scores size, age, grade and margin - hormone-receptor markers are not part of it.

...

143. Common cause of chronic pancreatitis:

- (A) Chronic alcohol
- (B) Chronic pancreatic calculi
- (C) Pancreas divisum
- (D) Gall bladder stones

Correct Answer: (A) Chronic alcohol

SOLUTION:

Step 1: Separate the two questions students confuse: what causes acute pancreatitis versus chronic pancreatitis. Gallstones top the acute list; alcohol tops the chronic list.

Step 2: For chronic pancreatitis the dominant driver in adults is long-standing alcohol intake, responsible for roughly **70%** of cases. The mechanism is repeated acinar injury, protein plugs, ductal calcification and steady fibrosis.

Step 3: Eliminate the distractors. Pancreatic calculi appear because of the disease, so they are an effect, not the usual cause. Pancreas divisum is a rare congenital variant and only sometimes contributes.

Step 4: Gallbladder stones are the hallmark of acute, not chronic, disease. So the best single answer for the common cause of chronic pancreatitis is chronic alcohol.

Chronic alcohol

Quick Tip: Gallstones cause acute pancreatitis; the leading cause of chronic pancreatitis is something you drink.

...

150. The following statement about Keloid is true:

- (A) It contains growth factor
- (B) Extended excision is the treatment of choice
- (C) It does not extend beyond the wound
- (D) None of the above

Correct Answer: (A) It contains growth factor

SOLUTION:

Step 1: Frame the question by contrasting keloid with hypertrophic scar. The pathology of a keloid is overactive fibroblasts and a surplus of cytokines and growth factors such as $TGF\beta$, which keep collagen production switched on.

Step 2: Because of that growth-factor excess, statement (a) is correct: keloids do contain growth factor. This is the biochemical signature that explains their relentless growth.

Step 3: Knock out the wrong options. Spreading past the wound edge is the textbook way to tell a keloid from a hypertrophic scar, so (c) is false. Cutting it out widely tends to trigger recurrence, frequently larger, which is why plain extended excision is not the treatment of choice, making (b) false.

Step 4: With at least one true statement present, None of the above (d) is ruled out. The valid statement is that a keloid contains growth factor.

It contains growth factor

Quick Tip: Keloids overflow past the wound and recur after excision - their engine is excess growth factor.

...

151. Which of the following layers are cut during fasciotomy?

- (A) Skin
- (B) Skin + subcutaneous fascia
- (C) Skin + subcutaneous tissue + superficial fascia
- (D) Skin + subcutaneous tissue + superficial fascia + deep fascia

Correct Answer: (D) Skin + subcutaneous tissue + superficial fascia + deep fascia

SOLUTION:

Step 1: Ask what fasciotomy is trying to achieve: lower the pressure inside a closed muscle compartment to restore perfusion in compartment syndrome.

Step 2: Identify what actually traps the pressure. The compartment is walled in by the *deep fascia*, an unyielding sheet, so any effective release must divide it.

Step 3: Trace the surgeon's knife from surface to compartment. It cuts skin, then the subcutaneous tissue, then the superficial fascia, and only when it reaches and splits the deep fascia is the compartment opened.

Step 4: Any option that omits the deep fascia leaves the pressure untouched and the limb at risk, so they are incorrect. The full layered answer is skin, subcutaneous tissue, superficial fascia and deep fascia.

Skin + subcutaneous tissue + superficial fascia + deep fascia

Quick Tip: The whole point is to open the deep fascia, so the cut must reach all the way down to it.

...

152. Which statement is not true regarding Crohn's disease?

- (A) Rectum is not involved
- (B) Continuous lesion visualized in endoscopy
- (C) Non-caseating granulomas
- (D) Cobblestone appearance

Correct Answer: (B), Continuous lesion visualized in endoscopy

SOLUTION:

Step 1: The question wants the one statement that does NOT fit Crohn's disease, so build a quick true/false table from the Crohn's versus ulcerative colitis comparison.

Step 2: Key discriminator: Crohn's is patchy with *skip lesions*, while ulcerative colitis is a continuous, confluent process spreading proximally from the rectum. Hence describing a continuous endoscopic lesion is a colitis feature, not Crohn's -

that statement is false.

Step 3: Verify the rest are genuine Crohn's traits. Rectal sparing is typical, non-caseating granulomas are the classic histology, and cobblestoning arises from criss-crossing linear ulcers separated by oedematous mucosa. All true.

Step 4: Only the continuous-lesion claim breaks the pattern, so it is the untrue statement and the correct choice.

Continuous lesion visualized in endoscopy

Quick Tip: Crohn's skips; continuous mucosal disease belongs to ulcerative colitis - pick the odd one out.

...

153. Which is the best investigation for carcinoma head of pancreas?

- (A) Guided biopsy
- (B) ERCP
- (C) Transduodenal / transperitoneal sampling
- (D) EUS

Correct Answer: (D) EUS

SOLUTION:

Step 1: Decide what an ideal test for a pancreatic head cancer must do: see a small deep tumour clearly, assess vascular involvement for resectability, and obtain cells safely.

Step 2: EUS wins on every count. From inside the duodenum the transducer sits millimetres from the lesion, detecting tumours other modalities miss, and EUS-FNA delivers a diagnosis through a low-risk route compared with percutaneous needles.

Step 3: Compare alternatives. ERCP is best for relieving obstructive jaundice and brushing the duct, not for staging. A percutaneous guided biopsy carries needle-tract seeding risk and does not stage the disease.

Step 4: Transduodenal or transperitoneal sampling is invasive and risks tumour

spillage. So, paired with CT for distant staging, EUS is the single best investigation for carcinoma of the head of the pancreas.

EUS

Quick Tip: Think of the test that sits next to the pancreas, images tiny tumours and samples them in one go.

...

154. An abdominal mass is best demonstrated in congenital hypertrophic pyloric stenosis by:

- (A) In palpation over the epigastrium
- (B) In left hypochondriac region
- (C) Right iliac fossa
- (D) During feeding

Correct Answer: (D) During feeding

SOLUTION:

Step 1: Picture the infant with projectile milk vomiting who stays hungry - the classic story of infantile hypertrophic pyloric stenosis, where the thickened pylorus forms a palpable lump.

Step 2: The trick to feeling that lump is the *test feed*. Giving the baby a bottle relaxes the abdominal wall and fills the stomach, and it is precisely during feeding that the pyloric olive is best felt and gastric peristalsis is seen.

Step 3: Anatomically the olive-shaped mass lies in the right upper quadrant, and waves of peristalsis sweep from left to right across the upper abdomen as the stomach struggles to empty past the obstruction.

Step 4: Simply pressing on the epigastrium, left hypochondrium or right iliac fossa in a crying, tense baby usually fails. The reliable demonstration happens during feeding, after which ultrasound confirms the thickened muscle.

During feeding

Quick Tip: The olive-shaped pyloric mass is felt best when the baby is relaxed and not feeding - the test feed.

...

155. Calculate the Glasgow Coma Scale (GCS) of a 25-year-old head injury patient with the following parameters: confused, opening eyes in response to pain, and localizing pain.

- (A) 6
- (B) 11
- (C) 12
- (D) 7

Correct Answer: (B) 11

SOLUTION:

Step 1: Recall the GCS breakdown by category. Motor response is the most heavily weighted at up to 6 points, verbal up to 5, and eye opening up to 4, summing to a maximum of 15.

Step 2: Translate each clinical descriptor into its point value. "Opening eyes to pain" sits one step above no response, so it scores 2 of 4. "Confused" speech means the patient talks but is disoriented, scoring 4 of 5. "Localizing pain" means the hand moves toward and tries to remove the stimulus, the second-highest motor grade at 5 of 6.

Step 3: Combine the three values: $2 + 4 + 5 = 11$.

Step 4: A GCS of 11 places the patient in the moderate injury band (9-12), guiding observation and imaging decisions. The other choices come from shifting any single component up or down a grade, which does not fit the stated findings.

11

Quick Tip: Score E (eyes), V (verbal), M (motor) separately, then add: eyes to pain = 2, confused = 4, localizing = 5.

...

156. The RET proto-oncogene is associated with the development of which of the following?

- (A) Medullary carcinoma thyroid
- (B) Astrocytoma
- (C) Paranglioma
- (D) Hurthle cell tumor thyroid

Correct Answer: (A) Medullary carcinoma thyroid

SOLUTION:

Step 1: Anchor on the cell of origin. Medullary thyroid carcinoma is a neuroendocrine tumor of the calcitonin-secreting parafollicular C cells, which are derived from the neural crest, unlike the follicular epithelium that gives rise to most thyroid cancers.

Step 2: RET is a growth-factor receptor that is physiologically active in these neural crest lineages, including the thyroid C cells and adrenal medulla. A constitutively activating mutation therefore transforms exactly these cells.

Step 3: This explains why RET sits at the centre of the MEN-2 syndromes (2A and 2B) and familial MTC, where medullary thyroid cancer is the common thread alongside pheochromocytoma.

Step 4: Eliminate the rest: a glial-origin astrocytoma, a SDH-linked paraganglioma, and a follicular-derived Hurthle cell tumor all lie outside the RET pathway. The single best fit is medullary thyroid carcinoma.

Medullary carcinoma thyroid

Quick Tip: RET acts in neural crest-derived parafollicular C cells - think MEN-2 and medullary thyroid cancer.

...

157. What is the cutoff for surgery in an abdominal aortic aneurysm in asymptomatic patients?

- (A) 5.5 cm
- (B) 6.5 cm
- (C) 7.5 cm
- (D) 8.5 cm

Correct Answer: (A) 5.5 cm

SOLUTION:

Step 1: Frame the decision as a balance between rupture risk (which climbs with diameter) and the procedural risk of elective repair. The threshold is the size at which rupture risk begins to dominate.

Step 2: Large trials established this crossover point at 5.5 cm for an asymptomatic infrarenal AAA. Below it, surveillance ultrasound is preferred; at or above it, elective open or endovascular repair is offered.

Step 3: Two size-independent triggers also mandate repair: a symptomatic aneurysm (pain, tenderness) and rapid expansion. These override the diameter rule.

Step 4: Choosing 6.5, 7.5, or 8.5 cm would mean watching the aorta into a high-rupture zone, which is unsafe. The accepted operative cutoff is therefore 5.5 cm.

5.5 cm

Quick Tip: Elective repair when an asymptomatic AAA exceeds 5.5 cm, or if symptomatic / rapidly expanding.

...

158. Which of the following fontanelles is the last to close?

- (A) Anterolateral
- (B) Anterior
- (C) Lateral
- (D) Occipital

Correct Answer: (B) Anterior

SOLUTION:

Step 1: List the four pairs and the midline gaps with their approximate closure times, since the question is purely about timing. Posterior closes first, around 2-3 months.

Step 2: Working through the timeline: the sphenoidal (anterolateral) follows near 6 months, then the mastoid (posterolateral) from 6 to 18 months.

Step 3: The anterior fontanelle, the largest and most clinically useful for assessing hydration and intracranial pressure, persists the longest and closes around 18 to 24 months of age.

Step 4: Therefore, among the choices given, the anterior fontanelle is the final one to ossify; the anterolateral and lateral (mastoid) ones close well before it.

Anterior

Quick Tip: Posterior closes first; the large diamond-shaped anterior fontanelle is the last, by 18-24 months.

...

159. Which enzyme deficiency causes Lesch-Nyhan syndrome?

- (A) Hypoxanthine-guanine phosphoribosyltransferase (HGPRT)
- (B) Xanthine oxidase
- (C) Adenine phosphoribosyltransferase (APRT)
- (D) AMP deaminase

Correct Answer: (A) Hypoxanthine-guanine phosphoribosyltransferase (HGPRT)

SOLUTION:

Step 1: Identify the pathway. Cells recycle purine bases through a salvage route to avoid the energetic cost of building purines from scratch. The key salvage enzyme for hypoxanthine and guanine is HGPRT.

Step 2: When HGPRT is absent, hypoxanthine and guanine cannot be re-converted to nucleotides, so they are funneled into the degradation pathway and end as excess uric acid, while PRPP accumulates and further fuels purine synthesis.

Step 3: Clinically this produces the classic triad of hyperuricemia, dystonic-choreoathetoid neurologic disease, and self-injurious biting, in an X-linked pattern affecting boys.

Step 4: Contrast the foils: a block at xanthine oxidase lowers uric acid; APRT loss precipitates adenine-derived stones; AMP deaminase loss gives exercise-induced myopathy. None of these reproduces Lesch Nyhan, so HGPRT deficiency is the answer.

HGPRT deficiency

Quick Tip: X-linked purine salvage defect with self-mutilation and hyperuricemia points to HGPRT.

...

160. Which vaccine is NOT included in the Mission Indradhanush immunization programme?

- (A) Tuberculosis
- (B) Measles
- (C) Japanese Encephalitis
- (D) Diphtheria

Correct Answer: (C) Japanese Encephalitis

SOLUTION:

Step 1: Recall the mnemonic behind the name: "Indradhanush" = rainbow = seven colours = seven diseases. The task is to find the option outside this set of seven.

Step 2: Lay out the seven covered conditions - diphtheria, pertussis, tetanus, childhood TB, polio, hepatitis B, and measles. Three of the four options (TB, measles, diphtheria) clearly sit inside this list.

Step 3: Japanese encephalitis is a vector-borne flaviviral disease covered by separate region-specific campaigns rather than the original Indradhanush seven, so it stands out as the exception.

Step 4: By elimination, the vaccine not part of the programme is the Japanese encephalitis vaccine.

Japanese Encephalitis

Quick Tip: Indradhanush = seven diseases (DPT, TB, polio, hepatitis B, measles); JE is the odd one out.

...

161. Which among the following is the most common cause of neonatal blindness?

- (A) *Neisseria gonorrhoeae*
- (B) *Chlamydia trachomatis*
- (C) *Klebsiella*
- (D) *Enterobacter*

Correct Answer: (A) *Neisseria gonorrhoeae*

SOLUTION:

Step 1: Distinguish two different questions: the most common cause of neonatal conjunctivitis versus the most common cause of neonatal blindness. The stem asks about blindness, which shifts the answer toward the more destructive organism.

Step 2: Gonococcal ophthalmia neonatorum is hyperacute and aggressive. Unlike

most surface infections, *N. gonorrhoeae* can invade an intact corneal epithelium, causing rapid keratitis, ulceration, and perforation.

Step 3: This sight-threatening corneal damage is why historic blindness in newborns was driven by gonococcus, prompting prophylaxis (Crede's silver nitrate, now erythromycin ointment) at birth.

Step 4: The other organisms either cause milder disease (*Chlamydia*, more common but rarely blinding) or are rare pathogens here (*Klebsiella*, *Enterobacter*). The blindness-causing answer is *Neisseria gonorrhoeae*.

Neisseria gonorrhoeae

Quick Tip: Gonococcus can penetrate an intact cornea, so it is the blinding cause of ophthalmia neonatorum.

162. Muscles affected in De Quervain tenosynovitis are -

- (A) Abductor pollicis longus and extensor pollicis brevis
- (B) Adductor pollicis longus and extensor pollicis brevis
- (C) Abductor pollicis longus and flexor pollicis brevis
- (D) Adductor pollicis longus and flexor pollicis brevis

Correct Answer: (A) Abductor pollicis longus and extensor pollicis brevis

SOLUTION:

Step 1: Anchor the answer on wrist surface anatomy. The radial side of the wrist has six dorsal extensor compartments, and De Quervain disease is the classic disorder of the very first one.

Step 2: A quick rule for compartment one is **APL + EPB** - two tendons only. Both run together over the radial styloid, and thickening of their shared sheath causes the localised pain of De Quervain.

Step 3: Test each choice against this rule. Abduction of the thumb needs the abductor pollicis longus, so any option naming the adductor is anatomically false. The second tendon must be the extensor pollicis brevis, so any option naming a

flexor is also false.

Step 4: Only option a pairs the abductor pollicis longus with the extensor pollicis brevis, both of which are extrinsic thumb tendons that genuinely traverse compartment one. Clinically, Finkelstein test reproduces the symptoms by stretching exactly these two tendons.

Abductor pollicis longus and extensor pollicis brevis

Quick Tip: Think of the two tendons in the first dorsal wrist compartment.

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163. What is meant by perilunate dislocation?

- (A) Lower radius, scaphoid, lunate and capitate all in same plane
- (B) Lower radius, scaphoid and capitate in alignment, lunate alone out of plane
- (C) Lower radius, scaphoid and lunate in alignment, capitate alone is out of plane
- (D) Both lunate and capitate are out of plane

Correct Answer: (B) Lower radius, scaphoid and capitate in alignment, lunate alone out of plane

SOLUTION:

Step 1: Frame the question and the normal radius-lunate-capitate column. In a healthy wrist these three bones stack like nested cups in a straight line on the lateral view.

Step 2: In a perilunate dislocation the injury runs *around* the lunate. The lunate keeps holding hands with the distal radius, but the capitate and the bones distal to it are thrown dorsally, breaking the smooth column.

Step 3: Read the options against this mechanism. The phrase that captures perilunate dislocation is the one where the radius, scaphoid and capitate stay in alignment while the lunate is the odd bone out of plane - option b. The mirror description, where the lunate stays in line and the capitate is displaced, is actually a lunate dislocation, ruling out option c.

Step 4: Option a is just a normal wrist and option d is non-specific. Recall the

ruptured ligaments - radioscaphocapitate, scapholunate and lunotriquetral - all of which let the carpus rotate around a retained lunate.

Lunate alone out of plane, radius-scaphoid-capitate aligned

Quick Tip: Which single carpal bone keeps its grip on the radius while the rest dislocate?

...

164. Fallen fragment sign is seen in -

- (A) Simple bone cyst
- (B) Osteosarcoma
- (C) Adamantinoma
- (D) Aneurysmal bone cyst

Correct Answer: (A) Simple bone cyst

SOLUTION:

Step 1: Reason from physics. For a bone fragment to literally fall and settle at the bottom of a lesion, the inside of that lesion must be a single open, fluid-filled space with nothing solid to stop it.

Step 2: Now classify the options. A simple (unicameral) bone cyst is exactly that - one cavity full of serous fluid. After a pathological fracture, a piece of cortex shears off and gravity carries it to the dependent wall, giving the fallen fragment sign.

Step 3: Eliminate the rest. Osteosarcoma and adamantinoma are solid, matrix-producing tumours, so a fragment has nowhere to fall. An aneurysmal bone cyst is divided by septa into multiple blood-filled chambers, which trap any fragment and prevent free settling.

Step 4: The sign is essentially diagnostic for a simple bone cyst with a healing pathological fracture, which is why option a is selected.

Simple bone cyst

Quick Tip: Which hollow, fluid-filled lesion lets a broken fragment drop freely inside it?

...

165. You are posted as an intern in casualty. Among the following patients with fracture, which will be your first priority to call the ortho PG and inform?

- (A) Patient's finger is blackening
- (B) Patient cannot extend his arm
- (C) A 10 cm abrasion
- (D) Intra-articular fracture of the elbow joint

Correct Answer: (A) Patient's finger is blackening

SOLUTION:

Step 1: Approach this as a triage exercise. Ask which option, if delayed, will cause the worst irreversible damage in the shortest time.

Step 2: Rank the threats. A black, dusky finger means the artery feeding it is occluded - a vascular emergency where the clock is measured in hours before gangrene sets in. This makes option A the most urgent escalation.

Step 3: Compare with the rest. Loss of arm extension is a neuromuscular or tendon deficit that can be assessed without instant intervention. A 10 cm abrasion is a clean-and-dress soft-tissue issue. An intra-articular elbow fracture will need surgery on a planned list but does not threaten limb survival in the next hour.

Step 4: Because preserving blood supply takes precedence over deformity, wound, or joint involvement, the blackening finger goes to the orthopaedic PG first.

Patient's finger is blackening

Quick Tip: Which sign points to lost blood supply and looming gangrene?

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166. In rheumatoid arthritis, which type of cells are prominently present in the hypertrophied synovial lining?

- (A) B cells
- (B) T cells
- (C) Macrophages
- (D) Dendritic cells

Correct Answer: (C) Macrophages

SOLUTION:

Step 1: Separate the synovium into two compartments. The thin surface intimal lining is one, and the deeper sublining lamina is the other; the question specifically targets the lining layer.

Step 2: Recall that the normal lining is barely 1 to 3 cells deep, but in rheumatoid arthritis it swells to roughly 8 to 10 cells. The cells doing this swelling are fibroblast-like synoviocytes and, crucially among the options given, macrophage-like synoviocytes.

Step 3: Why not the lymphocytes? T cells and B cells, along with dendritic cells, are certainly part of rheumatoid pathology, but they cluster in the sublining as perivascular lymphoid follicles rather than forming the thickened intimal sheet itself.

Step 4: Mapping the macrophage to the prominent lining cell among the choices gives the answer.

Macrophages

Quick Tip: Which cell, with fibroblasts, builds up the thickened synovial intimal lining?

...

167. The 8th and 9th rib costal cartilages form which type of joint with each other:

- (A) Costochondral joint
- (B) Interchondral joint
- (C) Synovial joint
- (D) Costovertebral joint

Correct Answer: (C) Synovial joint

SOLUTION:

Step 1: First identify which surfaces are meeting. The eighth and ninth costal cartilages contact each other along their margins, so this is a cartilage-to-cartilage (interchondral) contact, not rib-to-cartilage or rib-to-vertebra.

Step 2: Now recall the histological character of these interchondral contacts. The cartilages of ribs 6 through 10 articulate by small synovial joints that permit slight gliding during breathing.

Step 3: The question asks for the *type* of joint, and that type is synovial. The costochondral junction (rib to its cartilage) is a primary cartilaginous joint and the costovertebral joint (rib to spine) is a separate synovial articulation, so neither fits this pairing.

Step 4: Putting the location (interchondral) together with the asked-for type (synovial) gives option C as the answer.

Synovial joint

Quick Tip: What kind of joint links neighbouring lower costal cartilages and allows gliding?

...

168. Tom Smith septic arthritis is -

- (A) Acute gonococcal arthritis
- (B) Smallpox arthritis
- (C) Septic arthritis of infancy
- (D) Chronic pyogenic arthritis

Correct Answer: (C) Septic arthritis of infancy

SOLUTION:

Step 1: Treat this as eponym recall. Tom Smith is the name attached to a specific infective hip condition seen in the very young, so focus on the infancy angle.

Step 2: Build the clinical picture. It is a septic arthritis of the hip in infants, presenting acutely with quick abscess formation that may discharge or be drained and then heals. The damaged joint gives a positive telescope test from gross instability.

Step 3: Because the hip ends up dislocated and unstable, the appearance can mimic a congenital dislocation of the hip, yet the underlying mechanism is infection in early life.

Step 4: Reject the other choices - it is neither gonococcal, nor a smallpox-related joint disease, nor a chronic pyogenic process - leaving septic arthritis of infancy as the match.

Septic arthritis of infancy

Quick Tip: This eponym names a hip joint infection occurring in infants.

...

169. Which of the following is correct regarding the placenta and umbilical cord?

- (A) Placental artery provides nutrients through the umbilical cord to the baby
- (B) Placenta has Wharton's jelly
- (C) Placenta has 2 veins and 1 artery
- (D) Estrogen is secreted by the placenta

Correct Answer: (B) Placenta has Wharton's jelly

SOLUTION:

Step 1: Picture the lifeline between mother and baby. The umbilical cord is a tube of vessels embedded in supportive jelly that bridges the fetus and placenta. **Step 2:** The packing material around the cord vessels is called Wharton's jelly, a mucoid connective tissue rich in mucopolysaccharides that keeps the vessels from collapsing. This makes option b the right choice. **Step 3:** Checking the rest: the cord vessel pattern is 2 arteries and 1 vein, so the claim of 2 veins and 1 artery in option c is flipped and wrong. The oxygen and nutrient supply travels to the baby through the umbilical VEIN, not an artery, so option a is wrong. **Step 4:** Although the placenta secretes estrogen, the intended single best answer here describes the cord-placenta architecture, which is the presence of Wharton's jelly.

Placenta has Wharton's jelly

Quick Tip: Think of the gelatinous tissue cushioning the cord vessels - and remember the cord has 2 arteries, 1 vein.

...

170. Acute fatty liver of pregnancy is commonly seen at which stage of pregnancy?

- (A) 3rd trimester
- (B) 1st trimester
- (C) Immediate postpartum
- (D) Intrapartum

Correct Answer: (A) 3rd trimester

SOLUTION:

Step 1: AFLP is one of the liver-specific disorders unique to late pregnancy. The key timing clue is that it clusters near term. **Step 2:** The expected answer is the third trimester, because microvesicular fat deposition in hepatocytes overwhelms

maternal liver function as metabolic demand peaks late in gestation. **Step 3:** Pathophysiology: a deficiency in the fetal long-chain 3-hydroxyacyl-CoA dehydrogenase enzyme causes toxic long-chain fatty acid intermediates to cross into the maternal circulation and injure her liver. **Step 4:** Recognised risk factors are a male baby, first pregnancy, and twin pregnancy. First trimester onset is not seen, and intrapartum is not the typical presentation, which rules out the other options.

3rd trimester

Quick Tip: Liver disorders unique to pregnancy (AFLP, HELLP) cluster near term.

...

171. Establishment of the fetoplacental circulation is seen at which day after fertilization?

- (A) 11 to 13 days
- (B) 20 to 22 days
- (C) 7 days
- (D) 25 to 26 days

Correct Answer: (B) 20 to 22 days

SOLUTION:

Step 1: Distinguish two circulations: the uteroplacental (maternal) circulation forms early when trophoblasts erode endometrial vessels, while the fetoplacental circulation needs a beating fetal heart plus vascularised villi. **Step 2:** Track villus maturation - primary villi at about day 13, secondary at about day 16, and tertiary villi (containing fetal capillaries) at about day 21. Only tertiary villi can carry the fetal circulation. **Step 3:** The fetal heart first contracts and the fetoplacental loop is completed around the 21st to 22nd day, placing the answer in the 20 to 22 day band. **Step 4:** Day 7 is just blastocyst attachment, days 11 to 13 cover early uteroplacental circulation and primary villi, and day 25 to 26 is past the standard milestone, so option b is correct.

20 to 22 days

Quick Tip: Tertiary villi and the first fetal heartbeat appear around day 21 - that starts the fetoplacental circulation.

...

172. The fimbriectomy procedure of tubal sterilization is known as which method?

- (A) Uchida method
- (B) Irving method
- (C) Madlener technique
- (D) Kroener method

Correct Answer: (D) Kroener method

SOLUTION:

Step 1: Match each eponym to its surgical signature. Fimbriectomy specifically means cutting off the fimbriated end of the tube. **Step 2:** That description fits the Kroener method, where the fimbrial end is ligated and removed, so the answer is option d. **Step 3:** Sorting the others: Uchida uses a subserosal saline bleb in the mid tube before resection, and Irving ligates and divides the tube then tucks the medial cut end into the myometrium for extra security. **Step 4:** The Madlener method simply crushes and ties a loop of the mid tube and is considered the easiest but has a higher failure rate. Since only Kroener targets the fimbria, it is the fimbriectomy procedure.

Kroener method

Quick Tip: Fimbriectomy = removal of the fimbrial end - that eponym is Kroener.

...

173. What is the recommended dietary allowance (RDA) of iodine during lactation, in micrograms per day?

- (A) 150
- (B) 220
- (C) 100
- (D) 250

Correct Answer: (D) 250

SOLUTION:

Step 1: Build a small ladder of iodine needs: normal adult, then pregnancy, then lactation, each step higher because thyroid hormone demand grows. **Step 2:** The top rung, lactation, requires 250 micrograms per day, since the nursing mother must supply iodine for her own thyroid and for the breastfed infant. That points to option d. **Step 3:** The middle rung is pregnancy at 220 micrograms per day, and the bottom rung is the non-pregnant adult at about 150 micrograms per day. **Step 4:** Therefore 150 is the baseline adult figure, 220 is the antenatal figure, and 100 is simply too low; the lactating mother needs 250 micrograms.

250 mcg/day

Quick Tip: Adult 150, pregnancy 220, lactation is the highest at 250 mcg/day.

...

174. Which one of the following is NOT a cause of secondary postpartum haemorrhage?

- (A) Placenta previa
- (B) Retained bits of placenta
- (C) Endometritis
- (D) Polyp

Correct Answer: (A) Placenta previa

SOLUTION:

Step 1: Reframe by timing. Secondary PPH means bleeding that starts after the first 24 hours postpartum, so the cause must be something that persists or develops in the puerperium. **Step 2:** Two classic culprits dominate: retained placental tissue acting as a nidus, and puerperal infection like endometritis. These match options b and c, so they are valid causes. **Step 3:** Additional accepted causes include a uterine polyp or fibroid, infected genital tract tears, sub-involution of the placental site, and rarely choriocarcinoma, which validates option d. **Step 4:** Placenta previa describes a placenta implanted over or near the cervix and causes painless bleeding BEFORE delivery (antepartum haemorrhage); it has no role in postpartum bleeding once delivery is complete. Hence the answer that is not a cause is placenta previa.

Placenta previa

Quick Tip: Placenta previa causes antepartum, not postpartum, bleeding.

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175. What is the best time during pregnancy to perform the quadruple (quad) test?

- (A) 8-12 weeks
- (B) 11-15 weeks
- (C) 15-20 weeks
- (D) 18-22 weeks

Correct Answer: (C) 15-20 weeks

SOLUTION:

Step 1: Place the quad test on the screening calendar. It is a second-trimester blood test, so it falls after the first-trimester combined screen. **Step 2:** The four markers it checks are AFP, hCG, unconjugated estriol, and inhibin A, used to estimate risk of Down syndrome, trisomy 18, and open neural tube defects. **Step 3:** The recommended timing is 15 to 20 weeks of gestation, which matches option

c, with the sweet spot often quoted around 16 to 18 weeks. **Step 4:** Options offering 8 to 15 weeks belong to first-trimester or dual screening, and they are too early for accurate quad-marker interpretation, so the best answer is 15 to 20 weeks.

15 – 20 weeks

Quick Tip: Quad test is a second-trimester screen, done at 15-20 weeks.

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176. Drug that is used for fetal lung maturity is:

- (A) Dexamethasone
- (B) Folic acid
- (C) Beclomethasone
- (D) None

Correct Answer: (A) Dexamethasone

SOLUTION:

Step 1: Preterm neonates lack adequate pulmonary surfactant, leading to respiratory distress syndrome. The clinical strategy is to mature the lungs before delivery using a drug that promotes type II pneumocyte function.

Step 2: Glucocorticoids fulfil this role. Dexamethasone and betamethasone are the preferred corticosteroids because they readily cross the placental barrier and act on the developing fetal lung. So the answer points to dexamethasone.

Step 3: Timing matters - a single antenatal course is administered when birth is likely within 24 to 48 hours, in the window of roughly 24 to 34 weeks, maximizing the surfactant-inducing benefit.

Step 4: Eliminating distractors: folic acid is a vitamin supplement against neural tube defects, beclomethasone is an inhaled topical steroid for airway inflammation that is not used systemically for fetal maturation, and "None" cannot be correct since dexamethasone clearly works.

Dexamethasone

Quick Tip: Think antenatal corticosteroids given before preterm delivery.

...

177. In uterine prolapse, how to know if the ring pessary is in place?

- (A) If not expelled after increased abdominal pressure
- (B) If bleeding does not occur
- (C) If patient feels discomfort
- (D) None

Correct Answer: (A) If not expelled after increased abdominal pressure

SOLUTION:

Step 1: Pessaries are mechanical supports inserted into the vagina to hold prolapsed pelvic organs. After fitting, the operator must verify retention before discharging the patient.

Step 2: The functional test lies on physiology: any raised intra-abdominal pressure (coughing, straining, walking) would dislodge a poorly fitted ring. A well-sized ring resists this force.

Step 3: Therefore, the pessary is judged to be in place if it remains in position - that is, is not expelled - when the patient is asked to increase abdominal pressure. This identifies option a as the answer.

Step 4: The remaining choices fail: lack of bleeding is non-specific, patient discomfort signals an incorrect fit rather than a correct one, and "None" ignores the void retention test.

Not expelled after increased abdominal pressure

Quick Tip: A well-fitted ring resists straining and bearing down.

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178. Hormone therapy (HT) is indicated in menopausal women for:

- (A) Hot flash
- (B) Ca breast
- (C) Endometriosis
- (D) Uterine bleeding

Correct Answer: (A) Hot flash

SOLUTION:

Step 1: Begin with the pathophysiology of menopause. Ovarian estrogen production declines, producing the hypoestrogenic symptom complex. HT aims to correct this deficiency.

Step 2: The best-established benefit of replacing estrogen is suppression of vasomotor instability. Hot flashes are the hallmark vasomotor symptom and respond strongly to HT, which is why this is its core licensed use (alongside osteoporosis prophylaxis).

Step 3: Matching the option, hot flash is the indicated condition.

Step 4: The other options are excluded on safety grounds: breast cancer is estrogen-sensitive so HT is contraindicated, endometriosis worsens under estrogen, and unexplained uterine bleeding demands evaluation for malignancy before any hormone is given.

Hot flash

Quick Tip: HT relieves estrogen-deficiency vasomotor symptoms.

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179. Dilatation and curettage (D&C) is contraindicated in:

- (A) Pelvic inflammatory disease (PID)
- (B) Endometriosis
- (C) Ectopic pregnancy
- (D) None

Correct Answer: (A) Pelvic inflammatory disease (PID)

SOLUTION:

Step 1: Frame the question around procedural safety: D&C breaches the cervical barrier and manipulates the endometrium, so the contraindication will be a state where this manipulation causes harm.

Step 2: In acute or active pelvic inflammatory disease the genital tract is already infected. Introducing curettes risks driving organisms from the lower into the upper tract, worsening salpingitis and risking pelvic peritonitis. Thus PID stands out as the contraindication.

Step 3: Supporting this, upper-genital tract instrumentation (D&C, IUD insertion, therapeutic abortion) is itself a predisposing factor for PID - reinforcing why operating during active infection is avoided.

Step 4: Reviewing the rest: endometriosis poses no infection-spread risk for curettage, and ectopic pregnancy is not a curettage contraindication (curettage is sometimes part of its work-up). So the single best answer is PID.

Pelvic inflammatory disease (PID)

Quick Tip: Avoid uterine instrumentation during active pelvic infection.

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180 Which of these steps is followed first for the management of shoulder dystocia after the McRoberts maneuver?

- (A) Sharp flexion of hip joints towards abdomen
- (B) Suprapubic pressure
- (C) 90 degree rotation of posterior shoulder
- (D) Emergency c-section

Correct Answer: (B) Suprapubic pressure

SOLUTION:

Step 1: Approach this as a protocol-ordering question. Shoulder dystocia is handled by the HELPER algorithm, and the answer is whichever step immediately follows McRoberts.

Step 2: Recall the order: call for Help, consider Epidotomy, perform the Legs/McRoberts hip hyperflexion, then external suprapubic Pressure, then internal Enter rotations, then Remove the posterior arm, then Roll to all fours.

Step 3: Since McRoberts (the legs step) has been completed, the next escalation is suprapubic pressure - pushing just above the pubic bone to rotate and free the anterior shoulder. This makes suprapubic pressure the correct first subsequent step.

Step 4: Discarding the others: sharp hip flexion simply restates McRoberts that is already finished, 90-degree rotation of the posterior shoulder belongs to the later internal maneuvers, and emergency cesarean is reserved for failure of all conservative steps.

Suprapubic pressure

Quick Tip: After McRoberts, the next HELPER step is external pressure above the pubis.

...

181. True hermaphroditism (ovotesticular DSD) most commonly has which karyotype?

- (A) 45 XO with streak gonads
- (B) 46 XX with ovotestis
- (C) 47 XY +9
- (D) 47 XX

Correct Answer: (B) 46 XX with ovotestis

SOLUTION:

Step 1: Start from the definition - an ovotesticular DSD patient possesses both ovarian and testicular elements, classically as a combined ovotestis. We need the genotype most often associated with this.

Step 2: Epidemiologic data show the dominant karyotype is 46,XX, accounting for about 90% of cases; mosaicism (46,XX/46,XY) and pure 46,XY forms are far less frequent.

Step 3: The option pairing 46 XX with an ovotestis therefore captures both the prevailing chromosome complement and the diagnostic gonad, identifying it as the right choice.

Step 4: Excluding the rest: 45,XO with streak gonads is Turner syndrome, 47,XY +9 is a trisomy unrelated to this entity, and 47,XX is an aneuploid pattern that is not the hallmark of true hermaphroditism.

46 XX, ovotestis

Quick Tip: Both gonadal tissues plus the commonest 46,XX complement.

...

182. Peripartum cardiomyopathy occurs within what period of delivery?

- (A) Within 7 days
- (B) Within 6 weeks
- (C) Within 24 months
- (D) Within 5 months

Correct Answer: (D) Within 5 months

SOLUTION:

Step 1: Recognise PPCM as a diagnosis of exclusion - new-onset systolic heart failure related to pregnancy, with no prior heart disease and no alternative cause for the failure.

Step 2: The accepted timing comes from Pearson's criteria, which bracket the onset to the final month of gestation through the first 5 months postpartum, together with echocardiographic LV dysfunction.

Step 3: Comparing the choices, the postpartum boundary of 5 months corresponds exactly to the criterion, making "within 5 months" the answer.

Step 4: The other intervals fail the definition: 7 days and 6 weeks truncate the recognised window, while 24 months extends well beyond it and would misclassify unrelated dilated cardiomyopathies. So the correct cut-off is 5 months.

Within 5 months

Quick Tip: Recall Pearson's criteria: last month of pregnancy to 5 months postpartum.

...

183. Which nerve is most commonly compressed during pregnancy and the puerperium?

- (A) Radial nerve
- (B) Median nerve
- (C) Femoral nerve
- (D) Facial nerve

Correct Answer: (C) Femoral nerve

SOLUTION:

Step 1: Frame the problem by anatomy and mechanics. During labour the legs are held in prolonged flexion, abduction and external rotation, and the fetal head

presses against the lateral pelvic wall. The nerves running across the inguinal region and pelvic brim absorb this stress.

Step 2: The femoral nerve emerges under the inguinal ligament; steep hip flexion kinks it there, while the lateral femoral cutaneous nerve is squeezed where it passes near the anterior superior iliac spine. Clinically a femoral neuropathy shows up as buckling of the knee, weak knee extension, a lost knee reflex and numbness down the front of the thigh.

Step 3: Eliminate the rest. The radial and median nerves serve the arm and have no link to obstetric positioning, and the facial nerve is intracranial. Preventive measures include frequent repositioning, avoiding prolonged hip flexion and shortening the active pushing phase.

Step 4: The only pelvic/lower-limb nerve offered is the femoral nerve.

Femoral nerve

Quick Tip: Think of the lower-limb nerve crossing under the inguinal ligament during prolonged hip flexion.

...

184. In pregnancy, which of the following levels is altered the most?

- (A) Total T3
- (B) Free T3
- (C) Free T4
- (D) TSH

Correct Answer: (A) Total T3

SOLUTION:

Step 1: Approach this through the binding-protein effect of pregnancy. Oestrogen drives the liver to make far more thyroxine-binding globulin, and hCG, sharing a subunit with TSH, lightly stimulates the gland in early weeks.

Step 2: More carrier protein means more circulating bound hormone, so the measured total pools (total T3 and total T4) increase the most and remain high

across the pregnancy.

Step 3: The body protects the active free hormone, so free T3 and free T4 are held steady; they are not the most altered. TSH only falls briefly in the first trimester due to hCG and then normalises, so it is not the best answer either.

Step 4: The single value that changes most consistently and to the greatest degree is Total T3.

Total T3

Quick Tip: Rising TBG in pregnancy lifts the bound (total) hormone pool the most.

...

185. Paget's disease is associated with which other cancer?

- (A) Vulva
- (B) Vagina
- (C) Cervix
- (D) Uterus

Correct Answer: (A) Vulva

SOLUTION:

Step 1: Identify the disease type. Paget's disease outside the breast - extramammary Paget's disease - is an intraepithelial adenocarcinoma that favours skin loaded with apocrine glands.

Step 2: In gynaecology the apocrine-rich skin is the vulva, so this is where EMPD characteristically develops, typically in older women as a persistent, itchy, red plaque with white scaling that mimics dermatitis but fails to clear.

Step 3: Rule out the alternatives. The vagina, cervix and uterus are mucosal, non-apocrine surfaces and are not classic sites for Paget's disease. Therefore the matched cancer site is the vulva.

Vulva

Quick Tip: Extramammary Paget's disease loves apocrine-gland-rich skin of the external genitalia.

...

186. What is meant by Superfecundation?

- (A) Fertilization of two or more ova in one intercourse
- (B) Fertilization of two or more ova in different intercourses in same menstrual cycle
- (C) Fertilization of ovum and then its division
- (D) Fertilization of second ovum, first being implanted

Correct Answer: (B) Fertilization of two or more ova in different intercourses in same menstrual cycle

SOLUTION:

Step 1: Break the word down: super (extra) + fecundation (fertilisation). It signals an additional fertilising event within the same fertile window.

Step 2: Specifically, two or more eggs ovulated in a single cycle are fertilised by sperm from more than one episode of intercourse. If the intercourse episodes involve different men, the resulting fraternal twins can carry different paternal DNA.

Step 3: Contrast with the traps. One-act fertilisation of multiple ova is plain dizygotic twinning. Splitting of one fertilised egg gives monozygotic twins. Fertilising a second egg after a pregnancy is already underway is superfetation, not superfecundation. The defining feature here is different intercourse acts within the same cycle.

Different intercourses in the same menstrual cycle

Quick Tip: Same cycle, two eggs, but fertilised in separate sexual acts.

...

187. The fetal heart starts contracting at:

- (A) 10-12 days
- (B) 10-12 weeks
- (C) 3-5 weeks
- (D) 3-5 months

Correct Answer: (C) 3-5 weeks

SOLUTION:

Step 1: Anchor on embryology timelines. The paired heart tubes appear and fuse during week three, making the heart the first functioning organ in the embryo.

Step 2: The newly formed tubular heart begins to beat spontaneously at about 22 to 23 days, well within the third-to-fifth-week band.

Step 3: The other choices fail the timeline. At 10 to 12 days the embryo is still at the bilaminar/early trilaminar stage with no heart. By 10 to 12 weeks or 3 to 5 months the four-chambered heart is long established. So the earliest contraction time matches 3 to 5 weeks.

3 to 5 weeks

Quick Tip: The heart is the first organ to function - around day 22 to 23.

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188. Anaesthesia of choice for cesarean section in severe pre-eclampsia:

- (A) Spinal
- (B) GA (general anaesthesia)
- (C) Epidural
- (D) Spinal + epidural

Correct Answer: (C) Epidural

SOLUTION:

Step 1: Reason from the two main dangers in severe pre-eclampsia: an unstable, hyper-reactive circulation and an oedematous, difficult airway. The ideal technique sidesteps both.

Step 2: A continuous epidural lets the anaesthetist raise the block gradually so the blood pressure can be lowered gently rather than crashing. It also enhances uteroplacental blood flow and reduces stress-driven catecholamine release, which is beneficial in these patients.

Step 3: Weigh the rivals. General anaesthesia means laryngoscopy through swollen airway tissues plus a hypertensive pressor surge – both hazardous. A single-shot spinal drops pressure too sharply to control. The titratable epidural is therefore favoured for both labour and caesarean delivery in severe pre-eclampsia.

Epidural

Quick Tip: Pick the technique you can titrate slowly while protecting a swollen airway.

...

189. Which of the following is NOT a high-risk pregnancy?

- (A) Previous history of manual removal of placenta
- (B) Anemia
- (C) Diabetes
- (D) Obesity

Correct Answer: (A) Previous history of manual removal of placenta

SOLUTION

Step 1: Read the question as a negative one - find the choice that does NOT belong to the high-risk list. So confirm which three are genuine risk factors first.

Step 2: Anaemia (especially severe), diabetes (insulin-dependent) and obesity are all in the standard catalogue of conditions that increase maternal and fetal complications, so each of these is high risk.

Step 3: That leaves a previous manual removal of placenta. This describes an intervention in a prior third stage of labour and is not, by itself, classified as a high-risk pregnancy criterion. It is the odd one out.

Previous history of manual removal of placenta

Quick Tip: Three are classic risk factors; one is just a past third-stage intervention.

...

190. Which of the following is not used in pre-eclampsia?

- (A) Methyldopa
- (B) Atenolol
- (C) Labetalol
- (D) Hydralazine

Correct Answer: (B) Atenolol

SOLUTION:

Step 1: Antihypertensive choice in pregnancy is governed by fetal safety. The accepted drugs are *labetalol*, methyldopa, hydralazine and nifedipine, each with a long safety record in pregnant women.

Step 2: Plain beta blockers such as atenolol reduce uteroplacental blood flow and have been linked to reduced fetal growth and neonatal bradycardia, so guidelines exclude atenolol from routine use in pre-eclampsia.

Step 3: Mapping the options: for PIH and pre-eclampsia, labetalol is first line; for an acute hypertensive crisis, IV labetalol followed by nifedipine and hydralazine is used; for chronic hypertension, labetalol and methyldopa are favoured. Atenolol fits none of these preferred slots.

Step 4: Therefore the single drug not employed is atenolol.

Atenolol

Quick Tip: A plain beta-blocker linked to fetal growth restriction is avoided in pregnancy.

...

191. Cutis marmorata occurs due to exposure to:

- (A) Cold temperature
- (B) Dust
- (C) Hot temperature
- (D) Humidity

Correct Answer: (A) Cold temperature

SOLUTION:

Step 1: Recall that cutis marmorata is a benign newborn finding rather than a disease. The clue word is marbled, reticulated skin.

Step 2: The change is purely temperature driven: lowering the ambient temperature triggers an unstable vasomotor reaction in cutaneous capillaries, with simultaneous dilatation and contraction of the superficial vessels.

Step 3: Because cold is the precipitant, simply warming the infant makes the mottling vanish, confirming the cause. Dust, heat and humidity are not associated with this reaction.

Step 4: Hence the exposure responsible is cold temperature.

Cold temperature

Quick Tip: A marbled skin pattern in a newborn that disappears on rewarming.

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192. Murphy's eye is seen in:

- (A) Macintosh laryngoscope
- (B) Endotracheal tube
- (C) LMA
- (D) Flexible laryngoscope

Correct Answer: (B) Endotracheal tube

SOLUTION:

Step 1: Identify the device by the eponym. Murphy described a safety vent built into the breathing tube used for intubation.

Step 2: This vent is a side perforation just proximal to the bevelled tip of an endotracheal tube, and tubes carrying it are called Murphy-type tubes (those without it are Magill-type).

Step 3: Function: should the primary distal lumen of the *ETT* be blocked, ventilation continues through the Murphy eye, preventing total airway obstruction.

Step 4: The laryngoscopes and LMA listed are not tubes and carry no such vent, so the structure belongs to the endotracheal tube.

Endotracheal tube

Quick Tip: A side-wall vent hole near the tip of a breathing tube.

...

193. Modified Mallampati grading is used in assessment of:

- (A) Difficult intubation
- (B) Airway obstruction
- (C) Death due to aspiration
- (D) Intubation

Correct Answer: (A) Difficult intubation

SOLUTION:

Step 1: Think of the modified Mallampati score as a preoperative screen of pharyngeal visibility. The examiner looks at how much soft palate, uvula and faucial pillars can be seen.

Step 2: Visibility falls progressively from class I through class IV; the less you see, the more crowded the oropharynx and the more likely the laryngoscopic view will be poor.

Step 3: Published data give good area-under-the-curve accuracy for predicting difficult laryngoscopy and difficult intubation, while it is a weak predictor of mask ventilation difficulty.

Step 4: So among the options, the grading is applied to forecast a difficult intubation, not airway obstruction or aspiration danger.

Difficult intubation

Quick Tip: A tongue-out oropharyngeal view that predicts a hard airway.

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194. Which nerve is tested for adequacy of anaesthesia?

- (A) Median Nerve
- (B) Ulnar Nerve
- (C) Radial nerve
- (D) Mandibular nerve

Correct Answer: (A) Median Nerve

SOLUTION:

Step 1: To judge whether anaesthesia is sufficient, an examiner tests a sensory zone that has a reliable single-nerve supply.

Step 2: The lateral half of the ring finger is a clean median nerve sensory territory, so checking pinprick or touch here reflects median nerve block adequacy.

Step 3: Comparing distractors: the *ulnar* nerve covers the little finger and medial ring finger, the radial nerve covers the dorsal web, and the mandibular nerve is on the face. None of these is the standard adequacy check described.

Step 4: Hence the median nerve is tested.

Median nerve

Quick Tip: Test the lateral aspect of the ring finger.

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195. Most effective circuit in spontaneous anaesthesia is:

- (A) Mapleson A
- (B) Mapleson B
- (C) Mapleson C
- (D) Mapleson D

Correct Answer: (A) Mapleson A

SOLUTION:

Step 1: Rank the Mapleson systems by how much fresh gas flow (FGF) is needed to avoid rebreathing during spontaneous breathing; the lower the FGF requirement, the more efficient the circuit.

Step 2: In the Mapleson A or Magill arrangement, the expiratory valve sits close to the patient. On expiration, alveolar gas is vented first, while fresh gas refills the reservoir bag, so the next breath draws minimal carbon dioxide.

Step 3: This geometry lets $FGF \approx$ alveolar minute ventilation prevent rebreathing, which is the most economical of all the systems for a spontaneously breathing patient.

Step 4: The same circuit becomes inefficient for controlled ventilation (where Mapleson D excels), but for the spontaneous mode asked here the answer is Mapleson A.

Quick Tip: The Magill circuit conserves fresh gas during spontaneous breathing.

...

196. What is the mechanism of action of curonium drugs as muscle relaxants?

- (A) Persistently depolarizing at neuromuscular junction
- (B) Act competitively on ACh receptors blocking post-synaptically
- (C) Repetitive stimulation of ACh receptors on muscle end plate
- (D) Inhibiting the calcium channel on presynaptic membrane

Correct Answer: (B) Act competitively on ACh receptors blocking post-synaptically

SOLUTION:

Step 1: Classify the agent first. Any drug ending in -curonium is an aminosteroid, non-depolarizing neuromuscular-blocking agent.

Step 2: Non-depolarizing blockers are competitive antagonists: they occupy the nicotinic **ACh** receptor on the post-junctional membrane and prevent the natural transmitter from opening the channel, so no end-plate potential builds up and the muscle stays relaxed.

Step 3: Contrast with depolarizing blockers like succinylcholine, which persistently depolarize the junction; that is option (a) and is wrong here. Presynaptic calcium-channel block and repetitive receptor firing are also not how these drugs work.

Step 4: Therefore curonium relaxants act competitively, blocking ACh receptors post-synaptically.

Competitive post-synaptic ACh receptor block

Quick Tip: Non-depolarizing relaxants are competitive ACh receptor antagonists.

...

197. Dye used in the diagnosis of esophageal perforation:

- (A) Iohexol
- (B) Barium sulphate
- (C) Gadolinium
- (D) Iodine dye

Correct Answer: (A) Iohexol

SOLUTION:

Step 1: The clinical question is which contrast is safe when the esophageal wall may be breached. A perforation means contrast can spill into the chest. **Step 2:** Think about what happens to each agent after a leak. Barium that escapes the lumen stays in the tissues and triggers chronic mediastinitis and fibrosis, so it is contraindicated as the first agent in a suspected tear. **Step 3:** A water-soluble iodinated dye is reabsorbed by serosal surfaces if it leaks, so it is the preferred screening agent. Among the choices, Iohexol is exactly that water-soluble non-ionic iodinated contrast. **Step 4:** Gadolinium belongs to MRI, not fluoroscopic swallow studies, and a generic "iodine dye" is not an accepted named oral preparation. Barium is reserved for after a negative water-soluble study. Therefore the correct diagnostic dye is Iohexol. ***Iohexol = water-soluble iodinated contrast***

Iohexol

Quick Tip: Leaked barium causes mediastinitis, so the first agent must be water-soluble.

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198. The Bragg peak effect is most pronounced in:

- (A) X-ray
- (B) Proton
- (C) Neutron
- (D) Electron

Correct Answer: (B) Proton

SOLUTION:

Step 1: Ask which radiation drops nearly all of its energy at a defined tissue depth. That localized energy dump is the Bragg peak. **Step 2:** Charged heavy particles do this best because their energy loss per unit path rises steeply as they decelerate. A proton is a heavy charged particle, so its dose curve climbs to a sharp maximum just before it halts. **Step 3:** Rule out the rest. X-ray photons attenuate exponentially and spare nothing distant to a peak. Electrons are too light, scatter widely, and give a shallow rounded peak. Neutrons carry no charge and spread their dose without a crisp peak. **Step 4:** This depth selectivity is why proton therapy spares tissue beyond the target, and stacking energies builds the Spread-Out Bragg Peak. *Proton → sharp Bragg peak*

Proton

Quick Tip: Heavy charged particles dump their dose at a defined depth before stopping.

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199. The salt and pepper pot appearance of the skull is seen in:

- (A) Hyperparathyroidism
- (B) Multiple myeloma
- (C) Hyperthyroidism
- (D) Pseudohyperparathyroidism

Correct Answer: (A) Hyperparathyroidism

SOLUTION:

Step 1: Picture the skull radiograph: a fine, evenly stippled grainy vault rather than a few big holes. That texture is the salt and pepper pot sign. **Step 2:** A grainy vault means countless microscopic areas of bone loss. The hormone that drives generalized osteoclastic bone resorption is parathyroid hormone, and when it is in excess the bone is eaten away in tiny pockets. **Step 3:** Excess PTH defines hyperparathyroidism, which also produces osteitis fibrosa cystica, subperiosteal resorption of the phalanges, and brown tumours. **Step 4:** Contrast the distractors: myeloma makes well-circumscribed punched-out lesions (raindrop skull), thyrotoxicosis gives diffuse osteoporosis, and pseudohyperparathyroidism is PTH resistance with low calcium. The grainy salt and pepper vault belongs to true hyperparathyroidism. $\uparrow PTH \Rightarrow$ salt-and-pepper skull

Hyperparathyroidism

Quick Tip: A finely granular vault from diffuse bone resorption points to excess PTH.

...

200. Imaging techniques used to evaluate uterine anomalies include all of the following EXCEPT:

- (A) HSG
- (B) MRI guided HSG
- (C) CT guided HSG
- (D) USG

Correct Answer: (C) CT guided HSG

SOLUTION:

Step 1: This is an odd-one-out question, so find the modality that is NOT part of the standard workup for a Mullerian anomaly. **Step 2:** The accepted methods each visualise either the cavity or the fundal outline: HSG for the cavity and tubes, ultrasound for cavity plus contour, and MRI as the most accurate map of

internal and external uterine shape. **Step 3:** Now test CT. It carries ionising radiation and gives weak soft-tissue discrimination in the pelvis, so it cannot reliably distinguish septate from bicornuate uteri and is not used as a guided HSG technique. **Step 4:** Every option except CT guided HSG is a real tool, so the exception is CT guided HSG. *CT = poor pelvic soft tissue + radiation*

CT guided HSG

Quick Tip: Which choice adds radiation and poor pelvic soft tissue contrast and is not standard?

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201. The semen squeeze technique is used in the treatment of:

- (A) Erectile dysfunction
- (B) Premature ejaculation
- (C) Retrograde ejaculation
- (D) Antegrade ejaculation

Correct Answer: (B) Premature ejaculation

SOLUTION:

Step 1: Identify what the squeeze maneuver physically does: it interrupts the climax reflex by pressure at the glans, reducing the sensation of imminent orgasm. **Step 2:** A method whose whole purpose is to delay and prolong the time before climax is aimed at a man who reaches orgasm too quickly. That condition is premature ejaculation. **Step 3:** This is a variation of the Masters and Johnson behavioural therapy and is repeated in cycles to recondition ejaculatory control. **Step 4:** It has no role in failure to achieve an erection, in semen travelling backward into the bladder, or in describing the normal forward direction of ejaculation. So the squeeze technique treats premature ejaculation.

Squeeze at glans ⇒ delays climax

Premature ejaculation

Quick Tip: A Masters and Johnson maneuver that delays climax targets which ejaculatory problem?

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202. A patient with a history of a road traffic accident 2 months ago presents with complaints of dreams of accidents. He is able to visualize the same scene whenever he visits the place and is afraid to go back to the accident site. Identify the type of disorder he might be suffering from:

- (A) Adjustment disorder
- (B) PTSD
- (C) Anxiety disorder
- (D) OCD

Correct Answer: (B) PTSD

SOLUTION:

Step 1: Map the story to its core features: a clear traumatic event, then memories of that event forcing their way into the present. **Step 2:** The accident dreams and the replay of the same scene at the site are intrusive re-experiencing, while refusing to return is avoidance of trauma reminders. Both are anchored to one specific event and have lasted about two months. **Step 3:** The triad of a significant trauma, intrusive reliving, and avoidance continuing beyond a month defines post-traumatic stress disorder. **Step 4:** Eliminate the rest: adjustment disorder reacts to a stressor but without flashbacks, anxiety disorder is unfocused worry without a trauma anchor, and OCD revolves around obsessions and rituals. The trauma-linked reliving makes this PTSD. *Trauma + reliving + avoidance*
⇒ PTSD

PTSD

Quick Tip: A defined trauma with flashbacks and avoidance lasting over a month names the disorder.

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203. Freud's theory of dreams includes all of the following EXCEPT:

- (A) Displacement
- (B) Condensation
- (C) Symbolisation
- (D) Correlation

Correct Answer: (D) Correlation

SOLUTION:

Step 1: This is an odd-one-out, so list the true parts of Freudian dream work and spot the intruder. **Step 2:** Dream work converts hidden wishes into the dream we recall using condensation (many ideas compressed into one image), displacement (emotional charge moved onto a less threatening object), symbolisation (ideas disguised as symbols), and secondary elaboration. **Step 3:** Three of the four options, displacement, condensation, and symbolisation, sit squarely inside that list. **Step 4:** Correlation is a term from statistics describing how two variables move together; it has no place in psychoanalytic dream theory. Therefore the exception is correlation. *Correlation = statistical term, not dream work*

Correlation

Quick Tip: Three are dream-work mechanisms; one is a statistics term.

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204. Expression and consequent release of a previously repressed emotion is called as

- (A) Regression
- (B) Dissociation
- (C) Abreaction
- (D) All of the above

Correct Answer: (C) Abreaction

SOLUTION:

Step 1: Read the stem as a definition match - we need the single term that means emotional discharge of repressed feeling.

Step 2: In Freudian and cathartic therapy, that discharge is named abreaction (catharsis). The patient relives the painful memory, often under hypnosis or guided suggestion, and the pent-up affect is finally vented.

Step 3: Eliminate the others - Regression = behavioural retreat to an earlier developmental stage; Dissociation = separation of mental contents from awareness; All of the above fails the requirement two options are excluded.

Step 4: Only abreaction describes expression plus release of repressed emotion.

Abreaction

Quick Tip: Think of the cathartic re-living of a buried emotion under hypnosis.

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205. All are habit disorders except

- (A) Nail biting
- (B) Thumb sucking
- (C) Temper tantrum
- (D) Tics

Correct Answer: (C) Temper tantrum

SOLUTION:

Step 1: The key word is except, so identify the three true habits first and the leftover is the answer.

Step 2: Habit disorders cluster around tic disorders and body-focused repetitive behaviours - so tics, nail biting and thumb sucking all belong to this family of involuntary, tension-relieving acts.

Step 3: A temper tantrum is different in kind - it is a goal-directed emotional explosion driven by frustration, fully experienced by the child and not a quiet automatic repetition.

Step 4: The behaviour that is NOT a habit disorder is the tantrum.

Temper tantrum

Quick Tip: Three are quiet self-directed repetitive habits; one is an emotional outburst.

206. New name of mental retardation according to the American Association on Mental Retardation

- (A) Feeble mindedness
- (B) Madness
- (C) Intellectual disability
- (D) Mentally unstable

Correct Answer: (C) Intellectual disability

SOLUTION:

Step 1: Modern psychiatric nomenclature moved away from mental retardation toward a less stigmatising label.

Step 2: Both DSM-5 and the renamed American association now use the term intellectual disability (also called intellectual developmental disorder).

Step 3: Rule out the rest - feeble mindedness is a discarded historical grade, while madness and mentally unstable are colloquial, non-diagnostic words.

Step 4: The single accepted replacement term is intellectual disability.

Intellectual disability

Quick Tip: The destigmatised current term used in DSM-5 and the renamed AAIDD.

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207. Now-a-days Down syndrome is referred to as

- (A) Submental disorder
- (B) Oligophrenia
- (C) Madness
- (D) Mentally unstable

Correct Answer: (A) Submental disorder

SOLUTION:

Step 1: The stem asks for the current label applied to Down syndrome, a chromosome 21 trisomy with intellectual disability in the mild-to-moderate range.

Step 2: This is a flawed question because no option is a genuine present-day equivalent of Down syndrome; the recall answer key records option (a).

Step 3: Working through the alternatives - oligophrenia is a dated umbrella word for low intelligence, while madness and mentally unstable are non-clinical, derogatory expressions, so they are easily discarded.

Step 4: Per the printed key the chosen response is option (a).

Option (a)

Quick Tip: A flawed item - go by the printed recall key.

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208. A 55-year-old chronic alcoholic male presents with irrelevant talks, tremor and sweating. He had his last drink 3 days back. What is the probable diagnosis?

- (A) Delirium tremens
- (B) Korsakoff psychosis
- (C) Post-acute withdrawal syndrome
- (D) Discontinuation syndrome

Correct Answer: (A) Delirium tremens

SOLUTION:

Step 1: Anchor on the timeline - confusion with marked autonomic signs appearing roughly 72 hours after the last alcohol intake is the classic window for the most dangerous withdrawal state.

Step 2: That state is delirium tremens, defined by clouding of consciousness, disorientation, tremor, sweating and tachycardia.

Step 3: Pathophysiology in short - long-term alcohol up-regulates the excitatory NMDA system and props up GABA tone, sudden abstinence unmasks unopposed excitation, hence the hyperadrenergic, tremulous, sweating, confused picture.

Step 4: Distinguish the rivals - Korsakoff is a thiamine-deficiency memory disorder, while post-acute withdrawal and SSRI-type discontinuation syndromes lack this acute delirious autonomic storm.

Delirium tremens

Quick Tip: Confusion plus autonomic storm about 3 days after the last drink.

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209.



Identify the type of muscle shown in the image below.

- (A) Cruciate
- (B) Multipennate
- (C) Parallel
- (D) Unipennate

Correct Answer: (B) Multipennate

SOLUTION:

Step 1: Read the fibre pattern in the picture rather than the muscle name - count how many feathered rows feed into the tendon.

Step 2: The image is the pectoralis major, a broad fan whose fascicles approach a single tendon from several rows at oblique angles.

Step 3: Many oblique rows into one tendon defines a multipennate muscle (multi = many feathers).

Step 4: Reject the rest - unipennate = one-sided feather, parallel = longitudinal strap fibres, cruciate = crossing fibres. Only multipennate fits.

Multipennate

Quick Tip: Pectoralis major - several rows of oblique fibres into one tendon.

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210.



Function of the muscle shown in the picture

- (A) Flexion
- (B) Extension
- (C) Adduction
- (D) Abduction

Correct Answer: (A) Flexion

SOLUTION:

Step 1: The depicted muscles are the four lumbricals of the hand, slender intrinsic muscles deep to the palmar aponeurosis.

Step 2: Their signature action is a combined one - bending the knuckle (MCP) joints and straightening the finger (IP) joints, used on the upstroke of writing.

Step 3: Among the offered single-word answers, the MCP component is flexion, which is what the key selects.

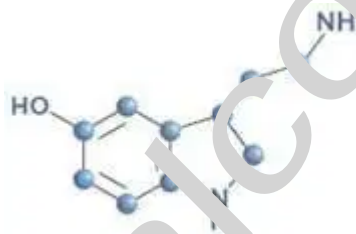
Step 4: Discard the alternatives - true digital adduction belongs to the palmar interossei and abduction to the dorsal interossei, while pure extension is the role of the long extensors, not the lumbricals.

Flexion

Quick Tip: Lumbricals - flex the MCP joints (and extend the IP joints).

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211.



The chemical structure shown in the image is also known as?

- (A) 5-hydroxytryptamine (5-HT)
- (B) N-methyl phenylamine
- (C) 3-Methoxytyramine
- (D) Phenethylamine

Correct Answer: (A) 5-hydroxytryptamine (5-HT)

SOLUTION:

Step 1: Read the molecule by its skeleton. A bicyclic indole ring bearing a hydroxyl at carbon 5 and an ethylamine side chain is the signature of serotonin, formally named 5-hydroxytryptamine, abbreviated 5-HT.

Step 2: Trace the pathway to confirm the identity. The amino acid tryptophan is converted to 5-hydroxytryptophan by the rate limiting enzyme tryptophan hydroxylase, and a decarboxylation step then removes the carboxyl group to yield 5-HT. The retained 5-OH on the indole ring is what the name encodes.

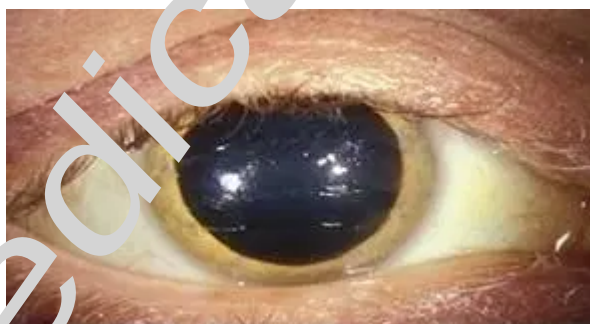
Step 3: Match against the options. An indole-based amine cannot be a plain phenyl amine such as phenethylamine or N-methyl phenethylamine, both of which lack the fused five-membered nitrogen ring. 3-Methoxytyramine carries a methoxy-substituted benzene ring derived from dopamine, again no indole. Only 5-HT fits.

Step 4: Clinically this molecule drives vasoconstriction and smooth muscle stimulation and is central to mood regulation, which reinforces that the depicted indoleamine is serotonin.

5-hydroxytryptamine (5-HT)

Quick Tip: Look for an indole ring with a 5-OH and an ethylamine tail - that is serotonin.

212.



Choose the best method of diagnosis for the clinical sign represented in the image.

- (A) Serum copper
- (B) Serum ceruloplasmin
- (C) Karyotyping
- (D) PCR

Correct Answer: (B) Serum ceruloplasmin

SOLUTION:

Step 1: Name the sign first. A brownish pigmented rim at the outer edge of the cornea, sitting in Descemet's membrane and starting near Schwalbe's line, is the Kayser-Fleischer ring of Wilson's disease.

Step 2: Link the sign to its biochemistry. Wilson's disease is a recessive defect of the copper-transporting ATPase, so copper cannot be loaded onto ceruloplasmin and is instead deposited in tissues such as cornea, brain, and liver. The direct laboratory consequence is a low circulating ceruloplasmin level.

Step 3: Choose the test. Of the four choices, the one that captures this consequence and is part of the standard Sternlieb criteria is serum ceruloplasmin, making it the best diagnostic method offered.

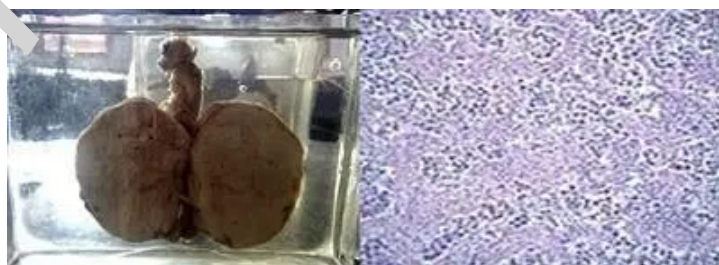
Step 4: Eliminate the rest. Serum copper alone is unreliable because free and bound fractions move in opposite directions. Karyotyping screens for aneuploidy, irrelevant to a metabolic copper disorder. PCR-based ATP7B genotyping is reserved for confirmation when biochemistry is equivocal, not as the primary test in this list.

Serum ceruloplasmin

Quick Tip: A golden-brown corneal ring points to Wilson's disease - test the copper-carrying protein.

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213.



Identify the condition represented in the image.

- (A) Seminoma
- (B) Germ cell differentiate tumor
- (C) Non-seminoma
- (D) Teratoma

Correct Answer: (A) Seminoma

SOLUTION:

Step 1: Approach by the cell pattern. Sheets of monotonous tumour cells with pale or clear cytoplasm, grouped in nests and divided by fibrous septa packed with lymphocytes, is the defining microscopic appearance of a testicular seminoma.

Step 2: Place its origin. Seminoma develops from the germ cells lining the seminiferous tubules and is the most common pure germ cell tumour of the testis, occasionally appearing in extragonadal midline locations such as the mediastinum.

Step 3: Use prognosis as a confirmatory cue. The very high cure and survival rate, its radiosensitivity, and preserved fertility all describe seminoma, supporting the identification.

Step 4: Rule out the alternative. Teratoma would display organised tissue from ectoderm, mesoderm, and endoderm, not uniform lymphocyte-rich sheets. Non-seminoma and a generic differentiated germ cell tumour are umbrella terms that do not match a single clean histological picture of clear cells with lymphocytic stroma.

Seminoma

Quick Tip: Uniform clear cells in nests with a lymphocyte-rich fibrous stroma point to a testicular seminoma.

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214.



Identify the condition shown in the image.

- (A) Lobar Pneumonia
- (B) Bronchopneumonia
- (C) Acute glomerulonephritis
- (D) Congested kidney

Correct Answer: (A) Lobar Pneumonia

SOLUTION:

Step 1: Interpret the gross clue. A lung that is solid, brown-red, and resembles liver on cut section is showing the red hepatization phase, a hallmark of lobar pneumonia.

Step 2: Recall the microscopy behind it. During red hepatization the alveolar capillaries are congested and the alveoli are packed with erythrocytes, neutrophils, and fibrin, eliminating the normal spongy air-filled texture and producing the firm liver-like consolidation seen grossly.

Step 3: Use the distribution to confirm. Lobar pneumonia consolidates a whole lobe uniformly and is usually pneumococcal, whereas bronchopneumonia is patchy and centred around airways, so a uniformly hepatized lobe favours the lobar pattern.

Step 4: Discard non-lung options. Acute glomerulonephritis and a congested kidney are renal conditions and cannot account for hepatization of pulmonary tissue.

Lobar Pneumonia

Quick Tip: A firm, liver-like, airless lung (red hepatization) means lobar pneumonia.

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215.



Identify the condition represented in the below image.

- (A) Miliary tuberculosis
- (B) Bronchiectasis
- (C) COPD
- (D) Lung cancer

Correct Answer: (A) Miliary tuberculosis

SOLUTION:

Step 1: Describe the radiographic texture. Countless small, uniform, well-distributed nodules in the millimetre range filling both lungs like sprinkled seeds is the classic miliary pattern, pointing directly to miliary tuberculosis.

Step 2: Connect pattern to mechanism. Such even, bilateral micronodular spread arises when *Mycobacterium tuberculosis* disseminates through the bloodstream and seeds the lungs diffusely, which is why the nodules are so regular and widespread.

Step 3: Contrast with the alternatives. Bronchiectasis gives dilated bronchi and ring or tram-track shadows, COPD gives over-inflated lucent lungs with low flat diaphragms, and lung cancer gives a focal mass rather than diffuse tiny seeds, so none reproduce the millet-seed look.

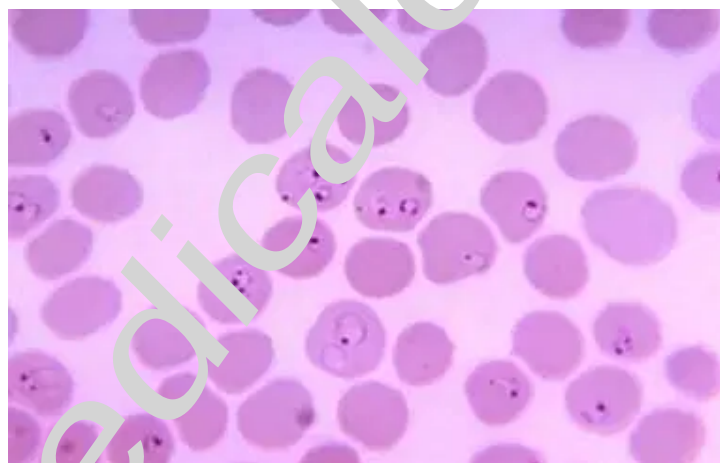
Step 4: Confirm. The combination of micronodules of 1 to 5 mm and uniform distribution is specific enough that the depicted condition is miliary TB.

Miliary tuberculosis

Quick Tip: Tiny uniform millet-seed nodules across both lungs equal miliary TB.

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216.



Identify the organism related to the blood smear image.

- (A) *P. falciparum*
- (B) *S. Typhi*
- (C) *Treponema pallidum*
- (D) *Toxoplasma gondii*

Correct Answer: (A) *P. falciparum*

SOLUTION:

Step 1: Localise the parasite. The organisms sit inside red blood cells as delicate signet-ring forms, and one erythrocyte carries several rings at once. Intra-erythrocytic ring trophozoites are the calling card of malaria, and the multiple-ring, high-density picture specifically favours *Plasmodium falciparum*.

Step 2: Use the density argument. A smear in which a large fraction of red cells are infected, with double or quadruple rings per cell, reflects the intense parasitaemia that *falciparum* uniquely produces because it infects red cells of all ages.

Step 3: Recall smear roles. The thin film shown here resolves morphology well enough to call the species, complementing the thick film whose job is sensitive detection. The crisp ring forms therefore allow a confident species label of *falciparum*.

Step 4: Exclude the rest. *S. Typhi* is an extracellular bacterium not seen as red-cell rings, *Treponema pallidum* is a thin spiral organism needing dark-field, and *Toxoplasma* appears as crescentic tachyzoites or cysts in tissue, none matching ring forms within erythrocytes.

P. falciparum

Quick Tip: Multiple ring-form trophozoites inside red cells with high parasitaemia means *P. falciparum*.

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217.



Which thickened nerve is shown here?

- (A) Facial Nerve
- (B) Greater auricular nerve
- (C) Vagus Nerve
- (D) Glossopharyngeal Nerve

Correct Answer: (B) Greater auricular nerve

SOLUTION:

Step 1: Read the location. A visibly enlarged nerve running upward and obliquely over the surface of the sternocleidomastoid toward the ear and parotid is the greater auricular nerve, the largest ascending cutaneous branch of the cervical plexus.

Step 2: Confirm by its root value and landmark. It is formed from C2 and C3 ventral rami, with C2 dominant, and it surfaces at Erb's point along the posterior margin of sternocleidomastoid before climbing to the auricle.

Step 3: Confirm by its territory. It carries sensation from the ear lobule and auricle, the skin over the mastoid and the parotid gland, and the deep parotid fascia, splitting into anterior and posterior terminal branches. Its superficial course makes it a common site to observe nerve thickening clinically.

Step 4: Exclude the others. The facial nerve is motor and buried within the

parotid, the vagus travels deep within the carotid sheath, and the glossopharyngeal nerve lies deep near the pharynx and tongue base, so none would present as a superficial thickened nerve on the sternocleidomastoid.

Greater auricular nerve

Quick Tip: A superficial nerve crossing the sternocleidomastoid toward the ear and parotid is the greater auricular nerve.

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218.



Which type of retractor is shown in the image?

- (A) Morris retractor
- (B) Czerny retractor
- (C) Richardson retractor
- (D) Lower lid retractor

Correct Answer: (A) Morris retractor

SOLUTION:

Step 1: Recognise the instrument class first. A retractor pulls tissue aside to expose a surgical field, and the one pictured is a hand-held, broad, deep-bladed design meant for big body cavities.

Step 2: The depth and width of the blade are the giveaway. Such a large retractor is needed for abdominal work, so it is reached for when a laparotomy is opened and the surgeon wants wide exposure.

Step 3: Practically, the assistant holds it firmly toward one side of the wound, sweeping the abdominal wall and viscera out of the way so the operating surgeon can see and work.

Step 4: Eliminate the others - Czerny is a self-retaining double-ended retractor, Richardson is a shorter abdominal retractor with a narrower right-angled blade, and the lower lid retractor belongs to eye surgery. The big deep blade matches only the Morris retractor, named after surgeon Sir Henry Morris.

Morris retractor

Quick Tip: A big deep-bladed hand-held retractor for wide abdominal exposure during laparotomy.

219.



Which of the following statements is true about the suture material shown in the image?

- (A) Made of rabbit submucosa
- (B) Made of cat submucosa
- (C) Not degraded
- (D) Degraded by enzymatic degradation

Correct Answer: (D) Degraded by enzymatic degradation

SOLUTION:

Step 1: Start from the material's nature. The pictured suture is catgut, an absorbable suture made of collagen taken from the intestinal submucosa of sheep or cattle, so the "cat" in the name is misleading.

Step 2: Ask how the body clears a collagen suture. Because it is a foreign protein, the tissue treats it like debris and digests it. Macrophages engulf it (phagocytosis) and proteolytic enzymes cut the collagen apart.

Step 3: Test each option against this. "Rabbit submucosa" and "cat submucosa" name the wrong animal, so both fail. "Not degraded" contradicts the fact that catgut is absorbable, so it fails too.

Step 4: Only "degraded by enzymatic degradation" survives, and it fits the 7 to 10 day absorption window of plain catgut along with its high tissue reactivity and use in fast-healing tissue.

Degraded by enzymatic degradation

Quick Tip: This is catgut - a collagen based absorbable suture cleared by phagocytosis and enzymes.

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220.



A patient has a history of road traffic accident 2 years back, and at the same site has developed pain and swelling. X-ray shows the following features. What will be the diagnosis?

- (A) Osteogenic sarcoma
- (B) Ewing's sarcoma
- (C) Chronic osteomyelitis
- (D) Multiple myeloma

Correct Answer: (C) Chronic osteomyelitis

SOLUTION:

Step 1: Read the timeline. An injury 2 years earlier and only now pain plus swelling at that exact spot suggests something slow and reactive, not a rapidly growing malignancy.

Step 2: Match that to the radiograph. Layers of dense new cortical bone laid down around the shaft - the onion-skin sclerosis - are typical of Garre sclerosing osteomyelitis, a chronic non-suppurative osteomyelitis driven by low-grade infection that triggers subperiosteal bone formation.

Step 3: Note the clinical mildness. The disease is often nearly asymptomatic, which is why the patient tolerated it for two years before mild symptoms appeared - fully in keeping with a chronic infective process.

Step 4: Knock out the tumours. Osteosarcoma would show sunburst spicules and a Codman triangle, Ewing's would be aggressive in a child, and myeloma would give multiple punched-out lytic holes in an older patient. None carries the post-traumatic, benign, densely sclerotic onion-skin look.

Chronic osteomyelitis

Quick Tip: Old trauma site, slow pain/swelling, onion-skin sclerotic periosteal new bone - a chronic infection.

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221.



Identify the bone numbered in the X-ray below that most commonly fractures when a person falls on outstretched hands.

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

Correct Answer: (A) 1

SOLUTION:

Step 1: Think about where the load goes during a FOOSH. The palm hits the ground, force runs up through the carpus, and it concentrates at the lower end of the radius - the weakest link in that chain.

Step 2: So the expected casualty is the distal radius, marked as 1 in the image. A break here is the classic wrist fracture, causing quick swelling, bruising, tenderness and at times the dinner-fork deformity.

Step 3: Epidemiology backs this up. In the elderly, especially postmenopausal women with thinner bone, a trip-and-fall onto the hand is the leading cause of this fracture; in the young it follows higher-energy sport or road trauma.

Step 4: The famous eponyms - Colles, Smith, Barton, Hutchinson - all describe

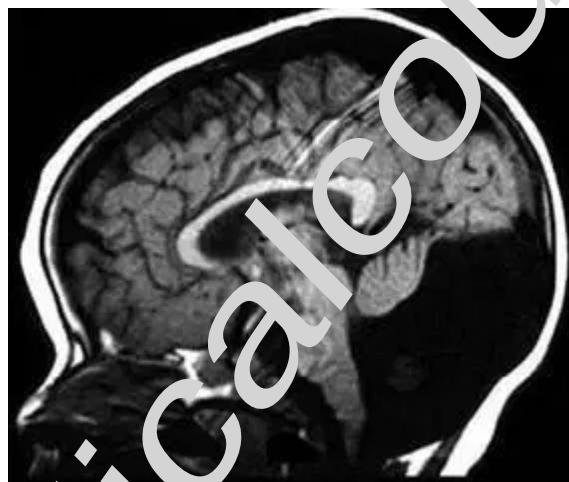
variants of this same distal radius break, confirming that bone 1 is the answer rather than the ulna or carpal bones.

Bone 1 - distal radius

Quick Tip: FOOSH classically breaks the distal radius - the wrist fracture (Colles type).

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222.



Identify the condition shown in the CT scan image below.

- (A) Dandy Walker malformation
- (B) Cerebellar vermis hypoplasia
- (C) Mega cisterna magna
- (D) None

Correct Answer: (A) Dandy Walker malformation

SOLUTION:

Step 1: Focus on the posterior fossa, the lower-back compartment of the skull. The scan shows it abnormally large and filled with a fluid cyst, immediately steering you toward a posterior fossa cystic malformation.

Step 2: Look for the vermis, the midline strip joining the cerebellar halves. Here

it is missing or markedly underdeveloped, so the cyst is actually a ballooned fourth ventricle that has opened out into the enlarged fossa.

Step 3: That exact set - absent or tiny vermis, cystic fourth ventricle, big posterior fossa with high tentorium - defines the Dandy-Walker malformation. The cerebellar hemispheres are splayed to the sides by the central cyst.

Step 4: Rule out the mimics. Mega cisterna magna keeps a normal vermis and fourth ventricle with just a roomy cisterna magna, and isolated vermal hypoplasia lacks the large communicating cyst. Neither fits, so the answer is Dandy-Walker malformation.

Dandy Walker malformation

Quick Tip: Absent vermis plus cystic fourth ventricle in an enlarged posterior fossa.

223.



Identify the X-ray HSG (hysterosalpingogram) shown below.

- (A) Septate uterus
- (B) Uterus didelphys
- (C) Unicornuate uterus
- (D) Bicornuate uterus

Correct Answer: (C) Unicornuate uterus

SOLUTION:

Step 1: Count the horns the contrast fills. In this HSG only one elongated cavity lights up and just one tube is seen, instead of the two-horned shapes the other options would give.

Step 2: Picture the embryology. The uterus forms from two Müllerian ducts fusing; if one duct fails to develop, only a single horn results. That single, curved, cigar- or banana-shaped cavity pulled to one side is the unicornuate uterus.

Step 3: Compare the shapes. Bicornuate and septate uteri both fill two divergent horns with two tubes, separated by a cleft or septum, and didelphys shows two entirely separate cavities with duplicated cervixes.

Step 4: Since the film shows just one lateralised horn and one tube rather than any paired pattern, it can only be a unicornuate uterus.

Unicornuate uterus

Quick Tip: A single banana-shaped, laterally deviated cavity with only one tube filling.

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224.



In a woman complaining of abnormal uterine bleeding (AUB), the following image was seen on endoscopic (hysteroscopic) examination of the uterus. What will be the diagnosis?

- (A) Leiomyoma
- (B) Adenomyosis
- (C) Ovarian neoplasm
- (D) Carcinoma of uterus

Correct Answer: (A) Leiomyoma

SOLUTION:

Step 1: Describe what the scope sees. Inside the cavity see a single firm, smooth-surfaced, pale rounded lump pushing the lining inward – an organised, well-defined growth rather than a ragged ulcer.

Step 2: That clean nodular look in a bleeding woman is the signature of a submucosal leiomyoma, the commonest benign uterine tumour, made of myometrial smooth muscle that herniates under the endometrium into the cavity.

Step 3: The symptom fits as well. Submucosal fibroids are a leading structural cause of abnormal uterine bleeding and also bring pelvic pressure, pain, and subfertility.

Step 4: Discard the rest. Adenomyosis is a diffuse process within the muscle wall, not a discrete cavity nodule; an ovarian tumour cannot be seen through a hysteroscope; and uterine carcinoma would look friable, irregular and necrotic. The smooth benign nodule means leiomyoma.

Leiomyoma

Quick Tip: Smooth pale rounded nodule bulging into the cavity in a woman with AUB.

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225.



Identify the following lesion.

- (A) Becker nevus
- (B) Hypopigmented macule
- (C) Spitz nevus
- (D) Epidermal nevus

Correct Answer: (A) Becker nevus

SOLUTION:

Step 1: Look at two clues in the picture together - a brown (hyperpigmented) flat patch and coarse terminal hair growing on it, sited over the shoulder/chest. Pattern recognition of pigment plus hair points straight to Becker nevus.

Step 2: Becker nevus is an androgen-sensitive hamartoma that surfaces around puberty, which explains the hypertrichosis. It grows gradually to about a palm's breadth and may carry scattered acneiform papules.

Step 3: Ruling out distractors - option b (hypopigmented macule) would be lighter than surrounding skin, the opposite of this lesion; option c (Spitz nevus) is a solitary firm pink nodule, not a hairy patch; option d (epidermal nevus) is a warty streak along Blaschko lines without pigment-plus-hair.

Step 4: Management is reassurance only since it is benign. Hence the correct option is Becker nevus.

Becker nevus

Quick Tip: Brown macule with coarse dark hair over the shoulder in an adolescent.

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226.



A child has a rash as shown in the picture. His family history is positive for asthma. What could be the most probable diagnosis?

- (A) Seborrheic dermatitis
- (B) Atopic dermatitis
- (C) Allergic contact dermatitis
- (D) Erysipelas

Correct Answer: (C) Allergic contact dermatitis

SOLUTION:

Step 1: Frame it as a contact-pattern eczema - papulovesicular lesions stopping abruptly at the border of where something touched the skin. That geometry is the signature of allergic contact dermatitis, an immune-mediated (type IV) response.

Step 2: Three checkpoints clinch ACD: confinement to the contacted zone, a lag of 24-48 hours after exposure (delayed hypersensitivity), and predictable flare on re-exposure to the same agent.

Step 3: The asthma family history flags atopy, which is a red herring nudging toward atopic dermatitis; however atopic eczema is diffuse and flexural rather than the crisp localized plaque pictured.

Step 4: Eliminating the rest - seborrheic dermatitis is greasy scale on sebum-rich sites, erysipelas is a febrile bright-red indurated streptococcal infection. Neither fits a sharply bordered itchy vesicular contact rash.

Allergic contact dermatitis

Quick Tip: Itchy vesicular rash confined to the exact zone of contact, appearing 1-2 days after exposure.

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227.



Spot radiograph from a double contrast esophagram. Image represents:

- (A) Esophageal atresia
- (B) Esophageal stenosis
- (C) Feline oesophagus
- (D) Tracheoesophageal fistula

Correct Answer: (C) Feline oesophagus

SOLUTION:

Step 1: The diagnostic key on this barium swallow is the texture of the wall - delicate, closely spaced transverse ripples encircling the lumen. That fleeting corrugated look is termed the feline esophagus.

Step 2: The mechanism is a brief contraction of the longitudinally oriented muscularis mucosa, throwing up 1-2 mm circumferential folds. Because they vanish quickly, they are a transient finding rather than fixed pathology.

Step 3: Location and timing seal it: the bands sit in the distal two-thirds of the thoracic esophagus, surface after a reflux event, and are most evident when the esophagus is only partially distended. They often have no clinical significance but link to GERD.

Step 4: Distractor check - atresia/TEF are neonatal congenital lesions, and stenosis is a persistent caliber narrowing; none give a transient herringbone fold pattern.

Feline esophagus

Quick Tip: Transient fine 1-2 mm transverse circumferential folds in the distal esophagus on barium.

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228.



MRI of skull represents:

- (A) Vein of Galen
- (B) Dandy Walker syndrome
- (C) Pneumocephalus
- (D) Crouzon syndrome

Correct Answer: (A) Vein of Galen

SOLUTION:

Step 1: Spot the abnormal structure - a rounded flow-related mass sitting in the midline just behind the corpus callosum splenium, in the quadrigeminal cistern. Anatomically that is where the great cerebral vein lives, so this is a vein of Galen malformation.

Step 2: Recall the venous anatomy: the two internal cerebral veins plus the basal vein of Rosenthal merge into this short trunk, which then drains into the straight sinus. An arteriovenous shunt balloons it into an aneurysmal sac.

Step 3: The clinical correlate is a high-output cardiac failure in the newborn because of the large shunt; older children present with hydrocephalus, seizures or developmental delay.

Step 4: Excluding alternatives - Dandy Walker is a posterior fossa cyst with

absent vermis, pneumocephalus is air not flow void, and Crouzon affects suture fusion of the skull vault, not an intracranial venous channel.

Vein of Galen malformation

Quick Tip: Midline dilated venous channel in the quadrigeminal cistern behind the splenium.

...

229.



What is a diagnosis based on a given image:

- (A) Uterus didelphys
- (B) Bicornuate uterus
- (C) Unicornuate uterus
- (D) Separate uterus

Correct Answer: (C) Unicornuate uterus

SOLUTION:

Step 1: On the HSG note that contrast opacifies just one slim, gently curved horn shaped like a banana, with a single tube. A solitary horn is the defining image of a unicornuate uterus.

Step 2: Embryologically one paramesonephric (Mullerian) duct fails to develop, leaving a single functional half. The fundus tapers off midline, a feature best appreciated on long-axis oblique MRI sections.

Step 3: Because Mullerian and mesonephric ducts share a developmental field, an ipsilateral renal anomaly is common; clinically there is a higher rate of miscarriage and obstetric problems.

Step 4: Distractors differ on cavity count - didelphys shows two cavities and two cervices, bicornuate shows two horns joining at one cervix with an indented fundus, and septate shows a normal outer contour split internally by a septum. Only one horn is seen here.

Unicornuate uterus

Quick Tip: Single curved banana-shaped uterine cavity with one tube on HSG.

...

230.



X-ray of skull showing which lesions in the brain:

- (A) Paget's disease
- (B) Multiple myeloma
- (C) Osteosarcoma
- (D) Osteomyelitis

Correct Answer: (A) Paget's disease

SOLUTION:

Step 1: Read the calvarium texture - patchy areas of dense fluffy sclerosis mixed with lucency, often described as cotton-wool spots, plus a thickened diploe. This texture is the hallmark of Paget disease.

Step 2: The disease is driven by disordered, accelerated bone turnover. In the skull, it begins with an outer-table lytic phase (osteoporosis circumscripta) and later swings to a reparative sclerotic phase that thickens the outer table and diploic space.

Step 3: A useful discriminator is that the inner table and cranial cavity are preserved, unlike aggressive tumors that breach inward.

Step 4: Contrast with mimics - myeloma produces same-size punched-out holes with no surrounding sclerosis, osteosarcoma gives a sunburst spiculated mass,

and osteomyelitis yields moth-eaten lysis with a sequestrum. The blended lytic-sclerotic cotton-wool skull fits Paget alone.

Paget's disease

Quick Tip: Cotton-wool mixed lytic-sclerotic skull with thickened diploe, inner table spared.

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231.



CT of thorax represents

- (A) Ascending aortic dissection
- (B) Descending aortic dissection
- (C) Aortic aneurysm
- (D) Cystic fibrosis

Correct Answer: (B) Descending aortic dissection

SOLUTION:

Step 1: The decisive CT sign is a thin intimal flap dividing the aorta into two channels (a true and a false lumen), and on this study it sits exclusively in the

descending thoracic aorta. That localizes it as a descending aortic dissection.

Step 2: Dissection arises when degeneration of the media lets blood track through an intimal tear, splitting the wall. The classic history is abrupt tearing pain felt between the shoulder blades, typically in a middle-aged man.

Step 3: Mapping to Stanford: sparing of the ascending aorta and arch makes this type B, which is usually treated medically (blood pressure control), in contrast to type A which requires emergency surgery.

Step 4: Ruling out options - an ascending dissection would place the flap proximally, a plain aneurysm dilates the lumen but lacks a dividing flap, and cystic fibrosis is a pulmonary airway disease unrelated to the aorta.

Descending aortic dissection

Quick Tip: Intimal flap with true and false lumen limited to the descending thoracic aorta.

232.



CT scan of the abdomen shows a vascular structure that branches as it enters the liver. Identify the structure.

- (A) SVC
- (B) IVC
- (C) Portal vein
- (D) Splenic vein

Correct Answer: (C) Portal vein

SOLUTION:

Step 1: Trace the blood flow. Venous blood from the gut, spleen, pancreas and gall bladder collects into the hepatic portal vein, which is the functional afferent vessel of the liver. On cross-sectional imaging it is the structure that reaches the porta hepatis and splits into right and left limbs running into the lobes.

Step 2: The liver is parcelled into Couinaud segments according to portal and hepatic-vein anatomy. Because each segment is fed by a portal branch, the imaged branching vessel must be the portal vein supplying those segments.

Step 3: Eliminate the others. The superior vena cava is a thoracic vessel returning to the right atrium and has no hepatic branches. The inferior vena cava lies posterior to the liver and collects the hepatic veins rather than dividing within the parenchyma. The splenic vein is merely a contributor that unites with the superior mesenteric vein to create the portal vein.

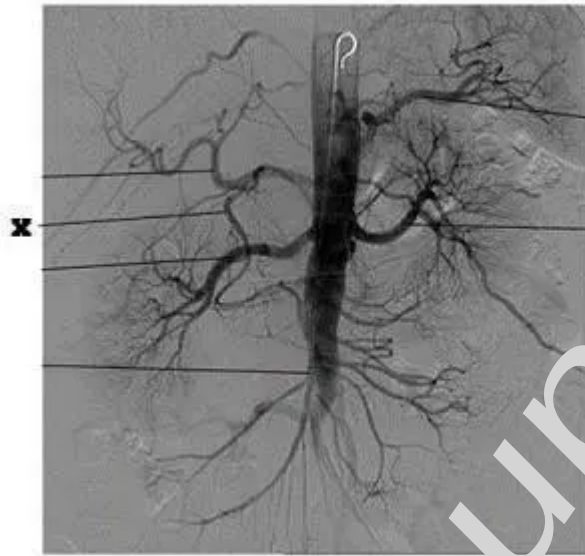
Step 4: The caudate lobe, segment I, has its own twin portal supply and drains independently to the IVC, underscoring that the branching inflow is portal. Hence the branching structure is the portal vein.

Portal vein

Quick Tip: Which vessel divides into right and left branches at the porta hepatis to supply the Couinaud segments?

...

233.



Identify artery 'X' in the given angiography anatomy image.

- (A) Superior mesenteric artery
- (B) Subclavian artery
- (C) Celiac artery
- (D) Brachiocephalic artery

Correct Answer: (A) Superior mesenteric artery

SOLUTION:

Step 1: Look at what the vessel feeds. The artery branching into a fan that supplies the small bowel, caecum, ascending colon and proximal transverse colon is the superior mesenteric artery, the midgut artery extending from the major duodenal papilla to the proximal two-thirds of the transverse colon.

Step 2: Confirm by origin. Of the three unpaired anterior aortic branches, the coeliac trunk is first, the SMA second at L1 just below it, and the inferior mesenteric artery third. The angiographic 'X' arising anteriorly at L1 and coursing inferiorly with multiple intestinal branches matches the SMA.

Step 3: Rule out the wrong options. The subclavian and brachiocephalic arteries belong to the aortic arch and feed the arm, neck and head, so they cannot appear as an abdominal arterial tree. The coeliac artery has a short stubby trunk that splits into three (left gastric, splenic, common hepatic) rather than the long

descending vessel with many small bowel branches shown here.

Step 4: The posterior relations (left renal vein, uncinate process, third part of duodenum) and anterior relations (splenic vein, pancreatic neck) seal the identification. Therefore 'X' is the superior mesenteric artery.

Superior mesenteric artery

Quick Tip: Which anterior aortic branch at L1 supplies the midgut and sends out the small-bowel arterial arcade?

...

234.



A woman shows symptoms of massive pulmonary thromboembolism. The gross appearance of the liver at autopsy is shown. Which of the following statements best characterizes the patient's condition?

- (A) Metastasis from PE
- (B) Angiosarcoma
- (C) Colonic adenocarcinoma with metastasis
- (D) Locally invaded hepatocellular carcinoma

Correct Answer: (C) Colonic adenocarcinoma with metastasis

SOLUTION:

Step 1: Pattern recognition first. Numerous separate rounded tumour nodules studding the whole liver is the hallmark of secondary deposits. A multifocal, multinodular liver is a metastatic liver, not a primary cancer.

Step 2: Identify the likely primary. Organs draining through the portal vein feed the liver preferentially, and colorectal carcinoma is the leading source, with liver metastases found in roughly 10 to 25 percent of patients operated for primary colorectal disease. The multinodular gross picture therefore best fits colonic adenocarcinoma that has spread to the liver.

Step 3: Exclude the alternatives. A massive pulmonary thromboembolism is a blood clot, which cannot metastasise, so metastasis from PE is nonsensical. Hepatic angiosarcoma produces ill-defined haemorrhagic blood-filled tissue rather than crisp tumour nodules. Hepatocellular carcinoma classically presents as one dominant cirrhosis-associated mass with 'local' invasion, not as scattered equal-sized deposits.

Step 4: Because resection works best when colorectal liver metastasis is confined to the liver, recognising this pattern guides management. The condition is colonic adenocarcinoma with metastasis.

Colonic adenocarcinoma with metastasis

Quick Tip: Multiple discrete liver nodules draining via the portal system point to which gut primary?

...

235.



What is the structure seen in the given X-ray below?

- (A) Stent
- (B) Surgical clips
- (C) Foley catheter
- (D) Intravesical wire

Correct Answer: (A) Stent

SOLUTION:

Step 1: Read the shape on the film. A radiopaque tube that runs from the kidney down to the bladder and ends in two opposing curls is the definition of a double-J ureteric stent, anchored proximally in the renal pelvis and distally in the bladder.

Step 2: The curled 'pigtail' ends prevent migration, and the X-ray here demonstrates these curls at both ends along the ureteral course, frequently on both sides, confirming a stent rather than any other implant.

Step 3: Recall its purpose. Stents relieve or pre-empt ureteric obstruction from strictures, post-procedure oedema, impacted stone fragments or extrinsic compression, and support healing in reconstructive surgery, which is why they sit exactly along the ureter.

Step 4: Discard the wrong answers. Surgical clips are tiny dense dots used to ligate vessels or ducts. A Foley catheter has a bladder balloon and a urethral

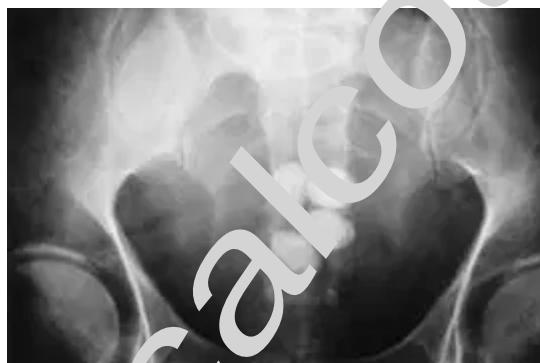
course, not a ureteric one. An intravesical wire would lie only within the bladder. The long ureteric tube with bilateral renal and vesical curls is a stent.

Stent

Quick Tip: A long radiopaque tube with J-curves in the renal pelvis and bladder is which device?

...

236.



What is the diagnosis based on the following X-ray?

- (A) Uterine Fibroid
- (B) Bladder Carcinoma
- (C) Bladder stone
- (D) Renal Tuberculosis

Correct Answer: (C) Bladder stone

SOLUTION:

Step 1: Locate and characterise the densities. Several oval radiopaque shadows sitting in the midline of the pelvis, where the bladder lies, are typical vesical calculi, which are usually round or oval but can be laminated, amorphous or jackstone-shaped.

Step 2: Consider aetiology. Stasis and infection, classically with urease-producing

Proteus in a dysfunctional bladder, generate struvite (magnesium ammonium phosphate) and apatite stones. Patients may have no symptoms or complain of blood in urine, suprapubic ache, an interrupted stream, or repeated urinary infections.

Step 3: Exclude the rest. A calcified uterine fibroid shows a coarse popcorn pattern attached to the uterus, not separate oval stones on the pelvic floor. Bladder carcinoma is soft tissue and does not show as plain-film radiopacity. Renal tuberculosis calcifies the kidney (putty kidney/autonephrectomy) in the upper tract, not centrally in the bladder.

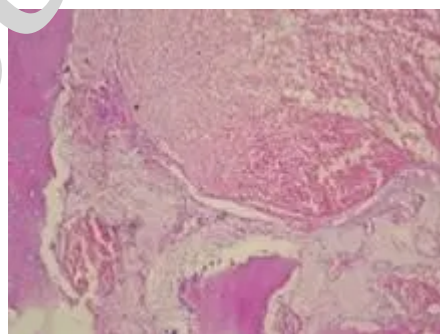
Step 4: Supportive imaging shows them as mobile echogenic foci on a full-bladder ultrasound and as filling defects on contrast studies. The diagnosis is bladder stone.

Bladder stone

Quick Tip: Multiple oval radiopaque densities centrally in the pelvis suggest stones in which organ?

...

237.



A red soft to firm swelling on the sternum, that on biopsy shows the following histology. What is the diagnosis?

- (A) Hemangioma
- (B) Osteochondroma
- (C) Osteoid osteoma
- (D) Paget disease

Correct Answer: (A) Hemangioma

SOLUTION:

Step 1: Match histology to diagnosis. A biopsy displaying endothelium-lined vascular channels (hamartomatous vascular tissue) sometimes admixed with fat, smooth muscle, fibrous tissue and thrombi is diagnostic of an intraosseous haemangioma.

Step 2: Correlate with the clinical picture. These are indolent benign vascular tumours of the medullary cavity, usually silent until they bulge or compress nearby structures, presenting as a swelling or palpable mass, exactly the red soft-to-firm sternal lump in this stem.

Step 3: Recall behaviour. High-flow lesions can produce shunt symptoms, and bulky lesions occasionally cause pathological fracture, yet they are classified as benign and only rarely become locally aggressive.

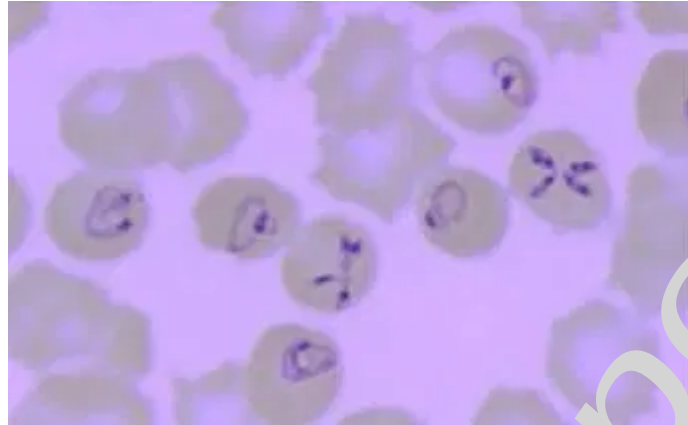
Step 4: Eliminate competitors. Osteochondroma is a cartilage-capped bony projection without vascular tissue. Osteoid osteoma is a tiny nidus-forming lesion causing night pain eased by NSAIDs, not endothelial channels. Paget disease shows mosaic bone with irregular cement lines on histology. The vascular endothelial-lined tissue confirms haemangioma.

Hemangioma

Quick Tip: Endothelium-lined vascular channels with fat and thrombi in bone point to which benign tumour?

...

238.



Which of the following is the carrying agent (vector) for the disease with the given characteristic on polarized microscopy?

- (A) Anopheles
- (B) Ixodes scapularis ticks
- (C) Louse
- (D) Rat flea

Correct Answer: (B) Ixodes scapularis ticks

SOLUTION:

Step 1: Decode the slide. Four pear-shaped parasites inside a single red cell, arranged with their tips touching to form a cross (the Maltese cross tetrad), are diagnostic of *Babesia*, an intraerythrocytic protozoan.

Step 2: Link disease to vector. Babesiosis is spread by the hard tick *Ixodes scapularis*, the deer tick that also carries *Borrelia burgdorferi* (Lyme). Therefore the carrying agent is the *Ixodes* tick.

Step 3: Distinguish from malaria. Because ring forms can mimic *Plasmodium falciparum*, remember two clues: only *Babesia* forms the Maltese cross, and *Babesia* lacks the haemozoin pigment that malaria deposits. These separate the two on a blood film.

Step 4: Reject other vectors. Anopheles mosquitoes carry malaria, body lice carry epidemic typhus and relapsing fever, and the rat flea carries plague. Only the *Ixodes* tick transmits *Babesia*.

Ixodes scapularis ticks

Quick Tip: The Maltese-cross tetrad inside RBCs means babesiosis - which arthropod transmits it?

...

239. Chordoma arises from:

- (A) Pharyngeal bursa
- (B) Notochord
- (C) Rathke's pouch
- (D) Luschka's bursa

Correct Answer: (B) Notochord

SOLUTION:

Step 1: The key embryology fact here is the origin tissue. The notochord is a transient midline rod present in the developing embryo; small clusters of its cells may persist into adult life within the axial skeleton.

Step 2: Malignant transformation of these persistent notochordal rests produces a chordoma. This explains why the tumour is confined to the midline neuraxis rather than appearing randomly.

Step 3: Anatomically, the spheno-occipital (clival) region and the sacrococcygeal region are the favourite locations, matching where notochordal remnants are most likely to linger.

Step 4: Quickly eliminating distractors: Rathke's pouch → craniopharyngioma; pharyngeal bursa and Luschka's bursa → nasopharyngeal/midline cystic lesions. None of these is the parent tissue of a chordoma.

Therefore the correct source tissue is the notochord.

Notochord

Quick Tip: Think of the persistent midline embryonic rod that forms the early axial skeleton.

...

240. What is the effect of progesterone only pills?

- (A) Completely suppresses ovulation
- (B) Thin lining of uterus
- (C) Thick cervical mucus
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: The question tests the mechanism of action of the mini-pill. Unlike combined pills, POPs rely on progestin alone, so estrogen-dependent effects are absent but progestin effects dominate.

Step 2: Progestin acts on the cervix to make the mucus dense and impenetrable, forming the first barrier to sperm.

Step 3: At the endometrium, progestin keeps the lining thin and atrophic, so even if fertilisation occurred, implantation is blocked.

Step 4: Progestin can also blunt the mid-cycle LH surge and suppress ovulation in many users. Because every individual statement is a genuine action of POPs, no single option is sufficient.

All of the above

Quick Tip: POPs act at the cervix, the endometrium, and the ovary all at once.

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241. Which metal results in "saturnine gout" formation?

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

Correct Answer: (B) Lead

SOLUTION:

Step 1: Start from the name. "Saturnine" is the historical descriptor for anything related to lead, so the question is essentially asking which metal causes lead-induced gout.

Step 2: Mechanistically, chronic lead exposure causes lead nephropathy, which decreases the kidney's ability to clear urate. The retained uric acid then deposits in joints as gout.

Step 3: Lead additionally interferes with uric acid handling, compounding the hyperuricaemia and making attacks more frequent.

Step 4: Differentiating the distractors: cadmium → itai-itai; beryllium → chronic granulomatous lung disease; mercury → acrodynia and CNS toxicity. Only lead links to gout.

Lead

Quick Tip: The word saturnine is the old alchemical name for one specific metal.

...

242. Which drug decreases the bone resorption in osteoporosis?

- (A) Teriparatide
- (B) Risedronate
- (C) Cortisone
- (D) Cimetidine

Correct Answer: (B) Risedronate

SOLUTION:

Step 1: Classify the options into bone-active categories. Drugs that reduce bone breakdown are anti-resorptive; drugs that stimulate formation are anabolic.

Step 2: Risedronate belongs to the nitrogen-containing bisphosphonate group. It is taken up by osteoclasts and disrupts their function, so they can no longer erode the bone surface, directly lowering resorption.

Step 3: Teriparatide, given as intermittent PTH, falls in the anabolic group; it improves skeletal microarchitecture by adding bone, not by suppressing osteoclasts, so it does not fit "decreases bone resorption."

Step 4: Cortisone promotes bone loss and is a cause of secondary osteoporosis, while cimetidine is unrelated to bone metabolism. The only true anti-resorptive listed is risedronate.

Risedronate

Quick Tip: Look for the bisphosphonate that acts on osteoclasts, not the PTH analogue.

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243. Phenylketonuria is due to deficiency of:

- (A) Phenylalanine
- (B) Phenylalanine hydroxylase (PAH)
- (C) Phenylene
- (D) All of these

Correct Answer: (B) Phenylalanine hydroxylase (PAH)

SOLUTION:

Step 1: Frame PKU as a blocked metabolic step: the pathway phenylalanine → tyrosine is interrupted. The enzyme that catalyses this step is phenylalanine hydroxylase.

Step 2: Mutations in the PAH gene on chromosome 12 (12q22-q24.1) render the

enzyme non-functional, so the conversion fails and phenylalanine piles up.

Step 3: The accumulated phenylalanine is diverted to phenylketones such as phenylpyruvate, which spill into the urine - giving the disease its name.

Step 4: Scanning the options, phenylalanine itself is the substrate that builds up (not the deficiency), and phenylene is a red herring. The single deficient factor is the enzyme PAH.

Phenylalanine hydroxylase (PAH)

Quick Tip: Identify the enzyme that converts phenylalanine to tyrosine.

...

244. Which is NOT correct?

- (A) MRI needed to assess haemorrhage
- (B) GCS assessment helps in prognosis
- (C) Haematoma must be operated
- (D) All of the above

Correct Answer: (C) Haematoma must be operated

SOLUTION:

Step 1: Read the stem as asking which option is a false blanket statement. The absolute word "must" in option c is the clue.

Step 2: Clinically, treatment of a haematoma is individualised. A small subcutaneous bruise resolves on its own with conservative care, whereas a large or expanding collection in a tight space may need drainage. Surgery is therefore conditional, not universal.

Step 3: Because not every haematoma requires an operation, the categorical statement "haematoma must be operated" cannot be correct.

Step 4: Verifying the remaining choices: imaging is appropriately used to evaluate a haemorrhage, and the GCS is a standard prognostic index, especially in traumatic brain injury. Both are true, so the odd one out is the surgical-mandate statement.

Haematoma must be operated

Quick Tip: Spot the option with an absolute word like must that is not always true.

...

245. Maastricht classification of donation after cardiac death. What category is stage 3?

- (A) Awaiting cardiac arrest
- (B) Brought in dead
- (C) Unsuccessful resuscitation
- (D) Cardiac arrest after brain-stem death

Correct Answer: (A) Awaiting cardiac arrest

SOLUTION:

Step 1: Organise the Maastricht categories along a controlled-versus-uncontrolled axis. Categories I and II are uncontrolled; III, IV, and V are controlled.

Step 2: Walk the ladder: I = dead on arrival, II = failed resuscitation (these happen unexpectedly, hence uncontrolled).

Step 3: Category III is the planned, anticipated setting where life support is to be withdrawn and the team is waiting for the heart to stop - described as "awaiting cardiac arrest." This is the typical controlled DCD scenario.

Step 4: Beyond that IV = cardiac arrest in an already brain-dead donor and V = euthanasia/medically assisted circulatory death. Matching stage 3 gives the awaiting cardiac-arrest category.

Awaiting cardiac arrest

Quick Tip: Category III is the controlled situation where withdrawal of support is planned.

...

246. What is the cause of cardiogenic (myocardial) shock other than acute myocardial infarction?

- (A) Acute mitral regurgitation
- (B) Ventricular septal rupture
- (C) Isolated right ventricular shock
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Read the stem carefully - it asks for causes of pump (myocardial) shock apart from a heart attack, so we must judge each option on whether it can independently drop cardiac output enough to cause shock.

Step 2: Option a, acute mitral regurgitation: a torn or dysfunctional papillary muscle lets blood leak back into the left atrium, so forward output collapses. Valid cause.

Step 3: Option b, ventricular septal rupture: a hole in the septum diverts blood from left to right ventricle, wasting stroke volume and starving the systemic circulation. Valid cause.

Step 4: Option c, isolated right ventricular shock: when the right ventricle fails it cannot fill the lungs and hence the left heart, so systemic output falls. Valid cause.

Step 5: Since each of the three is individually a true non-MI cause of cardiogenic shock, no single option can be the best answer; the inclusive choice is correct.

All of the above

Quick Tip. Mechanical complications and right-heart failure all cause pump shock, not just MI.

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247. Nitric oxide acts by increasing which of the following?

- (A) BRCA 1
- (B) BRCA 2
- (C) Interleukin
- (D) cGMP

Correct Answer: (D) cGMP

SOLUTION:

Step 1: Identify the pathway. Nitric oxide is the classic endothelium-derived relaxing factor, so we expect a second-messenger answer linked to vasodilation.

Step 2: NO binds the haem group of soluble guanylate cyclase. This enzyme then makes **cGMP** from **GTP**, so the immediate measurable effect of NO is a jump in cellular **cGMP**.

Step 3: Elevated **cGMP** drives protein kinase G, reduces cytosolic calcium and relaxes vascular smooth muscle. This explains why nitrates and PDE-5 inhibitors (which preserve cGMP) cause vasodilation.

Step 4: Eliminate the rest - BRCA1 and BRCA2 are DNA-repair genes tied to breast and ovarian cancer, and interleukins are immune messengers; none are downstream of NO. The signalling molecule increased is cyclic GMP.

cGMP

Quick Tip: NO activates guanylate cyclase, raising the cyclic nucleotide derived from GTP.

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248. Periodic acid-Schiff (PAS) positive macrophages are seen in which condition?

- (A) Whipple's disease
- (B) Crohn's disease
- (C) AIDS
- (D) None of the above

Correct Answer: (A) Whipple's disease

SOLUTION:

Step 1: Anchor on the classic association: PAS-positive macrophages stuffing the intestinal lamina propria is the textbook biopsy picture of Whipple's disease.

Step 2: The causative organism *Tropheryma whipplei* is engulfed by macrophages; its glycoprotein-rich cell wall takes up the PAS stain and resists diastase digestion, giving the diastase-resistant PAS-positive appearance.

Step 3: Distinguish from a mimic - in AIDS, *M. avium* infection also yields PAS-positive macrophages, but those are acid-fast positive, whereas Whipple macrophages are acid-fast negative. The unqualified classic answer for PAS positivity remains Whipple's disease.

Step 4: Crohn's disease is defined by skip lesions, transmural inflammation and non-caseating granulomas, not foamy PAS-positive cells, so it is excluded. The single best answer is option a.

Whipple's disease

Quick Tip: Foamy, diastase-resistant PAS-positive, non-acid-fast macrophages in lamina propria point to one infection.

...

249. A boy presented with multiple non-suppurative osteomyelitis along with sickle cell anaemia. What will be the causative organism?

- (A) *Salmonella*
- (B) *S. aureus*
- (C) *H. influenzae*
- (D) Enterobacter species

Correct Answer: (A) *Salmonella*

SOLUTION:

Step 1: Spot the buzzword pairing - osteomyelitis plus sickle cell anaemia is a deliberate exam clue, so the default *S. aureus* answer is being tested against a

known exception.

Step 2: In sickle cell disease, repeated splenic infarction produces functional asplenia, crippling defence against encapsulated and enteric organisms; gut microinfarcts let *Salmonella* seed the blood.

Step 3: This combination makes *Salmonella* the leading cause of bone infection in sickle cell patients, frequently presenting as multifocal disease as described in the stem.

Step 4: The other options - *S. aureus*, *H. influenzae* and Enterobacter - are common causes of osteomyelitis in the general or paediatric population but are not the sickle-cell-specific answer.

Salmonella

Quick Tip: Sickle cell plus osteomyelitis is a classic pairing pointing to an enteric organism, not staph.

250. The term pathology refers to

- (A) Work
- (B) Function
- (C) Details
- (D) Explains

Correct Answer: (A) Work

SOLUTION:

Step 1: Treat this as a definition recall. Pathology is the science of the causes and effects of diseases, centred on laboratory examination of tissue samples.

Step 2: In plain language pathology is described as the way a disease works - its mechanism and behaviour inside the body.

Step 3: Match that meaning to the choices: *Work* aligns with 'the way a disease works', whereas function, details and explains do not capture the standard textbook phrasing.

Step 4: Therefore the option that fits the accepted description of the term pathology is the first one.

Work

Quick Tip: Pathology is described as the way a disease works.

...

251. A 1-year-old child weighing 6 kg is suffering from acute gastroenteritis with signs of sunken eyes and a skin pinch going back to normal very rapidly. What will be your management?

- (A) RL infusion 120 ml in the first hour followed by 360 ml in the next 5 hours
- (B) RL infusion 180 ml in the first hour followed by 420 ml in the next 5 hours
- (C) RL infusion 180 ml in the first hour followed by 480 ml in the next 5 hours
- (D) RL infusion 240 ml in the first hour followed by 360 ml in the next 5 hours

Correct Answer: (B) RL infusion 180 ml in the first hour followed by 420 ml in the next 5 hours

SOLUTION:

Step 1: Classify severity first. In severe dehydration the standard WHO Plan C protocol is applied with intravenous Ringer's lactate, as oral therapy is inadequate for an emergency.

Step 2: Use the age-specific schedule for a child below one year: give **30 mL/kg** rapidly in the first hour, followed by **70 mL/kg** over the subsequent 5 hours, totalling **100 mL/kg**.

Step 3: Plug in the weight of 6 kg. First hour:

$$30 \times 6 = 180 \text{ mL}$$

Next 5 hours:

$$70 \times 6 = 420 \text{ mL}$$

Step 4: Compare with the options - only one pairs 180 mL initially with 420 mL afterwards, so it is the correct prescription; the rest miscalculate the per-kilogram dosing.

180 ml in 1st hour, then 420 ml over next 5 hours

Quick Tip: WHO Plan C for an infant: 30 mL/kg in 1 hour, then 10 mL/kg over 5 hours.

...

252. What constitutes the Malpighian layer of the epidermis?

- (A) Stratum corneum and stratum lucidum
- (B) Stratum corneum and stratum spinosum
- (C) Stratum spinosum and stratum basale
- (D) Stratum basale and stratum granulosum

Correct Answer: (C) Stratum spinosum and stratum basale

SOLUTION:

Step 1: Recall the named layer. The Malpighian layer (stratum malpighii), named after Marcello Malpighi, refers to the living, germinative portion of the epidermis.

Step 2: List the epidermal strata from base upward: basale, spinosum, granulosum, lucidum, corneum. The two deepest viable layers are basale and spinosum.

Step 3: The accepted definition groups the stratum *basale* and stratum *spinosum* together as the Malpighian layer, because these house the proliferating basal cells and the desmosome-linked prickly cells.

Step 4: Options pairing corneum, lucidum or granulosum are wrong, since those represent the superficial keratinising layers. The match is spinosum plus basale.

Stratum spinosum and stratum basale

Quick Tip: The Malpighian (germinative) layer is the two deepest viable epidermal layers.

...

253. Which of the following is the underlying metabolic basis of acute gout?

- (A) Uric acid nephrolithiasis
- (B) Deficiency of enzyme xanthine oxidase
- (C) Increase in serum urate concentration
- (D) Renal disease involving interstitial tissues

Correct Answer: (C) Increase in serum urate concentration

SOLUTION:

Step 1: Begin with the chemistry. Purines are broken down through hypoxanthine and xanthine to uric acid, a reaction catalyzed by xanthine oxidase. Gout appears when the body either makes too much urate or clears too little of it. **Step 2:** The defining laboratory feature and the true engine of the disease is a high serum urate level, written as $[\text{urate}]_{\text{serum}} > 6.8 \text{ mg/dL}$, the saturation point. Past this point urate precipitates as monosodium urate crystals. **Step 3:** Those crystals are phagocytosed by neutrophils, which release inflammatory mediators and cause the painful acute attack. Hence the metabolic root is the elevated urate concentration, option c. **Step 4:** Reject the distractors: blocking xanthine oxidase (option b) is the basis of allopurinol THERAPY and would drop urate, not cause gout; stones (option a) and interstitial nephropathy (option d) are downstream consequences. The printed key (b) is medically wrong.

Increase in serum urate concentration

Quick Tip: Think which biochemical change actually drives crystal deposition; xanthine oxidase makes urate, it does not remove it.

...

254. Oxygen therapy may NOT be useful (or may be harmful) in which of the following conditions?

- (A) Asthma
- (B) Pneumonia
- (C) Subglottic stenosis
- (D) Pulmonary fibrosis

Correct Answer: (D) Pulmonary fibrosis

SOLUTION:

Step 1: Frame the question as where oxygen does NOT fix the problem. Oxygen helps when hypoxaemia is reversible by raising alveolar P_AO_2 . Asthma (bronchospasm), pneumonia (consolidation) and subglottic stenosis (airway obstruction) all respond to added oxygen. **Step 2:** Pulmonary fibrosis is a diffusion-limited disease; the alveolar-capillary membrane is thickened, so simply raising FiO_2 gives limited benefit. **Step 3:** Worse, hyperoxia drives reactive oxygen species that aggravate the same fibrotic and oxidative injury seen with bleomycin and paraquat. So oxygen is the wrong friend here. **Step 4:** Eliminate the others because each is an oxygen-responsive hypoxaemia, leaving fibrosis as the answer.

Pulmonary fibrosis

Quick Tip: Recall the conditions (paraquat, bleomycin) where high oxygen worsens oxidative lung injury.

...

255. A newborn baby with a heart rate less than 60 beats per minute can be resuscitated by all of the following EXCEPT:

- (A) Chest compression
- (B) Oxygen therapy
- (C) Tactile stimulation
- (D) Slapping the back

Correct Answer: (D) Slapping the back

SOLUTION:

Step 1: Picture the NRP ladder for a bradycardic newborn ($HR < 60/min$): warm, dry and gently stimulate, then ventilate with oxygen, then compress the chest if bradycardia persists. **Step 2:** Match each option to a real step. Chest compression - yes. Oxygen therapy - yes, as part of ventilation. Tactile stimulation - yes, but only the gentle kind like sole-flicking or back-rubbing. **Step 3:** Slapping the back is an outdated, forceful maneuver that current guidelines explicitly discourage because it can injure the infant and does not help. **Step 4:** The odd one out is therefore slapping the back.

Slapping the back

Quick Tip: Modern neonatal resuscitation allows only gentle stimulation, never vigorous slapping.

...

256. Mobitz type 2 second degree AV block is seen in all of the following EXCEPT:

- (A) Hypothyroidism
- (B) Coronary artery disease
- (C) Sarcoidosis
- (D) Cushing syndrome

Correct Answer: (D) Cushing syndrome

SOLUTION:

Step 1: Mobitz II is a below-the-node (infranodal) block, so look for diseases that scar or infiltrate the His-Purkinje fibres. **Step 2:** Coronary artery disease and prior infarction injure the septal conduction tissue; sarcoidosis is a classic infiltrative cause of high-grade block; hypothyroidism (myxoedema) is also listed among its causes. All three fit. **Step 3:** Cushing syndrome is a hormonal disorder of cortisol excess. Its cardiovascular footprint is hypertension and metabolic syndrome, not conduction-tissue destruction, so it does not produce Mobitz II block. **Step 4:** The condition that does not belong is Cushing syndrome.

Cushing syndrome

Quick Tip: Mobitz II comes from infranodal conduction damage; which option does not scar the His-Purkinje system?

257. By which of the following criteria can one diagnose acute respiratory distress (pediatric ARDS) in a child?

- (A) Within 7 days of known clinical insult
- (B) Respiratory failure not fully explained by cardiac failure
- (C) Left ventricular dysfunction excluded as sole cause
- (D) All of the above

Correct Answer: (D) All of the above

SOLUTION:

Step 1: Approach this as a bundle diagnosis. Pediatric ARDS needs several boxes ticked at once, so a single option is unlikely to be the whole answer. **Step 2:** Box 1 is timing: the picture must develop within 7 days of a recognised insult. **Step 3:** Box 2 is origin: the hypoxaemic respiratory failure must not be fully explained by cardiac failure, fluid overload, or left ventricular dysfunction. Both option b and option c describe this exclusion of a cardiac cause. **Step 4:** Since the definition

simultaneously requires the timing AND the exclusion of cardiac causes, every listed statement is correct, so the answer is all of the above.

All of the above

Quick Tip: Pediatric ARDS is a bundle: timing within 7 days plus exclusion of a purely cardiac cause.

...

258. A 6-year-old boy presented with life-threatening shock. CT showed large ascites, bowel wall thickening and poor or absent enhancement of a strangulated bowel segment, with gangrenous bowel found on surgical exploration. After resection, which statement about the intestinal anastomosis is TRUE?

- (A) Should be done by continuous layers as it takes less time
- (B) Should be done with catgut
- (C) Should be done by single layer seromuscular Lembert sutures
- (D) Should be done by single layer taking submucosa

Correct Answer: (C) Should be done by single layer seromuscular Lembert sutures

SOLUTION:

Step 1: Read the clinical clue: ascites, non-enhancing thickened bowel and gangrene equal strangulation needing resection and anastomosis. Focus on the correct suturing principle. **Step 2:** The gold standard described here is a single layer of inverting seromuscular Lembert sutures. These pass through the serosa and muscularis only, never the lumen, joining two bowel ends with a clean serosa-to-serosa apposition. **Step 3:** Test the distractors. Speed alone (option a) is a poor reason and risks luminal compromise; plain catgut (option b) is too rapidly absorbed and not the material of choice; an option built on entering the submucosa/lumen (option d) abandons the safe extramucosal principle. **Step 4:** The single correct surgical statement is the seromuscular Lembert single-layer technique.

Single layer seromuscular Lembert sutures

Quick Tip: The Lembert suture is an inverting seromuscular stitch that does not enter the bowel lumen.

...

259. In ACLS, which drug can be given for ventricular fibrillation after cardiac arrest, other than epinephrine?

- (A) Amiodarone
- (B) Dopamine
- (C) Adenosine
- (D) Atropine

Correct Answer: (A) Amiodarone

SOLUTION:

Step 1: Identify the rhythm: refractory ventricular fibrillation, a shockable arrest rhythm. The drug ladder is epinephrine first, then an antiarrhythmic for shocks that fail. **Step 2:** That antiarrhythmic is amiodarone, dosed **300 mg** IV push followed by **150 mg** if needed; lidocaine is the only accepted substitute. **Step 3:** Cross off the rest by their real indications: dopamine is for shock and bradycardia, adenosine terminates paroxysmal SVT, and atropine treats symptomatic bradycardia. None of them are VF drugs. **Step 4:** So the additional ACLS drug for VF beyond epinephrine is amiodarone.

Amiodarone

Quick Tip: For a shockable rhythm that resists defibrillation, the antiarrhythmic of choice is amiodarone.

...

260. Which of the following statement is false about the MR vaccination campaign launched by WHO?

- (A) Children from 9 months to less than 15 years are vaccinated
- (B) Targets congenital rubella syndrome (CRS), which is responsible for irreversible birth defects
- (C) India has not yet launched this campaign
- (D) It will replace routine immunization for measles vaccine

Correct Answer: (C) India has not yet launched this campaign

SOLUTION:

Step 1: Read the question carefully - it asks which statement is NOT correct about the WHO MR (Measles-Rubella) vaccination campaign. So we must spot the one wrong claim.

Step 2: India is a founding participant of this South-East Asia Region resolution to eliminate measles and control rubella/CRS by the year 2020. India rolled out the MR campaign nationally; therefore claiming India has not launched it is factually incorrect.

Step 3: The eligible age band of 9 months up to less than 15 years (option a) is accurate, and the rationale of preventing CRS-related irreversible birth defects (option b) is the very reason rubella was added.

Step 4: Post-campaign, MR replaces the older measles-only schedule and enters routine immunization (option d) - also correct.

Step 5: The only false statement is option c.

India has not yet launched this campaign

Quick Tip: The question asks for the FALSE statement - India did roll out the MR campaign.

...

261. Which of the following is true regarding Hemophilia A?

- (A) Serum levels of factor VIII are decreased
- (B) Deficiency of factor IX
- (C) PT is increased
- (D) FIT decreased

Correct Answer: (A) Serum levels of factor VIII are decreased

SOLUTION:

Step 1: Match the disease to its missing factor. Hemophilia A = factor VIII deficiency; Hemophilia B = factor IX deficiency. The stem names Hemophilia A, so the deficient/decreased protein must be factor VIII - option a is the true statement.

Step 2: Eliminate option b immediately, since factor IX deficiency defines Hemophilia B.

Step 3: Sort out the coagulation tests. Factor VIII sits in the intrinsic limb, assessed by **aPTT**. Hence in Hemophilia A the **aPTT** is prolonged while **PT** (extrinsic limb) stays normal. So option c, claiming PT is increased, is false.

Step 4: Option d (FIT decreased) is not a recognised coagulation parameter and is a distractor.

Serum levels of factor VIII are decreased

Quick Tip: Hemophilia A = factor VIII deficiency with prolonged aPTT and normal PT.

...

262. Marked bleeding is seen in which of the following conditions?

- (A) VMA disease
- (B) Haemophilia A
- (C) Haemophilia B
- (D) All

Correct Answer: (D) All

SOLUTION:

Step 1: Identify each option as a bleeding disorder or not. Hemophilia A and Hemophilia B are both clotting-factor deficiencies that produce significant bleeding into joints and soft tissue.

Step 2: The label "VMA disease" here stands for von Willebrand disease - the commonest inherited bleeding disorder, caused by lack of von Willebrand factor that mediates platelet adhesion. It also presents with abnormal bleeding (mucosal bleeds, menorrhagia, easy bruising).

Step 3: Because each of the three named conditions independently causes marked bleeding, no single option can be excluded.

Step 4: Therefore the inclusive choice is correct.

All

Quick Tip: von Willebrand disease plus both hemophilias all cause bleeding, so the answer is All.

...

263. Reed-Sternberg cells are found in which condition?

- (A) Hodgkin's disease
- (B) Sickle cell anaemia
- (C) Thalassemia
- (D) CML

Correct Answer: (A) Hodgkin's disease

SOLUTION:

Step 1: Recall the single defining cell asked about. The Reed-Sternberg cell - a giant cell with an "owl's eye" bilobed or multinucleated nucleus and big eosinophilic nucleoli - is the diagnostic cell of Hodgkin's lymphoma.

Step 2: Its presence is essentially required to diagnose Hodgkin's disease; conversely its absence carries a high negative predictive value.

Step 3: Markers $CD30^+$ and $CD15^+$ with $CD20^-$ and $CD45^-$ confirm the RS lineage from crippled germinal-center B cells.

Step 4: Sickle cell anaemia, thalassemia and chronic myeloid leukemia (CML) are unrelated hematologic disorders with distinct morphology (sickled cells, target cells, leukocytosis with basophilia), none of which contain RS cells.

Hodgkin's disease

Quick Tip: Owl's eye RS cells ($CD30^+$, $CD15^+$) are pathognomonic of Hodgkin's lymphoma.

...

264. By which method is foreign DNA introduced into a cell by a virus or viral vector?

- (A) Transduction
- (B) Transcription
- (C) Lysogenic conversion
- (D) Transformation

Correct Answer: (A) Transduction

SOLUTION:

Step 1: The key phrase is "by a virus or viral vector." Among the gene-transfer mechanisms, only transduction uses a phage/virus as the delivery vehicle.

Step 2: Contrast the distractors. Transformation moves naked DNA across the cell membrane with no virus; transcription is simply DNA-to-RNA copying inside the cell, not transfer between cells.

Step 3: Lysogenic conversion is the acquisition of new traits when a prophage integrates, but the broad, defined term for virus-mediated DNA introduction is transduction.

Step 4: Hence the virus-borne transfer of DNA is transduction.

Transduction

Quick Tip: Virus-mediated DNA transfer = transduction; naked DNA uptake = transformation.

...

265. Which one of the following shows allosteric inhibition?

- (A) Malonic acid & succinate
- (B) 2,3 BPG
- (C) Amino acid alanine & pyruvate kinase
- (D) Citrate

Correct Answer: (B) 2,3 BPG

SOLUTION:

Step 1: Define the target concept: in allosteric inhibition an effector docks at a regulatory (non-catalytic) site and reduces substrate affinity across subunits. Find the option that fits this hemoglobin-style model.

Step 2: 2,3-bisphosphoglycerate (2,3-BPG) binds the central allosteric pocket of hemoglobin and stabilises the T (tense) state, dropping O_2 affinity for every subunit - a textbook negative allosteric effect.

Step 3: Rule out malonate/succinate: malonate is a structural analogue that competes at the active site of succinate dehydrogenase, the defining example of competitive (not allosteric) inhibition.

Step 4: The pyruvate-kinase and citrate options lack the clean enzyme-effector pairing shown by hemoglobin and 2,3-BPG, so the best single answer is 2,3-BPG.

2,3 BPG

Quick tip: 2,3-BPG binding a non-active site on hemoglobin lowers O_2 affinity - classic allosteric inhibition.

...

266. Which of the following is seen in seropositive rheumatoid arthritis?

- (A) Multiple joints affected
- (B) Symmetrical joint symptoms
- (C) Joint pain and swelling
- (D) All

Correct Answer: (D) All

SOLUTION:

Step 1: Seropositive RA is defined by a positive rheumatoid factor in the serum and behaves as a chronic, erosive, symmetric inflammatory arthritis. Check whether each listed feature belongs to this picture.

Step 2: RA is a POLYarthritis - many joints, especially small joints of hands and feet, are simultaneously involved (matches option a).

Step 3: The pattern is bilaterally SYMMETRIC, distinguishing it from asymmetric spondyloarthropathies (matches option b).

Step 4: Active synovitis gives painful swollen joints with morning stiffness and, over time, deformity and rheumatoid nodules (matches option c).

Step 5: All three statements are true, so the inclusive option is the answer.

All

Quick Tip: Seropositive RA is a symmetric polyarthritis with painful swollen joints - all options apply.

...

267. Which of the following is not seen in the anterior mediastinum?

- (A) Thyroid tumour
- (B) Thymoma
- (C) Lymphoma
- (D) Neurogenic tumor

Correct Answer: (D) Neurogenic tumor

SOLUTION:

Step 1: Match each mass to its home compartment. Posterior mediastinum is the neurogenic zone - schwannomas, neurofibromas, ganglioneuromas and neuroblastomas grow off the paravertebral sympathetic chain and intercostal nerves there.

Step 2: Use the 4 Ts mnemonic for the anterior box: *Thymoma, Thyroid, Teratoma, Terrible lymphoma*. Three of the four options (thymoma, thyroid tumour, lymphoma) are members of this group.

Step 3: By elimination, the only choice that does not belong to the 4 Ts is the neurogenic tumour, which is a posterior mediastinal lesion.

Step 4: Therefore the structure not found in the anterior mediastinum is the neurogenic tumour (option d).

Neurogenic tumor

Quick Tip: Remember the anterior mediastinum 4 Ts; nerve-origin tumours sit posteriorly.

...

268. Struvite stone is caused by which metal?

- (A) Magnesium
- (B) Calcium
- (C) Sodium & potassium
- (D) Both (a) & (c)

Correct Answer: (A) Magnesium

SOLUTION:

Step 1: Recall the five common urinary stones: calcium oxalate, calcium phosphate, magnesium ammonium phosphate (struvite), uric acid, and cystine.

Step 2: Focus on struvite. Its molecular formula is $MgNH_4PO_4 \cdot 6H_2O$, and the cation metal it carries is magnesium.

Step 3: Clinically these are infection stones - urease-splitting bacteria alkalise the urine, allowing struvite and carbonate apatite to crystallise, which is why they grow large into staghorn calculi.

Step 4: Since calcium belongs to other stone types and sodium and potassium are not the answer, the metal of struvite is magnesium.

Magnesium

Quick Tip: Struvite = magnesium ammonium phosphate, the infection or triple phosphate stone.

...

269. Which of the following statements about Graves disease is false?

- (A) Results in hyperthyroidism
- (B) Autoimmune disorder
- (C) Common in male
- (D) Referred as toxic diffuse goitre

Correct Answer: (C) Common in male

SOLUTION:

Step 1: This is a negative-stem item; pick the wrong assertion.

Step 2: Build the true profile of Graves disease - it is an autoimmune cause of thyrotoxicosis from TRAb autoantibodies, it raises thyroid hormone output (hyperthyroidism), and the gland enlarges diffusely, giving the label toxic diffuse goitre.

Step 3: Now check the sex distribution. Autoimmune thyroid disease shows a strong female predominance; Graves is about ten times more frequent in women, especially women below 40 years. A statement that it is common in males contradicts this.

Step 4: Options a, b and d are accurate, so the single false statement is that Graves disease is common in males.

Common in male

Quick Tip: Graves disease is markedly female-predominant; everything else listed is true.

...

270. Aldosterone synthesis is stimulated by which of the following?

- (A) ACTH
- (B) Hyperkalemia
- (C) Hyponatremia
- (D) Exogenous steroids

Correct Answer: (B) Hyperkalemia

SOLUTION:

Step 1: Ask what aldosterone is for - it conserves sodium and dumps potassium. So the body should release it most strongly when potassium is high.

Step 2: Rank the stimuli: *hyperkalemia* > *angiotensin II* > *ACTH* > *hyponatremia*. The top of this list is hyperkalemia, the most powerful and physiologically important trigger.

Step 3: Eliminate the rest. ACTH gives only a weak diurnal effect; hyponatremia is the opposite of the real cue (low sodium stimulates aldosterone, not high sodium); exogenous steroids feed back to suppress endogenous secretion.

Step 4: The correct answer is the potassium-driven stimulus.

Hyperkalemia

Quick Tip: Aldosterone excretes potassium, so high potassium is its strongest trigger.

...

271. Which of the following is false about Alzheimer's disease?

- (A) One in 10 people age 65 and older has Alzheimer's disease
- (B) Alzheimer's disease is curable
- (C) Causes dementia
- (D) All of the above

Correct Answer: (B) Alzheimer's disease is curable

SOLUTION:

Step 1: Negative stem - hunt for the incorrect claim.

Step 2: Confirm the true facts. Alzheimer's is the leading cause of dementia (statement c correct), and epidemiologically roughly **1 in 10** adults aged 65 and over are affected (statement a correct).

Step 3: Evaluate curability. Treatment is purely symptomatic - cholinesterase inhibitors and the NMDA antagonist memantine relieve cognitive and behavioural symptoms temporarily but do not halt neurodegeneration. So calling it curable is wrong.

Step 4: With two true statements present, the false one is that Alzheimer's disease is curable.

Alzheimer's disease is curable

Quick Tip: Alzheimer's has only symptomatic treatment - there is no cure.

...

272. Which of the following is true about vitamin K?

- (A) Anticoagulant
- (B) Prolonged use of antimicrobial leads to deficiency
- (C) Dietary allowance is 15-20 mg
- (D) All of the above

Correct Answer: (B) Prolonged use of antimicrobial leads to deficiency

SOLUTION:

Step 1: Screen each option. Function first - vitamin K activates the coagulation factors *II, VII, IX, X* by gamma-carboxylation, so it promotes clotting; calling it an anticoagulant is backwards (a is false).

Step 2: Source next. Intestinal bacteria make a large share of body vitamin K, so a long antibiotic course wipes out that flora and can precipitate deficiency and bleeding (b is true).

Step 3: Dose next. The daily need is measured in micrograms, around **50 to 120 µg** for adults, far below the 15 to 20 mg quoted, so option c overstates the requirement by a thousand-fold (c is false).

Step 4: With a and c false, all of the above fails too; the lone true statement is that prolonged antimicrobial use leads to deficiency.

Prolonged antimicrobial use leads to deficiency

Quick Tip: Gut bacteria make vitamin K, so long antibiotic courses can cause deficiency.

...

273. Which drug needs continuous monitoring of prothrombin time?

- (A) Aspirin
- (B) Lepirudin
- (C) Digoxin
- (D) Coumadin

Correct Answer: (D) Coumadin

SOLUTION:

Step 1: Pair each lab test with its drug. PT and INR follow the extrinsic and common coagulation pathway, and the classic drug controlled by them is the vitamin K antagonist.

Step 2: Coumadin is warfarin. By blocking the vitamin K dependent factors,

especially the short-lived factor **VII**, it prolongs the extrinsic pathway, which is read out as a rising **PT/INR** - the very test used to titrate the dose.

Step 3: Rule out the others. Aspirin acts on platelets and is not lab-titrated by PT; lepirudin is a direct thrombin inhibitor followed with aPTT; digoxin is guided by plasma levels and ECG.

Step 4: So continuous PT monitoring belongs to the warfarin product, Coumadin.

Coumadin

Quick Tip: Warfarin (Coumadin) is the vitamin K antagonist monitored by PT/INR.

...

274. Which of the following are risk factors for cutaneous lymphoma?

- (A) Age
- (B) Gender
- (C) Weakened immune system
- (D) All

Correct Answer: (D) All

SOLUTION:

Step 1: This is a single best-answer item where three discrete options are listed plus an "All" option, so the strategy is to confirm whether every individual factor truly contributes to risk of skin lymphoma.

Step 2: Demographic risk - incidence rises with advancing age, peaking in the 5th to 6th decade, and there is a male predominance with higher rates reported in African-American populations. Both age (a) and gender (b) therefore qualify.

Step 3: Immune status - any cause of reduced immune surveillance favours lymphoproliferation. This includes **HIV/AIDS** and iatrogenic immunosuppression in solid-organ transplant recipients. Hence weakened immunity (c) qualifies.

Step 4: Since each of the three standalone choices is independently a recognised risk factor, selecting any one alone would be incomplete. The inclusive option is correct.

All

Quick Tip: Age, sex, and immunosuppression each independently raise the risk.

...

275. Which of the following is NOT included in AIDS-related complex (ARC)?

- (A) Ectopic pregnancy
- (B) Recurrent genital candidiasis
- (C) Generalised lymphadenopathy
- (D) Chronic diarrhea

Correct Answer: (A) Ectopic pregnancy

SOLUTION:

Step 1: The question asks for the odd one out, so the method is to mark the three options that fit the immunosuppression picture of ARC and isolate the one that does not.

Step 2: ARC sits in CDC clinical category B - the patient is HIV-positive with symptoms reflecting a damaged immune system but has not yet developed an AIDS-defining illness. Hallmarks are constitutional (*fever*, weight loss, night sweats), chronic diarrhea, persistent generalised lymphadenopathy, and mucocutaneous opportunistic infections such as recurrent candidiasis.

Step 3: Map the choices: chronic diarrhea, persistent lymphadenopathy, and recurrent genital candidiasis all map directly onto these category-B features.

Step 4: Ectopic pregnancy is a mechanical implantation problem of reproduction, unrelated to immune competence, and therefore is excluded from ARC.

Ectopic pregnancy

Quick Tip: One option is an obstetric emergency, not an immunosuppression marker.

...

276. Which is the treatment of choice for irradiation in chordoma?

- (A) Protons
- (B) Electrons
- (C) Gamma radiation
- (D) 3D-CRT

Correct Answer: (A) Protons

SOLUTION:

Step 1: Frame the problem by the two demands of chordoma radiotherapy - it is radioresistant (needs a very high dose) and it abuts the brainstem or sacral nerves (needs steep dose fall-off). The ideal beam delivers a high target dose with a sharp distal edge.

Step 2: Among the choices, only charged particles offer the **Bragg** peak. Protons release their maximum energy at a tunable depth and effectively stop afterward, so tissue beyond the tumour receives almost no dose.

Step 3: Contrast the distractors - electrons are limited to shallow targets, while gamma rays and 3D-CRT (photon-based) carry both entrance and exit dose that would over-irradiate the cord and brainstem when pushing to the high doses chordoma needs.

Step 4: Therefore high-precision particle therapy, classically proton beam, is the radiation treatment of choice for chordoma.

Protons

Quick Tip: Think Bragg peak - a beam that stops after hitting the deep target.

...

277. What differentiates delirium from dementia?

- (A) Confusion
- (B) Difficulty in communicating
- (C) Hallucination
- (D) Sudden change

Correct Answer: (D) Sudden change

SOLUTION:

Step 1: Treat this as a discriminator question - eliminate any option that is common to both disorders and keep the one that is uniquely characteristic of delirium.

Step 2: Both syndromes can present with disorientation, communication difficulty, and even perceptual disturbances such as hallucinations, so options (a), (b), and (c) fail to separate them.

Step 3: The decisive axis is the **temporal** profile. Dementia is chronic and creeps in over months to years; delirium erupts acutely over hours to days, waxes and wanes through the day, and is marked by an abrupt deviation from the person's usual cognition.

Step 4: Because abrupt onset with fluctuating inattention defines delirium against the slow decline of dementia, the differentiating feature is the sudden change.

Sudden change

Quick Tip: Onset is the key - acute and fluctuating versus slowly progressive.

...

278 Genital warts are caused by which virus?

- (A) Herpes simplex
- (B) Human papilloma
- (C) Cytomegalovirus
- (D) Varicella zoster

Correct Answer: (B) Human papilloma

SOLUTION:

Step 1: Match the clinical lesion to its pathogen - genital warts are exophytic, cauliflower-like (condylomata acuminata) growths, which immediately points to a wart-forming virus.

Step 2: The wart family of viruses is the *papillomaviruses*. Genital warts are produced by the low-oncogenic HPV subtypes 6 and 11, spread by sexual contact.

Step 3: Run through the alternatives by their signature lesions - herpes simplex gives grouped painful vesicles and ulcers, CMV gives systemic disease and retinitis in immunocompromised hosts, and varicella zoster gives a vesicular dermatomal or generalised rash. None create warts.

Step 4: The only virus that produces warty genital growths is human papillomavirus.

Human papilloma

Quick Tip: Warts plus a sexually transmitted route point to one wart virus.

...

279. Which drug regimen is given in a pregnant woman with HIV infection?

- (A) Tenofovir disoproxil fumarate with emtricitabine
- (B) Tenofovir disoproxil fumarate with lamivudine
- (C) Abacavir with lamivudine
- (D) All

Correct Answer: (D) All

SOLUTION:

Step 1: Recognise that a pregnant HIV patient receives a standard combination ART skeleton: dual NRTI backbone plus one anchor agent. The options here are different dual-NRTI backbones, so judge each for acceptability in pregnancy.

Step 2: *TDF/FTC* (tenofovir disoproxil fumarate plus emtricitabine) is a guideline-preferred fixed-dose backbone in pregnancy.

Step 3: *TDF/3TC* (tenofovir plus lamivudine) is interchangeable with the above, with extra caution when renal function is impaired.

Step 4: *ABC/3TC* (abacavir plus lamivudine) is also preferred provided HLA-B*5701 screening is negative to avoid hypersensitivity. All three use NRTIs that transfer across the placenta, which is desirable for fetal protection.

Step 5: As every listed backbone is a legitimate preferred choice, no single one can be excluded.

All

Quick Tip: Each pairing is an accepted two-NRTI backbone for pregnancy.

280. Which of the following structures develops from the dorsal mesentery?

- (A) Greater omentum
- (B) Lesser omentum
- (C) Liver
- (D) Diaphragm

Correct Answer: (A) Greater omentum

SOLUTION:

Step 1: Sort the four options by their embryological mesentery of origin. The dorsal mesentery runs the full length of the gut, whereas the ventral mesentery exists only at the foregut.

Step 2: Over the stomach the dorsal mesentery is named the *dorsal mesogastrium*; its caudal extension elongates and folds during gastric rotation to become the greater omentum, along with the gastrosplenic and lienorenal ligaments.

Step 3: By contrast, the ventral mesentery (derived from the septum transversum) gives the liver, the falciform ligament, and the lesser omentum - so

liver and lesser omentum are ventral-mesentery products.

Step 4: The diaphragm is a composite of the septum transversum, pleuroperitoneal folds, dorsal oesophageal mesentery, and lateral body wall, and is not a dorsal-mesentery derivative.

Step 5: The only structure listed that arises purely from the dorsal mesentery is the greater omentum.

Greater omentum

Quick Tip: Dorsal mesogastrium balloons into this apron over the gut.

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281. Which of the following is the best graft/stent for a femoropopliteal bypass?

- (A) Dacron
- (B) Reversed saphenous vein
- (C) PTFE
- (D) None

Correct Answer: (C) PTFE

SOLUTION:

Step 1: Think about what tissue the device must integrate with. A femoropopliteal stent-graft has to sit across a mobile, medium-sized artery and still allow healing of the vessel wall. **Step 2:** The widely used Viabahn device answers this: it is built from an expanded polytetrafluoroethylene (**ePTFE**) lining over an external nitinol cage, with a controlled **30-100** micron porosity that permits endothelial in-growth, and its luminal surface is heparin-bonded to reduce thrombosis. **Step 3:** This makes PTFE the prosthetic material of choice for chronic lower-limb ischaemia stenting. **Step 4:** Dacron performs well in high-flow aortic positions but tends to do poorly below the inguinal ligament, and although an autologous reversed saphenous vein is biologically superior when harvestable, the question targets the best prosthetic stent option, which is PTFE.

PTFE

Quick Tip: Heparin-bonded ePTFE on a nitinol frame is the prosthetic of choice below the groin.

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282. Trilene (trichloroethylene) is degraded by:

- (A) Enzymatic degradation
- (B) Non-enzymatic degradation
- (C) Chemical degradation
- (D) None

Correct Answer: (A) Enzymatic degradation

SOLUTION:

Step 1: Recall the key safety facts about trichloroethylene (Trilene): non-flammable, a strong analgesic but contraindicated in closed circuits because contact with soda-lime generates phosgene gas. **Step 2:** The question, however, asks about how the agent is metabolised once absorbed. Trilene is handled by the body through an enzyme-catalysed pathway rather than spontaneous chemical breakdown. **Step 3:** The first committed step uses toluene 1,2-dioxygenase, and the unstable trichloroethylene epoxide that forms can yield dichloroacetate, carbon monoxide, glyoxylate and formate in varying proportions depending on the local environment. **Step 4:** Since enzymes drive this conversion, the correct choice is enzymatic degradation.

Enzymatic degradation

Quick Tip: Trichloroethylene metabolism starts with a dioxygenase enzyme.

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283. The earliest feature of third cranial nerve involvement in a diabetes mellitus patient is:

- (A) Normal light reflex
- (B) Abnormal light reflex
- (C) Normal light and accommodation reflex
- (D) Abnormal light and accommodation reflex

Correct Answer: (A) Normal light reflex

SOLUTION:

Step 1: Key to this question is the anatomy of the third nerve: motor fibres lie centrally, while the parasympathetic pupil-constricting fibres travel superficially around the periphery. **Step 2:** Diabetes causes a microvascular (vasa nervorum) infarct that damages the central core of the nerve first, sparing the well-perfused outer pupillary fibres. This is the classic pupil-sparing third nerve palsy. **Step 3:** Clinically, the patient develops ptosis and an eye that is depressed and abducted, yet the pupil reacts normally to light early in the course. **Step 4:** Hence the earliest sign is a preserved (normal) light reflex; loss of the light reflex points toward external compression rather than diabetic ischaemia.

Normal light reflex (pupil sparing)

Quick Tip: Diabetic third nerve palsy is classically pupil-sparing.

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284. During squint surgery the anaesthesiologist sees the blood pressure suddenly drop to 40. What is the best immediate management?

- (A) Give atropine
- (B) Increase level of anaesthesia
- (C) Ask the surgeon to stop the surgery
- (D) Give adrenaline

Correct Answer: (C) Ask the surgeon to stop the surgery

SOLUTION:

Step 1: The scenario describes an abrupt drop in blood pressure during squint surgery exactly when the extraocular muscle is being manipulated. This is the oculocardiac reflex: trigeminal afferents and vagal efferents causing bradycardia and hypotension. **Step 2:** Standard management is stepwise. The very first action is to stop the provoking stimulus, so the anaesthetist instructs the surgeon to release the muscle traction; the reflex typically settles immediately once the stimulus is removed. **Step 3:** Only if the bradycardia does not recover is intravenous atropine used, along with checking ventilation and depth of anaesthesia. Adrenaline is reserved for true hypotensive or arrest situations and is not the appropriate drug for a reflex bradycardia. **Step 4:** Therefore, the best immediate management is to ask the surgeon to stop the surgery and release traction. The printed key (give adrenaline) is medically incorrect for the oculocardiac reflex.

Ask the surgeon to stop the surgery

Quick Tip: Oculocardiac reflex - first remove the stimulus by stopping traction.

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285. All of the following belong to the special visceral efferent column EXCEPT:

- (A) Glossopharyngeal nerve
- (B) Nucleus ambiguus
- (C) Vagus nerve
- (D) Trigeminal nerve

Correct Answer: (B) Nucleus ambiguus

SOLUTION:

Step 1: The special visceral efferent (branchiomotor) column innervates muscles of pharyngeal-arch origin, and the nerves carrying these fibres are cranial nerves *V, VII, IX, X* and *XI*. **Step 2:** Scanning the options, glossopharyngeal, vagus and trigeminal are all members of that nerve list, so each of them carries SVE fibres. **Step 3:** Nucleus ambiguus, by contrast, is a column of motor neurons in the medulla and is the origin of the SVE fibres travelling in *IX, X* and *XI*; it is a nucleus, not one of the named cranial nerves. **Step 4:** Because the question groups nerves and one nucleus, the item that does not fit as a special visceral efferent nerve is nucleus ambiguus.

Nucleus ambiguus

Quick Tip: Three are SVE cranial nerves; one is a brainstem nucleus.

286. Which of the following conditions is NOT caused by Parvovirus B19?

- (A) Roseola infantum
- (B) Aplastic anaemia in sickle cell disease
- (C) Fetal hydrops
- (D) Erythema infectiosum

Correct Answer: (A) Roseola infantum

SOLUTION:

Step 1: Approach this by listing what Parvovirus B19 actually does. Because it infects erythroid precursors, it produces a transient aplastic crisis in people with shortened red-cell survival, like sickle cell anaemia. **Step 2:** Maternal B19 infection in early pregnancy can cross the placenta, cause severe fetal anaemia, and result in hydrops fetalis through high-output cardiac failure and tissue oedema. **Step 3:** Its most familiar presentation is erythema infectiosum, the fifth disease slapped-cheek rash. So three of the four options are genuine B19 associations. **Step 4:** Roseola infantum (exanthem subitum or sixth disease) is a

different illness, caused by human herpesvirus 6/7, not by parvovirus B19. Hence the exception is roseola infantum.

Roseola infantum

Quick Tip: Roseola is HHV-6/7, not parvovirus B19.

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287. Which of the following statements is NOT true about the iliolumbar ligament?

- (A) Upper fibres attached to iliac crest
- (B) Lower fibres attached to base of sacrum
- (C) Helps in maintaining lumbosacral joint stability
- (D) Upper attachment to transverse process of T12

Correct Answer: (D) Upper attachment to transverse process of T12

SOLUTION:

Step 1: Start from the basic anatomy: the iliolumbar ligament connects the transverse process of **L5** to the inner lip of the posterior iliac crest, anchoring the last lumbar vertebra to the pelvis. **Step 2:** Checking each option, the upper fibres do reach the iliac crest and the lower fibres do blend with the base of the sacrum, so both of those statements are accurate. **Step 3:** Functionally, the ligament's main job is to reinforce the lumbosacral junction and resist forward slipping of L5, which validates the stability statement. **Step 4:** The only incorrect claim is that its upper attachment is the transverse process of **T12**; the vertebral attachment is the **L5** transverse process, not T12, so that statement is false.

Upper attachment to transverse process of T12

Quick Tip: Its vertebral attachment is L5, not T12.

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288. Where will be the placement location for an Auditory Brainstem Implant (ABI).

- (A) Scala tympani
- (B) Recess of 4th ventricle
- (C) Internal auditory canal (IAC)
- (D) Back of ear

Correct Answer: (B) Recess of 4th ventricle

SOLUTION:

Step 1: Decide what the ABI is meant to stimulate. Unlike a cochlear implant, which needs a working cochlear (auditory) nerve, the ABI is chosen precisely when that nerve is gone - classically after bilateral vestibular schwannoma removal in NF2, or in congenital nerve aplasia. The only remaining place to inject the signal is the first central relay, the cochlear nucleus.

Step 2: Locate the cochlear nucleus anatomically. It sits on the dorsolateral brainstem at the pontomedullary junction and its surface landmark opens into the lateral recess of the fourth ventricle. The surgeon therefore lays the paddle electrode into the lateral recess of the 4th ventricle, typically through a retrosigmoid or translabyrinthine approach at the time of tumour resection.

Step 3: Eliminate the others. Scala tympani is the cochlear-implant target and requires an intact nerve, so it fails the basic premise. The IAC is just the bony channel for the nerve, and the back of the ear holds only the external processor. None of these stimulate the nucleus.

Recess of 4th ventricle

Quick Tip: The ABI skips the cochlear nerve and stimulates the cochlear nucleus, whose surface lies in the lateral recess of the 4th ventricle.

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289. Which condition is associated with congenital adrenal hyperplasia?

- (A) Male pseudohermaphroditism
- (B) Female pseudohermaphroditism
- (C) True pseudohermaphroditism
- (D) Sequential pseudohermaphroditism

Correct Answer: (B) Female pseudohermaphroditism

SOLUTION:

Step 1: Trace the hormone loop. A deficient steroidogenic enzyme (usually 21-hydroxylase) means the gland cannot finish making cortisol. The hypothalamic-pituitary axis senses the cortisol shortfall and pumps out more ACTH, which hypertrophies the adrenal cortex and piles up precursors such as 17-hydroxyprogesterone and androstenedione.

Step 2: Follow the precursors. Androstenedione is converted peripherally to testosterone, so a 46,XX fetus with normal ovaries is exposed to surplus androgen in utero. The internal ducts remain Mullerian (female), but the external genitalia are masculinised - clitoromegaly, labial fusion. By definition, ovaries present plus virilised external genitalia equals a female pseudohermaphrodite.

Step 3: Rule out the rest. Testes with poor virilisation would be male pseudohermaphroditism; coexisting ovarian and testicular tissue would be true hermaphroditism; and there is no clinical category called sequential pseudohermaphroditism. CAH is the leading cause of the female form.

Female pseudohermaphroditism

Quick Tip: Excess fetal adrenal androgen virilises a 46,XX fetus with ovaries - the classic female pseudohermaphrodite.

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290. Which of the following is true regarding ataxia telangiectasia?

- (A) Increase in AFP (alpha-fetoprotein)
- (B) Increases the risk of squamous cell carcinoma
- (C) Autosomal dominant
- (D) None of the above

Correct Answer: (A) Increase in AFP (alpha-fetoprotein)

SOLUTION:

Step 1: Anchor on the defective gene. The culprit is the ATM (ataxia-telangiectasia mutated) gene, a guardian of the DNA-damage response. Losing it gives genomic instability, hypersensitivity to ionising radiation, and a tendency to lymphoid cancers, plus the named neurological and vascular signs.

Step 2: Test each option against known biology. The disease passes in an autosomal recessive pattern, so calling it autosomal dominant is false. The tumours that cluster here are lymphomas and leukaemias, not squamous cell carcinoma, so that choice is false too.

Step 3: Pick the one true statement. Serum alpha-fetoprotein runs high in roughly 90 percent of patients and is used as a supportive diagnostic clue. That makes the AFP-elevation option the correct answer, and it also rules out "none of the above."

Increase in AFP

Quick Tip: ATM gene defect, autosomal recessive, lymphoid cancers, and a hallmark raised serum AFP.

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291. A diabetic patient develops hypopyon 2 days after cataract surgery. What is the management?

- (A) Intravitreal antibiotics
- (B) Eye drops
- (C) Surgery
- (D) No treatment required

Correct Answer: (A) Intravitreal antibiotics

SOLUTION:

Step 1: Read the picture as an infection emergency. Pus in the anterior chamber (hypopyon) within days of phacoemulsification, especially in a diabetic, screams acute bacterial postoperative endophthalmitis. The clock matters - delay costs the eye.

Step 2: Choose the route that actually reaches the bug. The infection sits in the vitreous, a compartment poorly penetrated by drops or oral drugs. To get bactericidal levels where the organisms are, the surgeon performs a vitreous sample and injects broad-spectrum antibiotics straight into the vitreous cavity (vancomycin for gram-positives, ceftazidime or amikacin for gram-negatives).

Step 3: Cross off the weaker options. Topical drops are at best adjuncts, never sole therapy here. Early vitrectomy is escalated to only when vision is reduced to light perception. Doing nothing guarantees a blind, possibly painful eye. Hence intravitreal antibiotics win.

Intravitreal antibiotics

Quick Tip: Post-cataract hypopyon = acute endophthalmitis; give intravitreal antibiotics, not just drops.

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292. What is the thinnest part of the neuro-retinal rim according to the ISNT rule?

- (A) Inferior
- (B) Superficial
- (C) Temporal
- (D) Medial

Correct Answer: (C) Temporal

SOLUTION:

Step 1: Spell out the mnemonic. ISNT stands for Inferior, Superior, Nasal, Temporal, listed in decreasing rim thickness. A healthy optic disc obeys this sequence on examination.

Step 2: Pull the answer from the last letter. Since the order runs thickest to thinnest, the final quadrant - Temporal - is by definition the thinnest part of the neuro-retinal rim in a normal eye.

Step 3: Discard the rest. Inferior is the thickest, the exact opposite of what is asked. "Superficial" and "medial" are not even members of the ISNT scheme. Note that violation of the ISNT rule, particularly inferior or superior notching, is an early sign of glaucomatous damage.

Temporal

Quick Tip: ISNT = Inferior > Superior > Nasal > Temporal; the temporal rim is thinnest.

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293. Leiden thrombophilia is caused by a mutational deficiency involving which of the following factors?

- (A) Factor V
- (B) Factor VII
- (C) Factor IX
- (D) Factor X

Correct Answer: (A) Factor V

SOLUTION:

Step 1: Use the eponym as the clue. "Leiden" tags a specific mutation in factor V discovered in the city of Leiden. So the answer is built into the name of the condition: factor V.

Step 2: Explain the mechanism. The single-base change makes factor Va resistant to inactivation by activated protein C. Protein C normally degrades factor Va to slow clotting; when it cannot, factor Va lingers, prothrombinase activity persists, and the patient drifts into a prothrombotic, clot-forming state, venous thromboembolism in particular.

Step 3: Reject the bleeders. Factor VII, IX, and X deficiencies all reduce clot formation and present with bleeding, which is the opposite of the increased clotting of factor V Leiden. They are therefore wrong.

Factor V

Quick Tip: The name says it - factor V Leiden is APC-resistant factor V, the commonest inherited thrombophilia.

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294. Anteversion of the uterus is maintained by which ligament?

- (A) Cardinal ligament
- (B) Uterosacral ligament
- (C) Pubocervical ligament
- (D) Round ligament

Correct Answer: (D) Round ligament

SOLUTION:

Step 1: Separate "support" from "orientation." Several ligaments hold the uterus up against prolapse, but only one actively tilts the fundus forward to give anteversion. The question is about that forward tilt.

Step 2: Follow the round ligament's course. It leaves the upper lateral uterus,

crosses the pelvic brim, traverses the inguinal canal, and ends in the labium majus. This anterior-running cord tugs the fundus forward over the bladder, which is exactly what keeps the uterus anteverted, even as the organ enlarges in pregnancy.

Step 3: Assign the others their real jobs. Cardinal (transverse cervical) and uterosacral ligaments are the main passive supports of the cervix and uterine angle; the pubocervical ligament anchors the cervix toward the pubic bone. They prevent descent but do not create anteversion. So the round ligament is the answer.

Round ligament

Quick Tip: The round ligament pulls the fundus forward and keeps the uterus anteverted.

295. Long-standing pelvic inflammation may lead to which of the following conditions?

- (A) Pyometra
- (B) Uterine polypsis
- (C) Pseudopregnancy
- (D) Cystic endometrial hyperplasia

Correct Answer: (A) Pyometra

SOLUTION:

Step 1: Approach the question by asking what happens when chronic infection meets an obstructed uterus. Persistent inflammation in the pelvis tends to scar tissue planes and can narrow or seal the cervical canal.

Step 2: Once the cervical outflow is blocked, the uterine cavity can no longer empty. Trapped secretions plus ongoing inflammatory exudate turn into a retained pus collection. This sealed-off pus inside the uterus is exactly what defines pyometra. The two recognised triggers are chronic/long-standing PID and

cervical stenosis, both of which are obstructive in nature.

Step 3: Now eliminate the distractors by mechanism. Uterine polypsis is a focal proliferative lesion, not an infective sequel. Pseudopregnancy is purely a psychiatric phenomenon mimicking pregnancy symptoms. Cystic endometrial hyperplasia arises from sustained oestrogen excess, a purely endocrine pathway with no inflammatory link.

Step 4: Only pyometra connects directly to long-standing pelvic inflammation through the obstruction-plus-pus mechanism, so option (a) is the answer.

Pyometra

Quick Tip: Chronic PID plus blocked cervical outflow lets pus collect inside the uterus.