INI-CET May 2025 Question Paper

178 recall questions with answers and explanations.

Recall honesty note: NBEMS does not release official papers, so these are memory-based recall questions, not official papers. Image-based questions are excluded for now because the bank's images are currently unavailable.

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Question 1. Which nerve is not related to olfaction?

A. Hypoglossal

B. Trigeminal

C. Glossopharyngeal

D. Vagus

Correct answer: A

Hypoglossal Olfaction (the sense of smell) is a complex sensation. While the olfactory nerve (CN I) is the primary nerve for detecting odorants, other nerves contribute to the overall perception. The trigeminal nerve (CN V) (B) is related because it provides general sensation from the nasal mucosa, detecting chemical irritants or qualities like the "cooling" of menthol or the "burn" of ammonia (chemosensation). The glossopharyngeal (CN IX) (C) and vagus (CN X) (D) nerves are related because they mediate taste from the posterior tongue and pharynx. The perception of "flavor" is a combined sensory experience that intimately links retronasal olfaction with taste. In contrast, the hypoglossal nerve (CN XII) (A) is a purely motor nerve. It supplies the intrinsic and extrinsic muscles of the tongue (except palatoglossus), controlling tongue movement. It has no sensory function related to smell, taste, or flavor perception.

Question 2. What is the nerve supply to the piriform fossa?

A. Internal laryngeal nerve

B. Recurrent laryngeal nerve

C. External laryngeal nerve

D. Glossopharyngeal nerve

Correct answer: A

Internal laryngeal nerve The piriform fossa (or recess) is a depression in the laryngopharynx located on either side of the laryngeal inlet. The sensory innervation of the larynx is divided by the vocal cords. The mucosa above the vocal cords, which includes the piriform fossa, is supplied by the internal laryngeal nerve (A). This nerve is a branch of the superior laryngeal nerve, which arises from the vagus (CN X). This innervation is critical as it provides the sensory (afferent) limb of the cough reflex for this area. (B) The recurrent laryngeal nerve provides sensory innervation to the mucosa below the vocal cords. (C) The external laryngeal nerve is a

motor nerve that supplies the cricothyroid muscle. (D) The glossopharyngeal nerve supplies sensation to the oropharynx (e.g., tonsils, posterior tongue), which is superior to the piriform fossa.

Question 3. A 35-year-old man comes to the emergency department complaining that food is stuck in his throat. Examination reveals a bone lodged in the left piriform recess. Which function is most likely to be affected?

A. Cough reflex

B. Gag reflex

C. Mastication

D. Salivation

Correct answer: A

Cough reflex This clinical scenario is a direct application of the anatomy from the previous question. The piriform recess is innervated by the internal laryngeal nerve. This nerve provides the sensory afferent limb for the cough reflex (A) for any foreign material at or above the laryngeal inlet. A foreign body, such as a fishbone, lodged in this recess can mechanically or by local inflammation/edema, "anesthetize" the nerve endings. This impairs the protective reflex, which normally detects the foreign body and triggers a cough to expel it. This impairment significantly increases the risk of aspiration. The gag reflex (B) is mediated by the glossopharyngeal nerve (CN IX) in the oropharynx, a different location. Mastication (C) (CN V) and salivation (D) (CN VII, CN IX) are unrelated to this specific location.

Question 4. Which of the following is not a boundary of the hepatocystic triangle?

A. Common hepatic duct

B. Cystic duct

C. Right lobe of liver

D. Cystic artery

Correct answer: D

Cystic artery The hepatocystic triangle, also known as the Triangle of Calot, is a critical anatomical space for surgeons, especially during a cholecystectomy (gallbladder removal). Its boundaries are: 1. Medially: The common hepatic duct (A) 2. Laterally: The cystic duct (B) 3. Superiorly: The inferior (visceral) surface of the liver (C) The cystic artery (D) is a vital structure, but it is a content of the triangle, not a boundary. The triangle is significant because it typically contains the cystic artery, the cystic lymph node (of Lund), and autonomic nerves. The surgeon must carefully identify all three boundaries of the triangle to safely locate and ligate the cystic duct and cystic artery within it, avoiding damage to the common hepatic duct.

Question 5. Which muscles are supplied by the superficial peroneal nerve?

A. Peroneus longus & Brevis

B. Extensor hallucis longus

C. Peroneus tertius

D. Both A & C

Correct answer: A

Peroneus longus & Brevis The common peroneal (fibular) nerve divides into two main branches: the superficial and deep peroneal nerves. 1. The superficial peroneal nerve (also called the superficial fibular nerve) supplies the muscles of the lateral compartment of the leg. These muscles are the Peroneus longus and Peroneus brevis (A). Their primary function is eversion of the foot, and they also assist in plantarflexion. 2. The deep peroneal nerve (deep fibular nerve) supplies the muscles of the anterior compartment of the leg. These muscles are responsible for dorsiflexion of the foot and extension of the toes. They include the tibialis anterior, Extensor hallucis longus (B), extensor digitorum longus, and Peroneus tertius (C). Therefore, only the peroneus longus and brevis are supplied by the superficial peroneal nerve.

Question 6. A teenager comes to the emergency department with wrist pain after falling off his skateboard and has tenderness in the anatomical snuffbox. Which bone is most likely fractured?

A. Scaphoid

B. Trapezoid

C. Capitate

D. Trapezium

Correct answer: A

Scaphoid This is a classic clinical presentation. A fall on an outstretched hand (FOOSH) is the most common mechanism for a scaphoid fracture (A). The anatomical snuffbox is a triangular depression on the dorsal, radial side of the wrist. Its floor is formed by the scaphoid bone, and tenderness upon palpation in this specific area ("snuff-box tenderness") is the hallmark clinical sign of a scaphoid fracture. The scaphoid is the most commonly fractured carpal bone. It is critical to diagnose and treat properly because it has a tenuous, retrograde blood supply, which puts it at high risk for avascular necrosis and non-union (failure to heal) if the fracture is missed. The trapezium (D) also lies in the snuffbox floor but is fractured far less often. The trapezoid (B) and capitate (C) are not associated with snuffbox tenderness.

Question 7. Primary muscle repair in cleft lip surgery involves reconstruction of which muscle?

A. Orbicularis oris

B. Orbicularis oculi

C. Levator palpebrae superioris

D. Masseter

Correct answer: A

Orbicularis oris A cleft lip is a congenital defect resulting from the failure of fusion of the facial prominences during embryonic development. This defect creates a gap in the upper lip. The key muscle that is disrupted is the Orbicularis oris (A). This is the circular muscle that surrounds the mouth and acts as the oral sphincter, responsible for closing and puckering the lips. In a cleft lip, the muscle fibers do not form a continuous ring; instead, they are interrupted and run abnormally, inserting onto the margins of the cleft. A primary goal of surgical cleft lip repair (cheiloplasty) is to dissect these abnormal muscle fibers, re-orient them into their correct horizontal position, and suture them together. This "primary muscle repair" is essential to restore normal lip function (like suckling), symmetry, and cosmetic appearance. The orbicularis oculi (B) , levator palpebrae superioris (C) , and masseter (D) are muscles of the eye and jaw, respectively, and are not involved.

Question 8. Match the cardiac anatomical features with their corresponding labels: Column 1 Column 2 1. Receives oxygenated blood from pulmo- nary veins A. Ascending aorta 2. Lies anterior to as- cending aorta B. Right ventricle NODIA page 7 INICET Examination Paper 3. Arises from LV C. Pulmonary trunk 4. Hypertrophy in pul- monary stenosis D. Left atrium

A. 1-A, 2-B, 3-C, 4-D

B. 1-D, 2-C, 3-A, 4-B

C. 1-B, 2-D, 3-C, 4-A

D. 1-C, 2-A, 3-D, 4-B

Correct answer: B

1-D, 2-C, 3-A, 4-B Let's match each statement from Column 1 to the correct structure in Column 2. 1. "Receives oxygenated blood from pulmonary veins": This is the functional definition of the Left atrium (D). 2. "Lies anterior to ascending aorta": In the superior mediastinum, the Pulmonary trunk (C) arises from the right ventricle and passes anterior and to the left of the ascending aorta before bifurcating. 3. "Arises from LV": The Ascending aorta (A) is the great vessel that originates from the base of the left ventricle (LV), carrying oxygenated blood to the body. 4. "Hypertrophy in pulmonary stenosis": Pulmonary stenosis is a narrowing of the pulmonary valve, which increases the pressure the Right ventricle (B) must pump against (increased afterload). This chronic pressure overload causes the muscle of the right ventricle to thicken (hypertrophy). The correct matches are: 1-D, 2-C, 3-A, 4-B. This corresponds to option (B).

Question 9. Which of the following is seen in high altitude?

A. Metabolic acidosis

B. Metabolic alkalosis

C. Respiratory acidosis

D. Respiratory alkalosis

Correct answer: D

Respiratory alkalosis An high altitude, the atmospheric pressure is lower, leading to a decreased partial pressure of inspired oxygen (PO 2). This causes hypoxemia (low oxygen in the blood), which is sensed by the peripheral chemoreceptors (carotid bodies). These chemoreceptors stimulate the respiratory center in the brainstem to increase the rate and depth of breathing (hyperventilation). This is a compensatory mechanism to increase oxygen intake. However, this hyperventilation also causes an excessive "blowing off" of carbon dioxide (CO 2). Since CO 2 is a volatile acid in the blood (forming carbonic acid), its excessive loss leads to a decrease in arterial PCO 2 . A primary decrease in PCO 2 raises the blood pH, resulting in respiratory alkalosis (D). This is the primary, acute acid-base disturbance seen at high altitude.

Question 10. IGF-1 and IGF-2 are structurally most similar to which molecule?

A. Insulin

B. Preproinsulin

C. Proinsulin

D. C-peptide

Correct answer: A

Insulin Insulin-like growth factors IGF-1 and IGF-2 are structurally most similar to insulin. They are single-chain polypeptides with significant amino acid sequence homology to proinsulin, but in their active circulating form, they closely resemble insulin in overall three-dimensional structure. Both IGFs contain A and B domains analogous to insulin’s A and B chains, along with additional C and D domains. Although they are synthesized as larger precursor molecules, their functional structure shows strong similarity to insulin, including conserved disulfide bonds that stabilize the molecule. Functionally, IGFs also share similarities with insulin. While insulin primarily regulates glucose metabolism, IGF-1 and IGF-2 mainly promote growth, cell proliferation, and differentiation. However, because of their structural resemblance, IGFs can weakly bind to insulin receptors at high concentrations. They are not most similar to preproinsulin, proinsulin, or C-peptide. Preproinsulin and proinsulin are precursor forms in insulin synthesis, and C-peptide is simply a connecting peptide removed during insulin maturation. Therefore, the best answer is Insulin.

Question 11. During which situation does the surface tension of the fluid lining the alveoli increase?

A. Expiration

B. Inspiration

C. Standing

D. Supine

Correct answer: B

Inspiration The fluid lining the alveoli is coated with pulmonary surfactant, a substance that reduces surface tension. This reduction is not static; it changes with the breathing cycle. During expiration (A), the alveoli decrease in size. This compresses the surfactant molecules on the surface, increasing their concentration and dramatically decreasing surface tension, which prevents the alveoli from collapsing. During inspiration (B), the alveoli expand, and their surface area increases. This spreads the surfactant molecules farther apart, decreasing their concentration at the air-liquid interface. With this "dilution" of surfactant, its tension-reducing effect is lessened, and the surface tension of the fluid lining increases (or, more accurately, returns towards its higher baseline). Posture (C, D) affects ventilation-perfusion matching but not the direct physics of alveolar surface tension in this manner.

Question 12. Which of the following are features of Bezold Jarisch reflex? 1. Hypopnea 2. Tachycardia 3. Bradycardia 4. Hypotension

A. 1,2,3

B. 1,3,4

C. 1,3

D. All of the above

Correct answer: B

All of the above The Bezold-Jarisch reflex is a cardio-inhibitory reflex, meaning it slows down and unloads the heart. It is a protective reflex originating from chemoreceptors and mechanoreceptors in the ventricular walls, often triggered by noxious stimuli, certain drugs, or situations like an "empty" ventricle in severe hypovolemia. The reflex arc involves vagal afferents and efferents. The classic triad of responses is: 1. Hypotension (4), caused by peripheral vasodilation (inhibition of sympathetic tone). 2. Bradycardia (3), caused by a surge in parasympathetic (vagal) output to the heart. 3. Apnea or Hypopnea (1) (a decrease in respiratory rate or depth). Tachycardia (2) (a fast heart rate) is the opposite of this reflex. Therefore, the correct features are 1, 3, and 4. This corresponds to option (B).

Question 13. In a normal awake person resting with eyes closed, which EEG waves diminish when the eyes are opened?

A. Beta waves

B. Theta waves

C. Alpha waves

D. Delta waves

Correct answer: C

Alpha waves Alpha waves (C) (8-13 Hz) are the dominant EEG rhythm in a normal adult who is awake and at rest with their eyes closed. This state is often called "eyes-closed-relaxed." These waves are most prominent in the occipital (visual) cortex. The most characteristic feature of this alpha rhythm is its immediate attenuation (reduction or blocking) as soon as the person opens

their eyes or engages in a mental task. This "alpha block" signifies the brain shifting from a relaxed, idling state to an active, processing state, which is characterized by higher-frequency, lower-amplitude Beta waves (A). Theta waves (B) and Delta waves (D) are associated with drowsiness and deep sleep, respectively.

Question 14. Given a latent period of 10 ms, a contraction period of 40 ms, and a relaxation period of 40 ms, how would you calculate the tetanizing frequency?

A. 20 Hz

B. 30 Hz

C. 40 Hz

D. 25 Hz

Correct answer: D

25 Hz Tetanizing frequency is the minimum stimulation frequency required to cause individual muscle twitches to fuse into a smooth, sustained contraction (tetanus). This fusion occurs when a new stimulus arrives before the muscle has finished relaxing from the previous one. To achieve complete, fused tetanus, the next stimulus must arrive before the relaxation phase can even begin. This means the time interval (T) between stimuli must be equal to or less than the contraction period. Given Contraction Period (T) = 40 ms To convert milliseconds (ms) to seconds (s): T = 40 / 1000 = 0.04 seconds Frequency (f) is the inverse of the time period (f = 1 / T). f = 1 / 0.04 s = 25 Hz Therefore, a stimulation frequency of 25 Hz (or higher) will send a new impulse every 40 ms, initiating a new contraction just as the previous one peaks, leading to fused tetanus. The latent period and relaxation period are not needed for this specific calculation.

Question 15. Which of the following is an example of feed forward mechanism?

A. HR increases from supine to standing

B. Vasoconstriction in response to cooling

C. Increase in cardiac output in response to anemia

D. Temperature regulation

Correct answer: A

HR increases from supine to standing A feed-forward mechanism is an anticipatory control system. It initiates a response before a change (or "error") in the system is actually detected, in anticipation of that change. (A) HR increases from supine to standing: This is the best example. As a person initiates the action of standing, the central nervous system sends signals (central command) that increase heart rate (HR) before the blood pressure has a chance to drop from the effects of gravity. This anticipatory rise helps prevent orthostatic hypotension. (B) Vasoconstriction in response to cooling: This is a classic negative feedback loop. The stimulus (cold) is detected, and the body responds (vasoconstriction) to correct the error (heat loss). (C) Increase in cardiac output in response to anemia: This is a negative feedback compensation.

The body detects the error (low oxygen delivery) and responds (increasing cardiac output) to compensate. (D) Temperature regulation: This is a prime example of a system controlled by negative feedback.

Question 16. A patient comes to the OPD with fever. Which area is most likely affected?

A. Insular cortex

B. Pre-optic nucleus

C. Periventricular hypothalamus

D. Dorsomedial hypothalamus

Correct answer: B

Pre-optic nucleus Fever is a regulated rise in the body's thermoregulatory set-point, which is controlled by the hypothalamus. The specific "thermostat" of the body is located in the Pre-optic nucleus (also called the pre-optic area) of the anterior hypothalamus (B). During an infection, inflammatory cytokines (pyrogens) stimulate the production of Prostaglandin E2 (PGE2) in this region. PGE2 then acts on neurons within the pre-optic nucleus to "raise" the set-point. The rest of the body then perceives the normal temperature as being "too cold" relative to this new, higher set-point. This triggers heat-generating mechanisms (e.g., shivering, peripheral vasoconstriction) that cause the body temperature to rise until it matches the new febrile set-point.

Question 17. Which of the following is not a mechanism by which ADH acts?

A. Increases water permeability in collecting ducts

B. Increases absorption of urea in medullary collecting duct

C. Increases absorption of NaCl in thin ascending limb

D. Increases absorption of urea in descending limb of loop of Henle

Correct answer: C

Increases absorption of NaCl in thin ascending limb Antidiuretic hormone (ADH), also called vasopressin, primarily acts on the late distal tubule and collecting duct of the nephron. Its main function is to conserve water and concentrate urine. ADH increases water permeability in the collecting ducts (Option A) by inserting aquaporin-2 channels into the apical membrane of principal cells via V2 receptor activation and cAMP signaling. This allows more water to be reabsorbed into the bloodstream. ADH also increases urea permeability in the inner medullary collecting duct (Option B). This enhances urea recycling into the medullary interstitium, helping maintain the hyperosmotic medullary gradient necessary for water reabsorption. However, ADH does not increase NaCl absorption in the thin ascending limb (Option C). The thin ascending limb has limited active transport capacity and is relatively impermeable to water; ADH does not significantly act here. Sodium reabsorption in the ascending limb is primarily a function of the thick ascending limb via the NKCC2 cotransporter. Option (D) is incorrect physiologically, but

the best answer among the given choices is (C).

Question 18. Tight junctions are mainly found in which region of the cell?

A. Apical

B. Apicolateral

C. Basolateral

D. Basal

Correct answer: A

Apical Tight junctions (zonula occludens) are located at the apical region of epithelial cells. They form the most apical part of the junctional complex and encircle the cell like a belt. Because they are positioned at the top of the lateral membrane, just beneath the apical surface, they are commonly described in exams as being present in the apical region. Their main function is to seal adjacent epithelial cells together, preventing paracellular movement of substances. This helps maintain selective permeability and preserves cell polarity by separating the apical and basolateral membrane domains. Structurally, tight junctions are composed of proteins such as claudins and occludin, which create a barrier to diffusion between cells. Since they are the uppermost component of the junctional complex, the best exam-oriented answer is Apical. BIOCHEMISTRY

Question 19. Two specimens from two different patients are received. Which technique can be used to confirm that they come from different individuals (in the context of Mycobacterium tuberculosis)?

A. RFLP

B. Mutation analysis

C. Pyrosequencing

D. RAPD

Correct answer: A

RFLP The question asks for a technique to determine if two Mycobacterium tuberculosis (M.tb) isolates are from different individuals, which is the fundamental task of molecular epidemiology—tracking an outbreak. This requires a "fingerprinting" method to compare the strains. Restriction Fragment Length Polymorphism (RFLP) (A) is the classic, gold-standard method for M.tb genotyping. It uses restriction enzymes to cut the bacterial DNA, and the resulting fragments are separated by size. The pattern, often based on the IS6110 insertion sequence, creates a unique "fingerprint." If the RFLP patterns from the two patients are different, it confirms they are infected with different strains and are not part of the same immediate transmission chain. Mutation analysis (B) and Pyrosequencing (C) are techniques used to look for specific, known mutations (e.g., for drug resistance), not to generate a comprehensive genomic fingerprint. RAPD (D) is another, older fingerprinting method, but RFLP is the traditional standard for M.tb.

Question 20. Match the following blotting techniques with the type of biomolecule they detect: Blotting Technique Detects A. Southern blot 1. RNA B. Northern blot 2. Lipids C. Western blot 3. DNA D. Eastern blot 4. Protein

A. A-3, B-1, C-4, D-2

B. A-1, B-3, C-2, D-4

C. A-4, B-2, C-1, D-3

D. A-2, B-4, C-3, D-1

Correct answer: A

A-3, B-1, C-4, D-2 This is a foundational concept in molecular biology, with the names being a famous mnemonic. A. Southern blot: Named after its inventor, Edwin Southern, this technique is used to detect specific sequences of DNA (3). B. Northern blot: Named by analogy (as a "geographic" opposite), this technique is used to detect specific sequences of RNA (1), and is often used to quantify gene expression. C. Western blot: Following the naming convention, this technique uses antibodies to detect specific Proteins (4). D. Eastern blot: This is a less common term that can refer to the detection of post-translational modifications or, as in this context, other biomolecules like Lipids (2). The correct matches are: A - 3 B - 1 C - 4 D - 2 This combination corresponds to option (A).

Question 21. A 90-kg obese man is consuming a carbohydrate- rich diet. Which enzyme or intermediate is likely to be increased in his body? 1. Malonyl CoA 2. Acetyl CoA Carboxylase 3. PDH 4. Citrate Lyase

A. 1,2,3

B. 2,3,4

C. 1,3,4

D. 1,2,3,4

Correct answer: D

1,2,3,4 This scenario describes a high-energy, high-carbohydrate state, which strongly promotes de novo lipogenesis (fat synthesis). All four listed components are key players in this pathway. 1. A carbohydrate-rich diet leads to high glucose, high insulin, and high glycolysis, producing pyruvate. Pyruvate enters the mitochondria and is converted to acetyl-CoA by Pyruvate Dehydrogenase (PDH) (3), which is activated (dephosphorylated) by insulin. 2. This acetyl-CoA combines with oxaloacetate to form citrate. When energy needs are met, excess citrate is shuttled from the mitochondria to the cytoplasm. 3. In the cytoplasm, Citrate Lyase (4) cleaves citrate back into acetyl-CoA and oxaloacetate. This is the source of cytoplasmic acetyl-CoA for fatty acid synthesis. 4. The rate-limiting, committed step of lipogenesis is catalyzed by Acetyl-CoA Carboxylase (ACC) (2), which carboxylates acetyl-CoA to form Malonyl-CoA (1). ACC is allosterically activated by citrate and also activated by insulin-mediated dephosphorylation. Therefore, in this fed state, the entire pathway is active, and all four

enzymes and intermediates will be elevated.

Question 22. Which of the following does not inhibit cytochrome c oxidase in the electron transport chain?

A. Carbon monoxide (CO)

B. Nitric oxide (NO)

C. Cyanide (CN)

D. Hydrogen sulfide (H 2 S)

Correct answer: B

Nitric oxide (NO) Cytochrome C oxidase (Complex IV) is the final enzyme in the electron transport chain, transferring electrons to molecular oxygen. It contains heme iron and copper centers that are targets for several classic poisons. Cyanide (CN) (C) and Hydrogen Sulfide (H 2 S) (D) are potent inhibitors that bind to the ferric (Fe 3+) state of the heme a3 iron, preventing electron transfer and halting aerobic respiration. Carbon Monoxide (CO) (A) also inhibits Complex IV, but it binds to the ferrous (Fe 2+) state of the heme iron, competing with oxygen for the same binding site. This is the same mechanism by which it binds to hemoglobin. In contrast, Nitric Oxide (NO) (B) is primarily a physiological regulator of Complex IV, not a classic toxic blocker. While very high, non-physiological concentrations of NO can inhibit the enzyme, its normal role is as a reversible, signaling molecule that modulates respiration rates based on cellular needs. Therefore, in the context of classic ETC "blockers" or poisons, NO is the exception.

Question 23. Which of these tissues is unable to take up glucose in states of insulin resistance, absence of insulin, or diabetes mellitus?

A. Skeletal muscle

B. Red blood cells

C. Brain

D. Kidney

Correct answer: A

Skeletal muscle Glucose uptake into cells is mediated by glucose transporters (GLUTs). The most important distinction is between insulin-dependent and insulin-independent transporters. Skeletal muscle (A) and adipose tissue are the primary users of the GLUT4 transporter. GLUT4 is an insulin-dependent transporter, meaning it is stored in intracellular vesicles and only translocates to the cell membrane to facilitate glucose uptake in response to insulin signaling. Therefore, in a state of insulin absence (like Type 1 Diabetes) or insulin resistance (like Type 2 Diabetes), glucose uptake into skeletal muscle is severely impaired. In contrast, the Brain (C) uses GLUT1 (at the blood-brain barrier) and GLUT3 (on neurons), both of which are insulin-independent to ensure a constant, vital supply of glucose. Red blood cells (B) exclusively use insulin-independent GLUT1. The Kidney (D) uses insulin-independent GLUT1 and GLUT2 (as

well as SGLT) for glucose reabsorption from the filtrate. PATHOLOGY

Question 24. Least common finding in diabetic kidney is

A. Podocyte loss

B. Armani Ebstein

C. Mesangial widening

D. GBM thickening

Correct answer: B

Armani Ebstein Diabetic nephropathy is characterized by several progressive structural changes. GBM (Glomerular Basement Membrane) thickening (D) is one of the earliest and most consistent findings. Mesangial widening (C), due to the accumulation of extracellular matrix, is also a very early and common feature, which eventually progresses to the classic nodular glomerulosclerosis (Kimmelstiel-Wilson lesions). Podocyte loss (A) and effacement of their foot processes are now understood to be critical and common events that directly contribute to the development of albuminuria. The Armani-Ebstein lesion (B) refers to the presence of glycogen-filled vacuoles within the epithelial cells of the renal proximal convoluted tubules (pars recta). While this finding is virtually pathognomonic for diabetes mellitus, it is a rare finding in modern practice. It was historically seen in patients with extremely poor glycemic control and massive glycosuria, often in the setting of diabetic ketoacidosis, before effective insulin therapy was widely available. Therefore, among the choices, the Armani-Ebstein lesion is the least common finding in a modern context.

Question 25. Alleles of gene pool belong to

A. Individual

B. Family

C. Population

D. Cell

Correct answer: C

Population The term "gene pool" is a core concept in population genetics. It is defined as the complete set of all genes and their different alleles (genetic variations) that are present within a specific population (C). A population is a group of individuals of the same species that live in the same area and are capable of interbreeding. The gene pool represents the entire genetic diversity available to that population, which serves as the raw material for natural selection and evolution. An individual (A) carries only a small subset of the total gene pool (a maximum of two alleles for any given gene). A family (B) represents a closely related subset of the gene pool, but not its entirety. A single cell (D) contains the genetic information of only one individual. Thus, the concept of a "gene pool" is only meaningful at the level of a population.

Question 26. In which type of thyroid carcinoma are multiple lytic skull lesions

typically seen?

A. Papillary carcinoma thyroid

B. Follicular carcinoma

C. Hurthle cell carcinoma

D. Thyroid lymphoma

Correct answer: B

Follicular carcinoma The metastatic patterns of thyroid cancers differ significantly. Follicular carcinoma (B) is classically known for its tendency to spread via hematogenous (bloodstream) dissemination, in contrast to papillary carcinoma, which spreads via lymphatics. Common sites for distant metastases from follicular carcinoma are the bone and lungs. Bone metastases are often osteolytic (bone-destroying) and can present as multiple lytic lesions on imaging. The skull, ribs, and vertebrae are common sites. Therefore, multiple lytic lesions in the skull are a classic presentation of metastatic follicular thyroid carcinoma. Papillary carcinoma (A) is the most common type and primarily spreads to cervical lymph nodes. Hurthle cell carcinoma (C), a variant of follicular carcinoma, also has a high propensity for vascular invasion and distant bone metastases, but follicular carcinoma is the classic answer. Thyroid lymphoma (D) is a hematological malignancy and does not typically present with lytic bone lesions as its primary feature.

Question 27. You would test for BRCA1 (and usually BRCA2) mutations, with BRCA1 being the primary gene associated with a strong family history of both breast and ovarian cancers.

A. BRCA1/2

B. P53

C. PTEN

D. CDH1

Correct answer: A

BRCA1/2 A strong family history of both breast and ovarian cancer is the classic hallmark of Hereditary Breast and Ovarian Cancer (HBOC) syndrome. This syndrome is most commonly caused by an inherited germline mutation in the BRCA1 or BRCA2 tumor suppressor genes (A). Mutations in these genes confer a significantly increased lifetime risk for developing breast cancer (often early-onset, triple-negative, or bilateral) and epithelial ovarian cancer, as well as other cancers like pancreatic and prostate cancer (especially BRCA2). While the other genes are also tumor suppressors, they are associated with different syndromes. P53 (B) mutations cause Li-Fraumeni syndrome, which involves a wide array of cancers (sarcomas, breast cancer, brain tumors, adrenocortical carcinoma). PTEN (C) mutations cause Cowden syndrome, linked to breast, thyroid, and endometrial cancers. CDH1 (D) mutations cause hereditary diffuse gastric cancer and lobular breast cancer. For the specific combination of breast and ovarian cancer,

BRCA1/2 testing is the most appropriate first step.

Question 28. BRCA testing is done by

A. RT-PCR

B. Whole exome sequencing

C. qPCR

D. Southern blot

Correct answer: B

Whole exome sequencing Testing for hereditary cancer syndromes like those caused by BRCA1/2 mutations involves identifying any of a vast number of possible pathogenic variants (mutations) that can occur anywhere along the entire coding sequence of these large genes. The most comprehensive and standard modern method for this is Next-Generation Sequencing (NGS). Whole Exome Sequencing (WES) (B) is a broad NGS technique that sequences all coding regions (exons) of the genome, which would include the BRCA genes. In clinical practice, a more "targeted" NGS panel that focuses on BRCA1/2 and other relevant cancer-susceptibility genes is often used. RT-PCR (A) and qPCR (C) are methods used to detect and quantify RNA (gene expression), not to identify unknown DNA mutations. Southern blot (D) is an older technique used to detect large-scale DNA rearrangements or deletions. While large deletions can occur in BRCA, they are typically tested for using MLPA (Multiplex Ligation-dependent Probe Amplification), and the primary method for finding the more common point mutations and small insertions/deletions is sequencing.

Question 29. Identify the incorrect association

A. BRCA2 Prostate

B. PTEN-Thyroid

C. STK11-Breast

D. TP53 Mucosal neuroma

Correct answer: D

TP53 Mucosal neuroma This question assesses knowledge of hereditary cancer syndromes. The incorrect association is TP53 - Mucosal neuroma. Mucosal neuromas are a pathognomonic feature of Multiple Endocrine Neoplasia type 2B (MEN 2B), which is caused by a germline mutation in the RET proto-oncogene, not TP53. TP53 mutations cause Li-Fraumeni syndrome, associated with sarcomas, breast cancer, brain tumors, and adrenocortical carcinoma. The other associations are correct: 1. BRCA2 (A) mutations, known for breast/ovarian cancer, also significantly increase the risk of prostate cancer (often aggressive) and pancreatic cancer. 2. PTEN (B) mutations cause Cowden syndrome, which has a high risk of thyroid cancer (follicular type), breast cancer, and endometrial cancer. 3. STK11 (C) mutations cause Peutz-Jeghers syndrome, which, in addition to hamartomatous polyps, increases the risk for several cancers, including breast cancer.

Question 30. Caspase-1 mediated cell death with inflammation is known as

A. Pyroptosis

B. Necroptosis

C. Ferroptosis

D. Necrosis

Correct answer: A

Pyroptosis Pyroptosis (A) is a lytic, highly inflammatory form of programmed cell death. It is defined by its dependence on the activation of Caspase-1. Pyroptosis is typically triggered by intracellular pathogens or danger signals, which are sensed by cytosolic inflammasomes (e.g., NLRP3). The inflammasome complex then cleaves pro-Caspase-1 into its active form. Active Caspase-1 has two key functions: 1. It cleaves the pore-forming protein Gasdermin D, which inserts into the cell membrane and causes cell lysis (oncosis) and the release of intracellular contents. 2. It cleaves pro-inflammatory cytokines IL-1 β and IL-18 into their active, mature forms, which are then released from the lysing cell, driving a potent inflammatory response. Necroptosis (B) is also programmed and inflammatory but is caspase-independent (mediated by RIPK1/RIPK3/MLKL). Ferroptosis (C) is iron-dependent cell death via lipid peroxidation. Necrosis (D) is an un-programmed, pathological form of cell death.

Question 31. Most common inherited bleeding disorder is

A. Von Willebrand disease

B. Factor V deficiency

C. Hemophilia A

D. Hemophilia B

Correct answer: A

Von Willebrand disease Von Willebrand disease (vWD) (A) is the most common inherited bleeding disorder, with an estimated prevalence of up to 1% of the general population, although the number of clinically symptomatic individuals is lower. It is caused by a quantitative or qualitative defect in von Willebrand factor (vWF), a protein crucial for platelet adhesion (primary hemostasis) and for stabilizing Factor VIII in circulation. It typically presents with mucocutaneous bleeding (e.g., easy bruising, nosebleeds, menorrhagia). Hemophilia A (C), a deficiency of Factor VIII, is the second most common inherited coagulation disorder, but it is much rarer than vWD, affecting approximately 1 in 5,000-10,000 males. Hemophilia B (D), a Factor IX deficiency, is even less common. Factor V deficiency (B) is an extremely rare bleeding disorder. Therefore, vWD is by far the most prevalent inherited bleeding disorder.

Question 32. In which condition is erythropoietin considered beneficial for treatment?

A. Anemia in chronic kidney disease

B. Anemia in myelodysplastic syndrome

C. Nutritional anemia

D. Aplastic anemia

Correct answer: A

Anemia in chronic kidney disease Erythropoietin (EPO) is a hormone produced primarily by the peritubular interstitial cells of the kidney in response to tissue hypoxia. It stimulates the bone marrow to produce red blood cells (erythropoiesis). In Chronic Kidney Disease (CKD) (A), the progressive damage to the kidneys leads to a failure of these cells to produce adequate EPO. This results in the classic "anemia of chronic disease" or "anemia of CKD," which is a normocytic, normochromic anemia. This is a state of true EPO deficiency. Therefore, treatment with synthetic EPO (recombinant human erythropoietin or other erythropoiesis-stimulating agents, ESAs) is a cornerstone of management, as it directly replaces the missing hormone. In Nutritional anemia (C), the problem is a lack of substrates (e.g., iron, B12), and EPO levels are appropriately high. In Aplastic anemia (D), the bone marrow stem cells have failed; EPO levels are extremely high, but the marrow cannot respond. In MDS (B), the anemia is complex, and while some patients may respond to EPO, the most direct and classic indication is CKD.

Question 33. A 32-year-old woman presents with easy bruising and petechiae, a platelet count of 18,000/mm³, normal hemoglobin and leukocyte counts, and a recent mild upper respiratory infection. Her peripheral smear is normal. What is the most appropriate next step in management?

A. Oral corticosteroids

B. Platelet transfusion

C. Bone marrow biopsy

D. Splenectomy

Correct answer: A

Oral corticosteroids This patient has isolated thrombocytopenia (platelet count 18,000/mm³) with normal hemoglobin and leukocyte counts, a normal peripheral smear, and a recent viral infection. This presentation is classic for immune thrombocytopenic purpura (ITP), an autoimmune condition in which antibodies (usually IgG) target platelets, leading to their destruction in the spleen. In adults with symptomatic ITP or platelet count below 30,000/mm³, the first-line treatment is corticosteroids (such as oral prednisone or dexamethasone). Steroids reduce antibody production and decrease splenic clearance of platelets. Platelet transfusion is reserved for severe or life-threatening bleeding, as transfused platelets are rapidly destroyed. Bone marrow biopsy is not routinely required when the clinical picture clearly suggests ITP. Splenectomy is considered a second-line therapy for chronic or steroid-refractory cases. Therefore, the most appropriate next step is oral corticosteroids. MEDINK

Question 34. A deficiency of glucose-6-phosphatase is associated with which pattern of bilirubin levels?

A. Direct bilirubin increased, indirect bilirubin decreased, and urine urobilinogen/urobilin increased

B. Direct bilirubin normal, indirect bilirubin increased, and urobilinogen normal

C. Raised direct bilirubin, normal indirect bilirubin, and absent urine bilirubin

D. Indirect bilirubin increased, direct bilirubin normal, and raised urine urobilinogen

Correct answer: D

Indirect bilirubin increased, direct bilirubin normal, and raised urine urobilinogen Glucose-6-phosphate dehydrogenase (G6PD) deficiency is an inherited enzymatic defect that makes red blood cells highly susceptible to oxidative stress. G6PD normally generates NADPH through the pentose phosphate pathway, which helps maintain glutathione in its reduced form. Reduced glutathione protects red blood cells from oxidative damage. When G6PD is deficient, oxidative stress (from infections, certain drugs, or fava beans) leads to hemolysis. During hemolysis, hemoglobin is released and broken down into heme, which is converted into biliverdin and then into unconjugated (indirect) bilirubin. Because this bilirubin is produced in excess, its level in blood rises. The liver itself is structurally normal and capable of conjugation, so direct (conjugated) bilirubin remains normal. However, increased amounts of unconjugated bilirubin reach the liver and then the intestine after conjugation. In the intestine, bilirubin is converted into urobilinogen. Since more bilirubin is being processed due to hemolysis, more urobilinogen is formed and reabsorbed into the bloodstream, leading to increased urinary urobilinogen levels. Thus, G6PD deficiency produces indirect hyperbilirubinemia with normal direct bilirubin and raised urine urobilinogen, corresponding to option (D).

Question 35. Neutrophilic granulomatous mastitis is caused by which organism?

A. Corynebacterium kroppenstedtii

B. Corynebacterium minutissimum

C. Mycobacterium tuberculosis

D. Staphylococcus aureus

Correct answer: A

Corynebacterium kroppenstedtii Idiopathic Granulomatous Mastitis (IGM) is a rare, chronic inflammatory breast condition. While often labeled "idiopathic," a specific subgroup known as Cystic Neutrophilic Granulomatous Mastitis has been strongly and specifically associated with infection by the lipophilic, gram-positive rod Corynebacterium kroppenstedtii (A). This organism is fastidious and difficult to culture, which is why the association was only recently established. It is thought to colonize and infect the breast ducts, triggering a robust inflammatory response characterized by granulomas (collections of histiocytes) and a prominent neutrophilic infiltrate, often leading to abscesses and sinus tracts. Mycobacterium tuberculosis (C) causes tuberculous mastitis, which features classic caseating granulomas, but not typically a neutrophilic component. Staphylococcus aureus (D) causes acute suppurative mastitis or abscesses, which

are rich in neutrophils but do not form the organized granulomas of IGM. Corynebacterium minutissimum (B) is known for causing the superficial skin infection erythrasma.

Question 36. Which of the following malignancies is unrelated to obesity?

A. Stomach

B. Pancreas

C. Meningioma

D. Multiple myeloma

Correct answer: A

Stomach Obesity is a major modifiable risk factor for many cancers, acting through mechanisms like chronic inflammation, insulin resistance, and hormonal (adipokine/estrogen) dysregulation. There are well-established, strong links between obesity and Pancreatic cancer (B), Meningioma (C), and Multiple myeloma (D). The relationship with Stomach cancer (A) is more complex and site-specific. Obesity is a strong risk factor for cancer of the gastric cardia (the upper part of the stomach), which is thought to be mediated by the increased prevalence of gastroesophageal reflux disease (GERD) in obese individuals. However, obesity is not strongly associated, and may even be inversely related, to cancers of the non-cardia stomach (the main body and antrum), which are more commonly linked to H. pylori infection. Because the association is not straightforward and is location-dependent (unlike the clear links for B, C, and D), "Stomach" is the most likely correct answer for a malignancy that is not uniformly related to obesity.

Question 37. Histopathological features of granulosa cell tumor include all except:

A. Call-Exner bodies

B. Inhibin A

C. CA-125 positivity

D. Coffee bean nuclei

Correct answer: C

CA-125 positivity Granulosa cell tumor (GCT) is the most common malignant sex cord-stromal tumor of the ovary. It has a set of classic histopathological and immunohistochemical features. 1. Call-Exner bodies (A) are a pathognomonic finding, representing small, rosette-like structures where granulosa cells arrange around a central eosinophilic, PAS-positive space. 2. Coffee bean nuclei (D) is the descriptive term for the tumor cell nuclei, which are ovoid and have a prominent longitudinal groove. 3. Inhibin A (B) is an immunohistochemical stain. As GCTs are derived from granulosa cells, they produce inhibin, and the tumor cells show strong, diffuse positivity for inhibin, making it a key diagnostic marker. CA-125 (C) is a tumor marker, both in serum and on immunohistochemistry, that is characteristic of epithelial ovarian cancers (e.g., serous carcinoma). While serum CA-125 can sometimes be elevated in GCT, it is not a specific or characteristic histopathological feature of the tumor cells themselves and is not used for primary diagnosis.

Question 38. Which stain is not used to identify organisms in a renal transplant biopsy?

A. Gomori methenamine silver

B. PAS (Periodic acid-Schiff) stain

C. Masson Fontana

D. Congo red

Correct answer: D

Congo red In a renal transplant (immunocompromised) patient, a biopsy is often stained to rule out opportunistic infections. Gomori Methenamine Silver (GMS) (A) is the classic stain for fungi, highlighting fungal walls in black. It is used to identify Pneumocystis, Candida, or Aspergillus. PAS (Periodic Acid-Schiff) (B), while a standard stain for basement membranes, also stains fungal walls (magenta) and can help identify them. Masson Fontana (C) is a stain for melanin. It is used in microbiology to identify the capsule of Cryptococcus neoformans, which contains melanin-like pigments. In contrast, Congo red (D) is a special stain used to identify amyloid deposits. Amyloid stains orange-red with Congo red, and under polarized light, it exhibits a pathognomonic "apple-green" birefringence. This stain is used to diagnose amyloidosis, a protein deposition disease, and is not used to identify infectious organisms.

Question 39. Why does not every Helicobacter pylori infection lead to ulcers?

A. Disease associated with host factors and environmental influences

B. Increased risk of peptic ulcer disease when H. pylori is present with NSAIDs

C. H. pylori infects the antrum even in asymptomatic individuals

D. Majority of H. pylori infections are asymptomatic

Correct answer: D

Majority of H. pylori infections are asymptomatic Helicobacter pylori is a spiral-shaped, gram-negative bacterium that colonizes the gastric mucosa, particularly the antrum. Although it is a major cause of peptic ulcer disease and is associated with gastritis, gastric carcinoma, and MALT lymphoma, most infected individuals never develop clinically significant disease. The reason not every infection leads to ulcers is that the majority of infections remain asymptomatic. Many people harbor the organism for years without developing mucosal damage severe enough to produce ulceration. Ulcer formation depends on multiple interacting factors such as bacterial virulence (e.g., CagA, VacA strains), host immune response, gastric acid secretion levels, genetic susceptibility, and environmental influences like smoking or NSAID use. In many individuals, the infection causes only mild chronic gastritis without disrupting the protective mucosal barrier to the extent required for ulcer formation. Therefore, while H. pylori infection is common worldwide, only a small proportion of infected individuals develop peptic ulcers. Hence, most H. pylori infections do not lead to ulcers because they are asymptomatic and non-ulcerative in the majority of cases.

Question 40. In which of the following situations does transplant rejection not occur?

A. Bare lymphocyte syndrome

B. Chronic granulomatous disease

C. Severe Combined Immunodeficiency (SCID)

D. DiGeorge syndrome

Correct answer: C

Severe Combined Immunodeficiency (SCID)Transplant rejection is an immune response mediated by the recipient's T-lymphocytes and B-lymphocytes, which recognize the donor graft as foreign. This requires a functional adaptive immune system. Severe Combined Immunodeficiency (SCID) (C) is a group of genetic disorders characterized by a profound failure of both T-cell and B-cell development and function. Patients with "classic" SCID have no adaptive immune system and are therefore incapable of mounting an immune response. They cannot recognize or attack a foreign graft, so transplant rejection does not occur. (Instead, they are at high risk of Graft-versus-Host Disease from any T-cells within the transplant). Bare lymphocyte syndrome (A) is a type of SCID, so it is also correct, but SCID is the broader and more definitive answer. DiGeorge syndrome (D) involves T-cell deficiency but is often partial, so rejection is still possible. Chronic granulomatous disease (B) is a defect in phagocyte (innate) immunity, but T-cell (adaptive) immunity is intact and fully capable of rejection.

Question 41. What explains increased oxygen consumption by cancer cells?

A. Cancer cells need increased lactate production Click Here to Buy book on Amazon page 11 INICET Examination Paper

B. Cancer cells have increased mitochondrial function

C. Cancer cells rely on anaerobic glycolysis even in presence of oxygen (Warburg effect)

D. Cancer cells undergo increased oxidative phosphorylation

Correct answer: C

Cancer cells rely on anaerobic glycolysis even in presence of oxygen (Warburg effect) The phenomenon known as the Warburg effect, described by Otto Warburg, explains the altered metabolism of cancer cells. Normally, in the presence of oxygen, healthy cells generate energy primarily through oxidative phosphorylation in mitochondria, which is efficient and produces large amounts of ATP. However, cancer cells preferentially use glycolysis to generate energy, even when adequate oxygen is available. This process is termed “aerobic glycolysis.” Although glycolysis produces far less ATP per glucose molecule compared to oxidative phosphorylation, cancer cells compensate by markedly increasing glucose uptake and glycolytic rate. The metabolic intermediates produced during glycolysis are diverted into biosynthetic pathways that support rapid cell proliferation, such as nucleotide, lipid, and amino acid synthesis. Thus, the key explanation is not increased mitochondrial activity or oxidative phosphorylation, but rather the paradoxical reliance on glycolysis despite oxygen availability. This metabolic

reprogramming supports tumor growth and is the basis for FDG-PET imaging in oncology.

Question 42. What technique is illustrated in the graph that depicts antigen-antibody interaction and the kinetics of the immune response?

A. Competitive ELISA for antibody affinity

B. Competitive ELISA for antibody concentration

C. Surface plasmon resonance for affinity

D. Surface plasmon resonance for concentration

Correct answer: C

Surface plasmon resonance for affinity Although no graph is shown, the question's text provides the key clues. The technique must be one that demonstrates "response kinetics" for an "antibody-antigen interaction." This implies a real-time measurement of the binding process. ELISA (A, B) is an endpoint assay; it measures the total amount of binding that has occurred after a set time and washing steps, but it does not show the "kinetics" (the rate of binding and unbinding). Surface Plasmon Resonance (SPR) (C, D) is the gold-standard technique for measuring real-time biomolecular interactions. In SPR, one molecule (e.g., antigen) is fixed to a sensor chip, and the other (e.g., antibody) is flowed over it. The binding and dissociation events are monitored in real-time, producing a "response" curve. From this kinetic data, one can calculate the association rate (kon) and dissociation rate (koff), which are then used to determine the affinity (K_D) of the interaction. Therefore, SPR is the technique used to measure interaction kinetics for determining affinity.

Question 43. In which disease is an HLA-mismatched transplant not considered problematic?

A. Bare lymphocyte syndrome

B. Wiskott-Aldrich syndrome

C. Job's syndrome

D. Chediak-Higashi syndrome

Correct answer: A

Bare lymphocyte syndrome An HLA-mismatched transplant normally fails due to Graft Rejection (recipient T-cells attack the graft) or Graft-versus-Host Disease (GVHD) (donor T-cells attack the recipient). This question asks in which condition this "problem" doesn't occur. Bare Lymphocyte Syndrome (BLS) (A) is a form of Severe Combined Immunodeficiency (SCID). In BLS Type II (the most common form), there is a genetic defect that prevents the expression of MHC Class II molecules. Without MHC II, the patient's antigen-presenting cells cannot activate CD4+ "helper" T-cells. This results in a profound T-cell immunodeficiency, meaning the patient cannot mount an immune response to reject the graft. Furthermore, because the recipient's own tissues also lack MHC II, the donor T-cells in the graft have a reduced ability to recognize the host, significantly mitigating the risk of GVHD. This unique situation makes BLS one of the few

conditions where an HLA-mismatched transplant can be successful. The other conditions (B, C, D) are all immunodeficiencies, but T-cell function is sufficiently intact to cause either rejection or severe GVHD.

Question 44. What is the role of Pro calcitonin in pneumonia?

A. Guiding initiation of antibiotic

B. Early antibiotic discontinuation

C. Requirement of further investigation

D. No role

Correct answer: B

Early antibiotic discontinuation Procalcitonin (PCT) is a biomarker that is highly specific for systemic bacterial infections. Its levels rise significantly in response to bacterial endotoxins but typically remain low in viral infections or non-infectious inflammatory states. This makes it very useful in managing respiratory infections like pneumonia. While a very low PCT level can guide initiation (A) (by suggesting a viral cause where antibiotics may be withheld), its most robust, evidence-based, and widely adopted role is in guiding antibiotic discontinuation (B). In a patient being treated for bacterial pneumonia, PCT levels will fall as the infection is controlled. Serial monitoring of PCT allows clinicians to identify when the infection has resolved, even if the patient has other reasons for inflammation (e.g., post-operative state). Following a PCT-guided algorithm (e.g., stopping antibiotics when PCT drops by >80% from its peak) has been shown to safely reduce the total duration of antibiotic therapy, which helps minimize side effects and antibiotic resistance. PHARMACOLOGY

Question 45. Which of the following statements regarding thalidomide is incorrect?

A. Used as an antimetabolite immunosuppressant

B. Used in treatment of multiple myeloma

C. Used in management of erythema nodosum leprosum

D. It is teratogenic

Correct answer: A

Used as an antimetabolite immunosuppressant The incorrect statement is (A). Thalidomide is a powerful immunomodulatory and anti-angiogenic drug. Its mechanism involves binding to the cereblon (CRBN) protein, which alters a "molecular glue" E3 ubiquitin ligase complex, leading to the degradation of specific transcription factors (Ikaros and Aiolos). It is not classified as an antimetabolite. Antimetabolites (e.g., methotrexate, 5-fluorouracil, azathioprine) are drugs that structurally resemble and interfere with key cellular metabolites, thereby blocking the synthesis of DNA, RNA, or proteins. All the other statements are correct: 1. It is teratogenic (D) is its most infamous property, discovered after it caused severe phocomelia (limb defects) in the 1950s. 2. Used in management of erythema nodosum leprosum (ENL) (C) is a classic indication; it is highly effective for this inflammatory complication of leprosy. 3. Used in treatment of multiple

myeloma (B), along with its derivatives lenalidomide and pomalidomide, is a cornerstone of modern therapy for this plasma cell malignancy.

Question 46. What is the recommended treatment for complicated gonorrhea caused by penicillin- resistant Neisseria gonorrhoeae?

A. Ceftriaxone

B. Amoxicillin

C. Tetracycline

D. Vancomycin

Correct answer: A

Ceftriaxone Neisseria gonorrhoeae has a remarkable ability to develop antibiotic resistance. It is now resistant to many older therapies, including penicillins (like Amoxicillin (B)) and Tetracyclines (C). The current standard of care and recommended treatment, especially for penicillin-resistant strains and for complicated gonorrhoea (e.g., pelvic inflammatory disease, disseminated gonococcal infection), is a third-generation cephalosporin. Ceftriaxone (A), given intramuscularly or intravenously, is highly effective and has been the mainstay of treatment for decades. Current guidelines (e.g., CDC) recommend a single 500 mg IM dose of ceftriaxone for uncomplicated infections, with higher doses or multi-day IV therapy for complicated cases. Vancomycin (D) is a glycopeptide used for resistant Gram-positive organisms (like MRSA) and has no role in treating N. gonorrhoeae, which is a Gram-negative diplococcus.

Question 47. All of the following is/are adverse effects of topical corticosteroids except?

A. Blue-grey discoloration of skin

B. Acne

C. Hypertrichosis

D. Atrophy

Correct answer: A

Blue-grey discoloration of skin Topical corticosteroids are widely used for their anti-inflammatory and immunosuppressive effects, but they carry a risk of significant local adverse effects, especially with prolonged use or high potency. Atrophy (D) of the epidermis is the most common and characteristic adverse effect, leading to thin, fragile skin with striae. Other common side effects include the development of acne (B) (steroid-induced acne or rosacea) and hypertrichosis (C), which is the growth of fine hair in the treated area. The skin's barrier function is also compromised, increasing the risk of cutaneous infections. In contrast, blue-grey discoloration of the skin (A) is not a feature of topical steroid use. This type of pigmentation is classically associated with drugs like amiodarone, minocycline, or heavy metals such as silver (argyria). Therefore, blue-grey discoloration is the exception among the listed side effects of topical corticosteroids.

Question 48. Which of the following is not true regarding bempedoic acid?

A. It is a dicarboxylic acid

B. It non-competitively inhibits ATP citrate lyase

C. It is used when statins and diet cannot control dyslipidemia

D. It inhibits de-novo synthesis of liver cholesterol

Correct answer: B

It non-competitively inhibits ATP citrate lyase Bempedoic acid is a newer, non-statin agent used for lowering LDL cholesterol. It is a prodrug that is activated in the liver. Its mechanism (D) is to inhibit de novo cholesterol synthesis at a step upstream of statins. It blocks ATP citrate lyase (ACL), the enzyme that converts citrate to acetyl-CoA in the cytoplasm, thereby reducing the acetyl-CoA pool available for cholesterol and fatty acid synthesis. This inhibition is competitive with its substrate, citrate, not non-competitive (B). Statement (C) is its correct clinical indication: it is used as an adjunct to diet and maximally tolerated statin therapy for patients who need further LDL-C reduction. While it is technically a prodrug, its active form, bempedoyl-CoA, works, and the parent molecule (A) is indeed a dicarboxylic acid. Therefore, the incorrect statement is (B) because the inhibition of ACL is competitive. MEDINK

Question 49. A patient is given imipramine along with diphenhydramine. What effect can be expected in this situation?

A. Diphenhydramine inhibits action of imipramine

B. Imipramine reduces diphenhydramine elimination

C. Both have anti-muscarinic actions

D. Both inhibit norepinephrine reuptake

Correct answer: C

Both have anti-muscarinic actions This question involves a drug-drug interaction, specifically a pharmacodynamic additive effect. 1. Imipramine is a Tricyclic Antidepressant (TCA). While its primary therapeutic effect is inhibiting the reuptake of norepinephrine and serotonin, it is also known for its "dirty" receptor profile, which includes potent blockade of muscarinic acetylcholine receptors. 2. Diphenhydramine is a first-generation antihistamine (H1 blocker). A primary property of first-generation antihistamines is their strong anti-muscarinic (anticholinergic) activity. When both drugs are administered together (C), their individual anti-muscarinic effects will add up, leading to a high risk of anticholinergic toxicity. This can manifest as dry mouth, blurred vision, urinary retention, constipation, tachycardia, and in severe cases, delirium ("mad as a hatter, blind as a bat..."). Imipramine does not primarily reduce diphenhydramine elimination (B), and diphenhydramine does not inhibit imipramine's action (A) or inhibit norepinephrine reuptake (D).

Question 50. Which of the following is a clinical cure for malaria?

A. Primaquine

B. Chloroquine

C. Artesunate

D. Sulfadoxine-pyrimethamine

Correct answer: D

Sulfadoxine-pyrimethamine A clinical cure in malaria means elimination of the asexual erythrocytic (blood) stages of the parasite, thereby resolving symptoms such as fever and anemia. It does not necessarily eliminate dormant liver forms (hypnozoites), so relapse may still occur in Plasmodium vivax or Plasmodium ovale infections. Sulfadoxine-pyrimethamine is a combination antifolate therapy that acts synergistically by inhibiting folate synthesis in the malaria parasite. Sulfadoxine inhibits dihydropteroate synthase, while pyrimethamine inhibits dihydrofolate reductase. This dual blockade prevents DNA synthesis in the parasite’s blood stages, leading to clearance of parasitemia and resolution of clinical symptoms. In contrast: 1. Primaquine provides a radical cure by eliminating hepatic hypnozoites. 2. Chloroquine and Artesunate are also blood schizonticides but are not specifically referred to as clinical cure agents in this context. Therefore, sulfadoxine–pyrimethamine achieves a clinical cure by clearing the blood-stage parasites responsible for symptoms.

Question 51. Which statement about benzodiazepines and barbiturates is not true?

A. Both act on GABA-A

B. With alcohol it causes CNS depression

C. Flumazenil can be used for severe alcohol withdrawal symptoms

D. Both can be used as a sedative hypnotic

Correct answer: C

Flumazenil can be used for severe alcohol withdrawal symptoms This question assesses the pharmacology of GABA-A modulators. (A) Both benzodiazepines and barbiturates bind to distinct allosteric sites on the GABA-A receptor chloride channel, enhancing GABA's inhibitory effects. (B) Alcohol also enhances GABA-A transmission. When combined with either benzodiazepines or barbiturates, it results in a synergistic and potentially fatal CNS depression. (D) Both drug classes cause dose-dependent CNS depression, making them effective sedative-hypnotics. The incorrect statement is (C). Flumazenil is a specific benzodiazepine receptor antagonist. It is used to reverse the effects of a benzodiazepine overdose. It has no role in managing alcohol withdrawal. In fact, benzodiazepines (like diazepam or lorazepam) are the treatment for severe alcohol withdrawal symptoms (like delirium tremens). Using Flumazenil in this context would be contraindicated and could precipitate severe seizures.

Question 52. Which of the following anti-epileptics is not given during pregnancy?

A. Lamotrigine

B. Valproate

C. Levetiracetam

D. Carbamazepine

Correct answer: B

Valproate Valproate (Valproic Acid) (B) is the anti-epileptic drug that is most strongly contraindicated in pregnancy, especially during the first trimester. It is a known human teratogen with a high risk (up to 10%) of causing major congenital malformations, most notably neural tube defects (such as spina bifida). It is also associated with a "fetal valproate syndrome" and significant long-term neurodevelopmental problems, including reduced cognitive function (lower IQ) and an increased risk of autism spectrum disorders in the offspring. Because of these severe risks, its use in women of childbearing potential is highly restricted. In contrast, Lamotrigine (A) and Levetiracetam (C) are considered among the safest anti-epileptics in pregnancy and are often the first-line choices. Carbamazepine (D) also carries some teratogenic risk (e.g., neural tube defects, though less than valproate), but valproate is by far the most dangerous and avoided.

Question 53. Mechanism of action of Fenoldopam drug is:

A. D1 agonist

B. Alpha-1 antagonist

C. Beta-2 agonist

D. D2 antagonist

Correct answer: A

D1 agonist Fenoldopam is a parenteral (IV) antihypertensive drug used in the treatment of hypertensive emergencies and for short-term blood pressure control. Its primary mechanism of action is as a selective postsynaptic Dopamine-1 (D1) receptor agonist (A). Activation of D1 receptors, which are highly expressed in renal, mesenteric, coronary, and cerebral vasculature, leads to stimulation of adenylyl cyclase and an increase in intracellular cAMP. This causes potent arteriolar vasodilation and a rapid decrease in systemic blood pressure. A unique and beneficial effect of its D1 agonism is that it specifically increases renal blood flow, glomerular filtration, and natriuresis (sodium excretion). This makes it a favorable choice in patients with hypertensive emergencies and concomitant renal insufficiency. It does not act as an alpha-1 antagonist (B), beta-2 agonist (C), or D2 antagonist (D).

Question 54. Match the drug schedules listed with their corresponding drugs under the Drug and Cosmetic Act.

A. Schedule H - 1. Insulin

B. Schedule G - 2. Morphine

C. Schedule 2 - 3. Veterinary drugs

D. Schedule X - 4. Hepatitis B vaccine

Correct answer: A

A-1, B-2, C-3, D-4 Under the Drugs and Cosmetics Act, 1940 (India), different schedules classify

drugs based on their regulation, prescription control, and special precautions. 1. Schedule H – Insulin (A-1) Insulin is a prescription-only medicine. Schedule H drugs cannot be sold without a valid prescription from a registered medical practitioner. 2. Schedule G – Morphine (B-2) Morphine requires the label “Caution: It is dangerous to take this preparation except under medical supervision.” Hence, it falls under Schedule G. 3. Schedule 2 – Veterinary drugs (C-3) Schedule 2 pertains to drugs meant for veterinary use and includes specific labeling and regulatory provisions for animal treatment drugs. 4. Schedule X – Hepatitis B vaccine (D-4) Hepatitis B vaccine is listed under Schedule X, which includes certain biologics and drugs requiring strict control and special prescription records. Thus, the correct matching is A-1, B-2, C-3, D-4.

Question 55. Which of the following psychoactive substances possesses antidepressant effects?

A. Bupropion

B. Cannabidiol

C. Ketamine

D. Mephedrone

Correct answer: C

Ketamine While Bupropion (A) is a well-established first-line antidepressant, it is not typically classified as a "psychoactive substance" in the same category as the others. The most accurate answer among the psychoactive/recreational drugs listed is Ketamine (C). Ketamine is a dissociative anesthetic that acts as an NMDA receptor antagonist. In sub-anesthetic doses, it has been found to produce a remarkably rapid-acting and potent antidepressant effect, particularly in patients with treatment-resistant depression (TRD). This has led to the development and FDA approval of its enantiomer, esketamine (Spravato), as a nasal spray for TRD. Its rapid onset (within hours) is a major paradigm shift from traditional antidepressants, which take weeks to work. Cannabidiol (CBD) (B) is being researched but lacks robust proof. Mephedrone (D) is a synthetic stimulant with no antidepressant properties.

Question 56. Loading dose of an oral drug depends on all of the following except?

A. Volume of distribution

B. Plasma concentration

C. Half-life

D. Bioavailability

Correct answer: C

Half-life A Loading Dose (LD) is a large, initial dose of a drug given to rapidly achieve a therapeutic plasma concentration. The goal is to "fill up" the body's volume of distribution. The formula for loading dose is:

Question 57. A patient taking carbamazepine is also given erythromycin and subsequently develops ataxia and dizziness. What is the underlying cause of these symptoms?

A. Toxicity of erythromycin

B. Toxicity of carbamazepine

C. Erythromycin speeds up carbamazepine metabolism

D. Causes recurrent seizure episodes

Correct answer: B

Toxicity of carbamazepine This is a classic and clinically significant drug-drug interaction. Carbamazepine is an antiepileptic drug with a narrow therapeutic index. Its adverse effects, which occur at high concentrations, include dizziness, diplopia, and ataxia (unsteady gait). Carbamazepine is metabolized primarily by the cytochrome P450 3A4 (CYP3A4) enzyme in the liver. Erythromycin (a macrolide antibiotic) is a potent inhibitor of the CYP3A4 enzyme. When erythromycin is given to a patient on a stable dose of carbamazepine, it inhibits the enzyme responsible for carbamazepine's clearance. This inhibition (C is incorrect, it slows metabolism) leads to a rapid and sharp increase in the plasma concentration of carbamazepine, pushing the patient into a toxic state. The patient's symptoms of ataxia and dizziness are the direct result of this carbamazepine toxicity (B). The symptoms are not due to erythromycin toxicity (A) or seizures (D). FORENSIC MEDICINE

Question 58. One of the following statements regarding venom is incorrect:

A. Common cobra - Neurotoxic

B. Common krait - Neurotoxic

C. Elapidae - Myotoxic

D. Viperidae - Hemotoxic

Correct answer: C

Elapidae - Myotoxic This question evaluates knowledge of snake venom properties. Common cobra (A) and Common krait (B) both belong to the Elapidae family. The venom of these snakes is predominantly neurotoxic. It contains toxins that block postsynaptic (cobra) or presynaptic (krait) acetylcholine receptors at the neuromuscular junction, leading to progressive descending paralysis and respiratory failure. Viperidae (D) (vipers) typically have venom that is predominantly hemotoxic (also called vasculotoxic). This venom damages blood vessels, disrupts the coagulation cascade, and causes hemolysis, leading to local swelling, pain, necrosis, and systemic bleeding. The statement Elapidae - Myotoxic (C) is the incorrect generalization. While some elapids (like sea snakes or certain Australian species) have myotoxic components, the primary and defining feature of the Elapidae family as a whole, especially the Indian cobras and kraits, is potent neurotoxicity. Therefore, labeling the entire family as "myotoxic" is incorrect.

Question 59. The triad of abrasions, bruises and punctate lacerations are typically seen in:

A. Fall from height

B. Bomb blast injuries

C. Road traffic accidents

D. Firearm injuries

Correct answer: B

Bomb blast injuries In blast injuries, the body is exposed to multiple mechanisms of trauma occurring simultaneously. An explosion generates a high-pressure shock wave followed by flying debris and environmental impact. Because of this, victims commonly show a characteristic triad of abrasions, bruises, and punctate lacerations. Abrasions occur due to friction against rough surfaces or debris. Bruises (contusions) result from blunt force trauma caused by the blast wave or impact with surrounding objects. Punctate lacerations are small, penetrating wounds caused by shrapnel, splinters, metallic fragments, glass pieces, or other projectiles propelled by the explosion. These multiple small penetrating wounds are especially typical of bomb blasts. In contrast, fall from height usually produces fractures and localized blunt injuries, road traffic accidents cause patterned blunt injuries, and firearm injuries generally produce entry and exit wounds rather than multiple punctate lacerations. Thus, the combination of abrasions, bruises, and punctate lacerations is classically associated with bomb blast injuries.

Question 60. Which of the following findings is not seen in a worker exposed to mercury in a thermometer manufacturing company?

A. Tremors and Mad Hatter's disease

B. Basophilic stippling

C. Mees' lines

D. Peripheral neuropathy

Correct answer: C

Mees' lines Chronic exposure to mercury, especially in thermometer manufacturing, leads to a condition historically known as erethism or “Mad Hatter’s disease.” This includes behavioral changes (irritability, shyness, excitability), memory problems, and fine tremors that may progress to coarse tremors. Peripheral neuropathy can also occur due to toxic effects on the nervous system. Basophilic stippling may be seen in heavy metal poisoning, including mercury, though it is more classically associated with lead poisoning. Neurological manifestations remain the hallmark of chronic mercury exposure. Mees’ lines, however, are transverse white lines seen on the nails and are classically associated with arsenic poisoning rather than mercury toxicity. Therefore, they are not a typical finding in workers exposed to mercury in thermometer manufacturing. Thus, among the options given, Mees’ lines are not characteristic of mercury

exposure, making option (C) the correct answer.

Question 61. The dental numbering system illustrated below corresponds to which classification system?

A. Palmer's notation

B. Universal system

C. FDI formula

D. Haderup system

Correct answer: A

Palmer's notation The image shows a dental notation system that uses a grid symbol (quadrants) and numbers 1-8 for permanent teeth and letters a-e for deciduous (primary) teeth. The numbers/letters start from the central incisor (1 or a) and go back to the molars (8 or e). This specific system, using the quadrant grid, is known as the Zsigmondy-Palmer notation or, more commonly, Palmer's notation (A). 1. Universal system (B) numbers permanent teeth 1-32 sequentially, starting from the upper right 3rd molar to the upper left 3rd molar, then down to the lower left 3rd molar and finishing at the lower right 3rd molar. 2. FDI formula (C) is the two-digit system where the first digit represents the quadrant (1-4 for permanent, 5-8 for deciduous) and the second digit represents the tooth (1-8 or 1-5). 3. Haderup system (D) uses plus (+) and minus (-) signs to indicate upper and lower jaws.

Question 62. Minimum age at which a girl can give valid consent for medical termination of pregnancy (MTP) is:

A. 12 years

B. 16 years

C. 18 years

D. 21 years

Correct answer: C

18 years According to India's Medical Termination of Pregnancy (MTP) Act, 1971, and its subsequent amendments, the concept of consent is tied to the age of majority. A "minor" is defined as a person who has not attained the age of 18 years. For a woman who is 18 years of age or older (i.e., an adult), only her own written consent is required for an MTP. She has the full legal right to make this decision independently. For a "minor" (a girl under the age of 18), she cannot give valid legal consent on her own. The law requires the written consent of her guardian to be obtained. Therefore, the minimum age at which a girl can give her own valid consent, without requiring the consent of a guardian, is the age of majority, which is 18 years (C).

Question 63. According to the MTP Act, at what gestational age is the opinion of two doctors required for termination of pregnancy?

A. 16 to 20 weeks

B. Less than 16 weeks

C. 20 to 24 weeks

D. 24 to 28 weeks

Correct answer: C

20 to 24 weeks The MTP Act, as amended in 2021, specifies the requirements for medical opinions based on gestational age: 1. Up to 20 weeks: Termination can be done on the opinion of one Registered Medical Practitioner (RMP). 2. From 20 weeks up to 24 weeks: Termination requires the opinion of two RMPs. This (C) is the correct answer. This 20-24 week category is specifically available for certain classes of women, including survivors of sexual assault, minors, or in cases of fetal anomalies. 3. Beyond 24 weeks: Termination is only allowed in cases of substantial fetal abnormalities, as diagnosed by a Medical Board (which consists of multiple doctors), or to save the life of the mother. Therefore, the requirement for two doctors' opinions specifically applies to the 20 to 24-week window.

Question 64. In which type of poisoning does silver-nitrate– impregnated filter paper turn black when exposed to gastric lavage contents?

A. Aluminium phosphide

B. Malathion

C. Barbiturates

D. Opium

Correct answer: A

Aluminium phosphide Aluminium phosphide (A) is a highly toxic pesticide (commonly used as a grain fumigant, "Celphos"). When it comes into contact with moisture (in the air or in the stomach), it liberates phosphine gas (PH 3). This phosphine gas is the primary toxic agent. A common bedside test to detect phosphine in the gastric lavage fluid or the patient's breath is the silver nitrate test. Phosphine gas is a strong reducing agent and will react with silver nitrate (AgNO 3) to reduce the silver ions (Ag +) to metallic silver (Ag), which is black. The reaction is: This reaction causes the silver nitrate impregnated filter paper to turn black. This test is specific for phosphide poisoning and is not used for malathion (B), barbiturates (C), or opium (D).

Question 65. A patient has burns on the face, both upper limbs, and the front of the chest. What percentage of total body surface area is involved?

A. 27 to 30

B. 30 to 37

C. 38 to 42

D. 25 to 48

Correct answer: A

27 to 30 The percentage of total body surface area (TBSA) involved in burns is commonly

estimated using the Rule of Nines in adults. This method divides the body into regions, each representing 9% or multiples of 9% of the total surface area. It provides a rapid and practical way to assess burn severity and guide fluid resuscitation. According to the Rule of Nines, the entire head and neck together account for 9% of TBSA. Each upper limb contributes 9%, so both upper limbs together account for 18%. The anterior chest accounts for 9% (the anterior trunk is 18%, divided into chest 9% and abdomen 9%). In this patient, burns involve the face, both upper limbs, and the front of the chest. If the face alone is considered, it approximates about 4.5% (anterior half of the head). Adding both upper limbs (18%) and anterior chest (9%) gives approximately 31.5%. However, in exam-based calculations, rounding and approximations are commonly applied, often considering the head as 9% or simplifying the calculation. Thus, the closest and most appropriate answer is 27–30% TBSA involvement.

Question 66. According to the Bharatiya Nyaya Sanhita (BNS), which of the following injuries is not considered grievous hurt?

A. Emasculation

B. Dislocation of elbow

C. Severe body pain for 5 days

D. Loss of a member

Correct answer: C

Severe body pain for 5 days The concept of "grievous hurt" has been carried over from the Indian Penal Code (IPC) Section 320 to the Bharatiya Nyaya Sanhita (BNS) Section 114. This section lists specific injuries that are legally defined as "grievous." These include: Emasculation (A) Permanent privation (loss) of sight, hearing, or a "member" or joint. Loss of a member (D) (e.g., an arm or leg) or destruction/permanent impairing of the powers of any member or joint. Fracture or dislocation of a bone (B) or tooth. Any hurt which endangers life or which causes the sufferer to be, during the space of fifteen days (in BNS, changed from 20 days in IPC), in severe bodily pain or unable to follow his ordinary pursuits. The statement Severe body pain for 5 days (C) does not meet this legal definition. The law specifies a duration of 15 days of severe pain or inability to work. Therefore, pain for only 5 days would be classified as "simple hurt," not "grievous hurt."

Question 67. Which recent legislation provides for the protection and security of medical records?

A. The Digital Personal Data Protection Act, 2023

B. PCPNDT Act

C. HIPAA

D. MRD Act

Correct answer: A

The Digital Personal Data Protection Act, 2023 This question asks for recent legislation ensuring

the safety of medical records. The Digital Personal Data Protection Act, 2023 (DPDP Act) (A) is India's landmark legislation that establishes a comprehensive framework for the processing of digital personal data, which explicitly includes health data. This act mandates that "Data Fiduciaries" (such as hospitals and clinics) must obtain explicit, informed consent from "Data Principals" (patients) to collect and process their health information. It imposes significant obligations on these entities to ensure the safety, security, and confidentiality of this sensitive personal data, with penalties for data breaches. PCPNDT Act (B) is specific to preventing sex-selective abortion. HIPAA (C) is the United States legislation (Health Insurance Portability and Accountability Act) and is not applicable in India. MRD Act (D) is not a specific, recent, or prominent piece of legislation in this context.

Question 68. Which X-ray is used to confirm that a person is over 18 years of age?

A. Appearance of inner end of clavicle, knee joint, and wrist joint

B. Fusion of ischial tuberosity and lower end of humerus

C. Medial end of clavicle and sternum

D. Medial end of clavicle and skull

Correct answer: A

Appearance of inner end of clavicle, knee joint, and wrist joint Age estimation in medicolegal practice is commonly done using X-ray examination of ossification centers and epiphyseal fusion. Around the age of 18 years, most long bone epiphyses such as those at the wrist (distal radius and ulna) and knee joint (lower end of femur and upper end of tibia) have fused or are in the final stages of fusion. These findings help in determining whether an individual has attained majority. The medial (inner) end of the clavicle is particularly important because it is the last epiphysis in the body to fuse. Its appearance and partial fusion begin around 18 years and complete fusion usually occurs by 21–22 years. Therefore, radiological examination of the medial clavicle, along with wrist and knee joints, provides supportive evidence that a person is at least 18 years old. Other options mention structures that either fuse earlier or are not standard primary markers for confirming attainment of 18 years in routine medicolegal assessment. Hence, option (A) is correct.

Question 69. In a suspected poisoning case, gastric lavage fluid turns black when mixed with silver nitrate solution. This occurs in which type of poisoning?

A. Aluminium phosphide poisoning

B. Organophosphorus poisoning

C. Opium poisoning

D. Cocaine poisoning NODIA MEDINK

Correct answer: A

Aluminium phosphide poisoning Aluminium phosphide (A) is a toxic pesticide that reacts with water in the stomach to produce phosphine gas (PH 3). This phosphine gas is a potent reducing

agent. When the gastric lavage fluid (containing the dissolved phosphine) is mixed with a silver nitrate solution, the phosphine reduces the silver ions (Ag +) to metallic silver (Ag). Metallic silver is black, so the solution turns black, or a black precipitate forms. This is a classic diagnostic bedside test for aluminium phosphide poisoning. This reaction does not occur with organophosphorus compounds (B), opium (C), or cocaine (D).

Question 70. Match the following: Substance Type of Poisoning A. Lead 1. Metallic irritant B. Croton 2. Organic irritant C. Opium 3. CNS depressant D. Cocaine 4. Deliriant

A. A-1, B-2, C-3, D-4

B. A-2, B-1, C-3, D-4

C. A-3, B-4, C-1, D-2

D. A-4, B-3, C-2, D-1

Correct answer: A

A-1, B-2, C-3, D-4 This question requires classifying different poisons. A. Lead: Lead is a heavy metal. Poisons from heavy metals (like lead, arsenic, mercury) are classified as 1. Metallic irritants. B. Croton: Croton oil (from the Croton tiglium plant) is a powerful vesicant and one of the most potent gastrointestinal irritants of plant (organic) origin. It is classified as an 2. Organic irritant. C. Opium: Opium and its derivatives (opioids like morphine, heroin) are classic 3. CNS depressants. They act on opioid receptors in the brain, causing sedation, respiratory depression, and miosis. D. Cocaine: Cocaine is a CNS stimulant. However, in high doses, it can cause an acute toxic psychosis with hallucinations, paranoia, and agitated, confused, and bizarre behavior. This state is best described as a 4. Deliriant state. (Datura is the more classic deliriant, but among the choices, cocaine fits this best). Therefore, all four items are matched correctly: A-1, B-2, C-3, D-4. This corresponds to option (A). Here are the extracted questions and detailed solutions for questions 81 through 103.

Question 71. Cyanide and carbon monoxide poisoning inhibit which enzyme as their primary mechanism of action?

A. NADH dehydrogenase

B. Succinate dehydrogenase

C. Cytochrome C oxidoreductase

D. Cytochrome C oxidase

Correct answer: D

Cytochrome C oxidase Cyanide (CN) and Carbon Monoxide (CO) are classic inhibitors of the mitochondrial electron transport chain (ETC). Both substances act by binding to and inhibiting Cytochrome C oxidase (Complex IV) (D), the final enzyme complex in the chain. This enzyme is responsible for transferring electrons from cytochrome c to molecular oxygen (the final electron acceptor) to form water. Cyanide binds to the ferric (Fe 3+) state of the heme iron in Complex

IV, while carbon monoxide binds to the ferrous (Fe 2+) state. In both cases, this binding prevents electron transfer to oxygen, effectively halting aerobic respiration and leading to rapid cytotoxic hypoxia and cell death. NADH dehydrogenase (A) is Complex I. Succinate dehydrogenase (B) is Complex II. Cytochrome C oxidoreductase (C) is Complex III. MICROBIOLOGY

Question 72. How many PCR cycles are required to generate half the number of amplified DNA copies that are produced after 27 PCR cycles?

A. 25

B. 26

C. 13

D. 12

Correct answer: B

26 PCR amplification follows an exponential pattern, where ideally the amount of DNA doubles with each cycle. After n cycles, the number of DNA copies produced is:

Question 73. Choose the correct statement(s): 1. Weil-Felix test is done for typhus fever 2. Widal test is done in the first week of fever 3. Standard agglutination test is done for brucellosis 4. Microscopic agglutination test is done for leptospirosis

A. 1, 2, 3 are correct

B. 1, 3, 4 are correct

C. 1, 2, 3, 4 are correct

D. 1, 4 are correct

Correct answer: B

1, 3, 4 are correct Let's evaluate each statement: 1. Weil-Felix test is done for typhus fever. (Correct). This is a classic heterophile agglutination test used to diagnose rickettsial infections, including typhus fever. It uses Proteus antigens (OX-19, OX-2, OX-K) that cross-react with antibodies produced against Rickettsia. 2. Widal test is done in the first week of fever. (Incorrect). The Widal test is a serological test for typhoid fever (enteric fever). It detects antibodies (anti-O and anti-H) against Salmonella Typhi. These antibodies take time to develop, and the test is typically not positive in the first week of illness; it becomes reliable only from the second week onwards. 3. Standard agglutination test is done for brucellosis. (Correct). The Standard Agglutination Test (SAT), or tube agglutination test, is a primary serological method for diagnosing brucellosis, detecting antibodies against Brucella antigens. 4. Microscopic agglutination test is done for leptospirosis. (Correct). The Microscopic Agglutination Test (MAT) is the gold standard serological test for diagnosing leptospirosis. It involves testing patient serum against a panel of live Leptospira serovars and observing for agglutination under a dark-field microscope. Therefore, statements 1, 3, and 4 are correct, making (B) the right answer.

Question 74. Which of the following is correctly matched for vectors and? Vectors Diseases

A. Louse IV Epidemic typhus

B. Mite I Scrub typhus

C. Flea II Endemic typhus

D. Tick III Rocky Mountain spotted fever

Correct answer: C

A-IV, B-I, C-II, D-III This is a matching question for vector-borne rickettsial diseases. A. Louse: The body louse (Pediculus humanus corporis) is the vector for IV. Epidemic typhus, caused by Rickettsia prowazekii. (Match: A-IV) B. Mite: The larval stage of mites (chiggers) is the vector for I. Scrub typhus, caused by Orientia tsutsugamushi. (Match: B-I) C. Flea: The rat flea (Xenopsylla cheopis) is the vector for II. Endemic (Murine) typhus, caused by Rickettsia typhi. (Match: C-II) D. Tick: Ticks (e.g., Dermacentor) are the vectors for III. Rocky Mountain spotted fever, caused by Rickettsia rickettsii. (Match: D-III) The correct set of matches is A-IV, B-I, C-II, D-III. This corresponds to option (C).

Question 75. Which bacteria show the Kanagawa phenomenon when grown on Wagatsuma agar?

A. Burkholderia mallei

B. Vibrio cholerae

C. Vibrio parahaemolyticus

D. Staphylococcus aureus

Correct answer: C

Vibrio parahaemolyticus The Kanagawa phenomenon refers to the production of a heat-stable hemolysin (Thermostable Direct Hemolysin, TDH) by pathogenic strains of Vibrio parahaemolyticus (C). This phenomenon is tested on a special, high-salt (7% NaCl) blood agar medium called Wagatsuma agar. Pathogenic (Kanagawa-positive) strains will exhibit beta-hemolysis (a clear zone of red blood cell lysis) on this medium, while non-pathogenic (Kanagawa-negative) strains will not. The presence of TDH is strongly correlated with the organism's ability to cause gastroenteritis. The other organisms listed do not produce this specific hemolysin or are not tested on Wagatsuma agar for this phenomenon.

Question 76. Choose the organisms that have two morphological forms: 1. Acanthamoeba 2. Naegleria 3. Giardia 4. Trichomonas

A. 1, 2 are correct

B. 1, 2, 3, 4 are correct

C. 1, 2, 3 are correct

D. 1, 4 are correct

Correct answer: C

1, 2, 3 are correct This question asks to identify parasites that exist in two distinct morphological forms, typically a motile, feeding trophozoite stage and a dormant, non-motile cyst stage. 1. Acanthamoeba: (Correct). It has two forms: an active trophozoite and a highly resistant, double-walled cyst. 2. Naegleria: (Correct). It uniquely has three forms (trophozoite, flagellate, and cyst), but it does have two main forms (trophozoite and cyst) in tissue and culture. For the purpose of this question (having "two forms," implying cyst and trophozoite), it fits. 3. Giardia: (Correct). Giardia lamblia classically has two forms: the motile, binucleated, flagellated trophozoite (in the gut) and the infective, non-motile cyst (passed in feces). 4. Trichomonas: (Incorrect). Trichomonas vaginalis is a notable exception among protozoan parasites. It exists only as a trophozoite stage. It does not form a cyst. Transmission occurs via the direct transfer of the fragile trophozoite. Therefore, organisms 1, 2, and 3 have two (or more) forms, including a cyst stage, while 4 does not. This makes (C) the correct answer.

Question 77. Which parasite among the following is capable of causing autoinfection?

A. Strongyloides stercoralis

B. Ancylostoma duodenale

C. Ascaris lumbricoides

D. Hymenolepis nana

Correct answer: A

Strongyloides stercoralis Autoinfection is a cycle where an infection is re-established or amplified without the parasite leaving the host or coming from an external source. 1. Strongyloides stercoralis (A) is the classic example of a nematode (roundworm) that causes autoinfection. Its rhabditiform larvae can mature into infective filariform larvae within the host's intestine. These larvae can then penetrate the colonic mucosa or perianal skin, re-entering the circulation and migrating back to the lungs to restart the life cycle. This "internal autoinfection" can lead to a massive, disseminated "hyperinfection" in immuno compromised patients. 2. Hymenolepis nana (D) (dwarf tapeworm) is a cestode (tapeworm) that also causes autoinfection. However, Strongyloides is the more clinically significant and classic answer, especially regarding internal autoinfection. Ascaris (C) and Ancylostoma (B) require an external soil maturation phase. Given the options, Strongyloides is the best answer.

Question 78. All of the following are dimorphic fungi except:

A. Coccidioides

B. Talaromyces

C. Histoplasma

D. Cryptococcus

Correct answer: D

Cryptococcus Dimorphic fungi are fungi that exist in two different morphological forms

depending on the temperature. They grow as a mold (filamentous form) in the environment (at 25-30°C) and as a yeast (unicellular form) in host tissues (at 37°C). The mnemonic "Cold is mold, Heat is yeast" applies. 1. Coccidioides immitis (A) is dimorphic, though it's an exception to the rule. It's a mold in the soil and forms a unique spherule (not yeast) in the lungs. 2. Talaromyces marneffei (B) (formerly Penicillium marneffei) is a true dimorphic fungus. 3. Histoplasma capsulatum (C) is a classic dimorphic fungus (mold in soil, yeast in macrophages). 4. Cryptococcus neoformans (D) is the exception. It is monomorphic. It exists only as an encapsulated yeast form, both in the environment and in the host. It does not have a mold form associated with infection.

Question 79. Which of the following is the correct order of steps for conducting a research study? 1. Decide study objective 2. Frame a research question 3. Select study sample 4. Select study setting

A. 1, 2, 3, 4

B. 2, 1, 4, 3

C. 1, 3, 2, 4

D. 4, 3, 2, 1

Correct answer: B

2, 1, 4, 3 Conducting a research study follows a logical, sequential process. 1. Frame a research question (2): This is the very first step. It identifies the gap in knowledge or the specific problem the research aims to address (e.g., "Is drug X effective for disease Y?"). 2. Decide study objective (1): Based on the broad question, you formulate a specific, measurable, and achievable objective (e.g., "To compare the 6-month mortality rate in patients with disease Y treated with drug X versus placebo."). The question comes before the specific objective. 3. Select study setting (4): You decide on the "where" and "who" in broad terms. Will this be a hospital-based study, a community-based study, or a multi-center trial? This defines the population from which you will draw your sample. 4. Select study sample (3): After defining the setting and target population, you apply specific inclusion/exclusion criteria and a sampling strategy to select the final study participants. This logical flow—from broad question, to specific objective, to location, to final sample—is represented by the order 2, 1, 4, 3 (B).

Question 80. Among 100 people in a village, 10 previously had measles. During the year, 20 new cases occurred. What is the incidence of measles in this population?

A. 10%

B. 20%

C. 22%

D. 30%

Correct answer: C

22% Incidence is a measure of the risk of developing a new condition within a specified period.

The numerator for incidence is the number of new cases. The denominator is the population at risk at the beginning of the period. 1. Numerator (New Cases): 20 new cases of measles. 2. Population at Risk: The "population at risk" includes only those who are susceptible to the disease. The 100 people in the village are the total population. However, 10 of them "had a history of measles in the past," meaning they are immune and not at risk of getting measles again. Therefore, the true population at risk is: 100 (total) - 10 (immune) = 90 people. Incidence Calculation: Incidence = (New Cases / Population at Risk) Incidence = (20 / 90) 100% = 0.2222... × 100% = 22.22% The closest answer is 22% (C).

Question 81. During the Maha Kumbh Mela, mobile health units and multiple surveillance teams were set up. Syndromic surveillance was carried out using symptoms such as fever and diarrhea. What is the primary objective of this type of surveillance?

A. To provide necessary immediate treatment

B. For immediate quarantine of healthy contacts

C. To detect potential warning signs of any outbreak

D. To reduce the need for manpower

Correct answer: C

To detect potential warning signs of any outbreak Syndromic surveillance is the monitoring of non-specific clinical symptoms (e.g., fever, diarrhea, cough) rather than laboratory-confirmed diagnoses. Its primary purpose, especially in a mass gathering setting like the Kumbh Mela, is not to provide individual treatment (A) or reduce manpower (D). Its main value is early warning. By tracking the number of people presenting with "diarrhea syndrome" or "fever syndrome," public health officials can detect a potential warning sign of an outbreak (C) (e.g., cholera, typhoid, influenza) days before laboratory tests would confirm the specific pathogen. This early detection allows for a rapid public health response (like investigating water sources or promoting hygiene) to prevent a large-scale epidemic. Quarantining healthy contacts (B) would be a response, not the purpose of the surveillance itself.

Question 82. RMNCH+A offers comprehensive healthcare across the entire life cycle. Which of the following is not included under the RMNCH+A strategy?

A. Family planning

B. Maternal and Child Health (MCH) care

C. Geriatric population

D. Adolescent health

Correct answer: C

Geriatric population The RMNCH+A strategy is a flagship program in India that expands on the previous RMNCH (Reproductive, Maternal, Newborn, and Child Health) program. The "+A" was added to explicitly include Adolescent health (D) as a critical link in the continuum of care. The

RMNCH+A framework focuses on a "continuum of care" across specific life stages. The components are: R - Reproductive health (including Family planning (A)) M - Maternal health (B) N - Newborn health C - Child health (B) +A - Adolescent health (D) This strategy specifically targets the life stages from reproductive age through adolescence and childhood. The Geriatric population (C) (the elderly) is a different demographic and is covered by other national programs (e.g., National Programme for Health Care of the Elderly - NPHCE), but it is not a component of the RMNCH+A strategy.

Question 83. According to NACO guidelines, which of the following does not fall under the High-Risk Groups for HIV?

A. Men having sex with men (MSM)

B. Female sex workers (FSW)

C. Truck drivers NODIA MEDINK

D. Injecting drug users (IDUs)

Correct answer: C

Truck drivers India's National AIDS Control Organisation (NACO) focuses its interventions on specific populations with the highest risk of HIV transmission. These are termed "High-Risk Groups" (HRGs). The core HRGs are: 1. Female Sex Workers (FSW) (B) 2. Men who have sex with Men (MSM) (A) 3. Injecting Drug Users (IDUs) (D) 4. Transgender (TG) / Hijras Truck drivers (C) are not classified as an HRG. They are classified as a "Bridge Population." A bridge population is one that has links to both high-risk groups (e.g., they may be clients of FSWs) and the low-risk "general population" (their regular partners). While they are a critical group for HIV intervention, they are not in the same core high-risk category as FSW, MSM, and IDUs.

Question 84. In a Primary Health Centre (PHC) study on diabetic patients, body weight was measured before and again 6 months after a dietary intervention. Which statistical test should be used to assess whether the change is significant?

A. Unpaired t-test

B. Paired t-test

C. ANOVA

D. Chi-square test

Correct answer: B

Paired t-test This question requires selecting the correct statistical test. The key features of the study design are: 1. Data Type: The outcome is "mean weight," which is continuous (ratio) data. This rules out the Chi-square test (D), which is used for categorical data. 2. Number of Groups: There is one group of patients. 3. Nature of Measurement: Measurements are taken on the same individuals at two different time points ("before" and "after"). This means the data points are paired or dependent. The Paired t-test (B) is the specific statistical test designed to compare the means of two related (paired) samples of continuous data. It assesses whether the

mean difference between the "before" and "after" measurements is significantly different from zero. The Unpaired t-test (A) would be used if you were comparing two different, independent groups (e.g., an intervention group and a control group). ANOVA (C) is used to compare the means of three or more groups.

Question 85. Which of the following statistical parameters is paired incorrectly?

A. Mean, median - Dispersion

B. Standard error - Variation

C. Correlation coefficient - Relationship

D. Moments - Skewness

Correct answer: A

Mean, median - Dispersion This question tests the classification of statistical measures. A. Mean, median - Dispersion: This is incorrect. The Mean and Median are measures of Central Tendency. They describe the "center" or "typical" value of a dataset. Measures of Dispersion (or variability) include standard deviation, variance, and range, which describe how "spread out" the data is. B. Standard error - Variation: (Correct). The Standard Error (e.g., Standard Error of the Mean) is a measure of the statistical variation or precision of a sample statistic, estimating how much the sample mean is likely to vary from the true population mean. C. Correlation coefficient - Relationship: (Correct). The correlation coefficient (e.g., Pearson's r) is the primary statistic used to quantify the strength and direction of a linear relationship between two continuous variables. D. Moments - Skewness: (Correct). In statistics, "moments" are quantitative measures. The third central moment is used to calculate skewness (a measure of asymmetry), and the fourth central moment is used to calculate kurtosis.

Question 86. In statistics, centiles and quartiles are considered as:

A. Measures of central tendency

B. Measures of dispersion

C. Measures of location/position

D. Measures of correlation

Correct answer: C

Measures of location/position Centiles (Percentiles), Deciles, and Quartiles are all measures of location or position (C). They are "fractiles" that divide a dataset, once it has been ordered from smallest to largest, into equal parts. Centiles divide the data into 100 equal parts. The 90th centile is the value below which 90% of the data falls. Quartiles divide the data into 4 equal parts. The 1st quartile (Q1) is the 25th centile, and the 3rd quartile (Q3) is the 75th centile. They indicate the position of a particular value relative to the rest of the data. While the median (the 50th centile) is a measure of central tendency (A), and the interquartile range (Q3-Q1) is a measure of dispersion (B), the quartiles and centiles themselves are classified as measures of position.

Question 87. In a hospital-based study, patients were divided into three groups according to disease prevalence (Low, Medium, High), and then random selections were made from each group. What type of sampling method is this?

A. Simple random sampling

B. Systematic random sampling

C. Stratified random sampling

D. Cluster random sampling

Correct answer: C

Stratified random sampling This scenario describes Stratified Random Sampling (C). This technique involves two key steps: 1. Stratification: The parent population (all patients) is first divided into distinct, non-overlapping subgroups, or "strata." In this case, the strata are the three groups: "Low prevalence," "Medium prevalence," and "High prevalence." 2. Random Sampling: A simple random sample is then drawn from within each stratum. This method ensures that each subgroup (stratum) is adequately represented in the final sample, which is particularly useful when the subgroups are of different sizes or have different characteristics, as in this case. Cluster sampling (D) would involve randomly selecting entire groups (e.g., randomly picking 3 out of 10 hospital wards) and sampling everyone within them. Simple random (A) and Systematic (B) sampling would not involve pre-categorizing the patients into groups.

Question 88. In a given population: • Less than 15 years: 6000 • 15 to 64 years: 12000 • 65 years and above: 2000 Calculate the dependency ratio.

A. 33%

B. 50%

C. 66%

D. 75%

Correct answer: C

66% The Dependency Ratio is a demographic measure that shows the ratio of the non-working-age population (dependents) to the working-age population. Dependents: This population consists of two groups: 1. Young dependents (<15 years): 6000 2. Old dependents (≥65 years): 2000 3. Total Dependents = 6000 + 2000 = 8000 Working-age Population: This is the population aged 15-64 years. Working-age Population = 12000 Dependency Ratio Calculation: Dependency Ratio = (Total Dependents / Working-age Population) × 100% Dependency Ratio = (8000 / 12000) × 100% Dependency Ratio = (8 / 12) × 100% Dependency Ratio = (2 / 3) × 100% = 0.666... × 100% = 66.6...% The closest answer is 66% (C). ENT

Question 89. A 50-year-old woman reports a foreign body sensation and a change in voice after eating fish. Examination reveals an inflamed fish bone lodged in the pyriform fossa. Which nerve is responsible?

A. Recurrent laryngeal nerve

B. Internal branch of superior laryngeal nerve

C. External branch of superior laryngeal nerve

D. Glossopharyngeal nerve

Correct answer: B

Internal branch of superior laryngeal nerve This is a classic ENT question linking anatomy to clinical symptoms. 1. Symptom: The "foreign body sensation" is a sensory symptom. 2. Location: The pyriform fossa is located in the supraglottic larynx. The sensory innervation of the larynx is divided: Above the vocal cords (supraglottis), including the pyriform fossa, is supplied by the Internal branch of the superior laryngeal nerve (B). This nerve is the afferent (sensory) limb of the cough reflex for this area. Irritation or inflammation (as from a fish bone) in this area is sensed by this nerve, causing the foreign body sensation. Below the vocal cords (subglottis) is supplied by the Recurrent laryngeal nerve (A). The External branch of the superior laryngeal nerve (C) is motor, supplying the cricothyroid muscle. The Glossopharyngeal nerve (D) supplies the oropharynx (tonsils, posterior tongue). The "change in voice" (hoarseness) is likely due to inflammatory edema spreading to the nearby vocal cords, but the sensation is from the internal laryngeal nerve.

Question 90. A 7-year-old child with a recent ear infection now presents with lockjaw, limb spasms, fever, and neck stiffness. What is the most likely diagnosis?

A. Meningitis

B. Tetany

C. Bezold abscess

D. Sinus thrombosis

Correct answer: A

Meningitis This child presents with a "history of ear infection" (otitis media), which is now complicated by a constellation of meningeal signs: fever, neck rigidity (nuchal rigidity), lockjaw (trismus, from irritation of the meninges around the jaw), and limb spasm. This clinical picture strongly suggests that the infection from the middle ear has spread to the central nervous system, causing Meningitis (A). The middle ear cavity is separated from the middle and posterior cranial fossae by only thin plates of bone, allowing for the contiguous spread of infection, especially in children. Sinus thrombosis (D) is another possible intracranial complication, but the classic triad of fever, headache, and neck rigidity points directly to meningitis. A Bezold abscess (C) is an extracranial complication where pus tracks down the neck. Tetany (B) is caused by hypocalcemia and presents differently.

Question 91. Which of the following statements about Juvenile Nasopharyngeal Angiofibroma (JNA) is incorrect?

A. Unilateral cervical lymph nodes

B. Epistaxis

C. Only seen in young boys

D. Biopsy

Correct answer: D

Biopsy Juvenile Nasopharyngeal Angiofibroma (JNA) is a benign but highly vascular and locally aggressive tumor of the nasopharynx. (B) Epistaxis: Recurrent, severe, and unilateral epistaxis (nosebleed) is the most common presenting symptom, due to the tumor's extreme vascularity. (C) Only seen in young boys: This is a key demographic feature. JNA occurs almost exclusively in adolescent and pre-pubescent males. (A) Unilateral cervical lymph nodes: While the tumor itself is in the nasopharynx, it can cause nasal obstruction and serous otitis media. Lymph node involvement is not a typical feature, as it's a benign (non-metastasizing) tumor. However, the most incorrect and dangerous option is (D). (D) Biopsy: A biopsy of a suspected JNA in an outpatient or office setting is absolutely contraindicated. The tumor is a non-encapsulated mass of blood vessels. Attempting to biopsy it can provoke catastrophic, life-threatening hemorrhage that is extremely difficult to control. The diagnosis is made based on the classic clinical presentation (a young male with recurrent epistaxis and nasal obstruction) and characteristic findings on CT/MRI imaging (e.g., the Holman-Miller sign), often confirmed with angiography.

Question 92. A 50-year-old woman reports a sudden episode of vertigo with vomiting, unsteadiness, and light-headedness, brought on by changing her head position in the morning. She denies hearing loss, recent viral illness, medications, or head trauma. What is the most likely diagnosis?

A. Meniere disease

B. BPPV

C. Vestibular neuritis

D. Acoustic neuroma

Correct answer: B

BPPV This is a classic clinical presentation of Benign Paroxysmal Positional Vertigo (BPPV). The key features are: 1. Paroxysmal: The vertigo is sudden and occurs in brief episodes. 2. Positional: It is specifically triggered by changes in head position (e.g., rolling over in bed, looking up). 3. Benign: It is not a life-threatening condition. 4. Associated symptoms: Nausea, vomiting, and unsteadiness are common during an attack. The absence of hearing loss or tinnitus (A) rules out Meniere disease. The transient, position-triggered nature rules out Vestibular neuritis (C), which causes constant, severe vertigo lasting for days and is often post-viral. An Acoustic neuroma (D) presents with progressive, unilateral hearing loss and chronic imbalance, not acute positional vertigo. BPPV is caused by displaced otoconia (calcium crystals) in the semicircular canals.

Question 93. Choose the most appropriate candidates for cochlear implants: 1.

Ototoxicity NODIA page 17 INICET Examination Paper 2. Congenital hearing loss 3. Ossicular fixation 4. Otosclerosis

A. 1 and 2

B. 2 and 3

C. 3 and 4

D. 1 and 4

Correct answer: A

1 and 2 A cochlear implant is a neuroprosthetic device that bypasses the damaged inner ear (cochlea) to directly stimulate the auditory nerve. It is a treatment for severe-to-profound sensorineural hearing loss (SNHL), where the hair cells in the cochlea are non-functional. 1. Ototoxicity (e.g., from aminoglycoside antibiotics or chemotherapy) causes destruction of cochlear hair cells, resulting in SNHL. This is a prime indication. 2. Congenital hearing loss (e.g., from genetic causes or infections) is very often sensorineural and is a primary indication for cochlear implantation in children to facilitate speech and language development. 3. Ossicular fixation (fixation of the middle ear bones) and Otosclerosis (fixation of the stapes bone) are both causes of conductive hearing loss (CHL). In CHL, the inner ear (cochlea) is healthy, but sound cannot be conducted to it. These conditions are treated with surgery (e.g., stapedectomy) or conventional hearing aids, not cochlear implants.

Question 94. Which of the following diagnoses can cause stridor in infants? 1. Laryngomalacia 2. Congenital hemangioma vs polyp 3. Subglottic stenosis 4. Recurrent respiratory papillomatosis (RRP)

A. 1 and 3

B. 2 and 3

C. 1, 3 and 4

D. 1 and 4

Correct answer: A

1 and 3 Stridor in infants is a high-pitched inspiratory sound caused by partial obstruction of the upper airway. Among the listed conditions, laryngomalacia and subglottic stenosis are well-recognized causes of infantile stridor. Laryngomalacia is the most common cause of congenital stridor. It occurs due to collapse of supraglottic structures during inspiration because of immature laryngeal cartilage. Stridor typically appears soon after birth and worsens with crying or feeding. Subglottic stenosis refers to narrowing of the airway below the vocal cords. It may be congenital or acquired (e.g., post-intubation). It causes persistent biphasic or inspiratory stridor in infants. Although airway hemangiomas and polyps can cause obstruction, congenital hemangiomas are less common causes of classic neonatal stridor. Recurrent respiratory papillomatosis usually presents later in childhood rather than early infancy. Therefore, the most appropriate answer is 1 and 3 (Option A). OPHTHALMOLOGY

Question 95. Which of the following organisms are responsible for acute hemorrhagic conjunctivitis? a. Poliovirus b. Coxsackie A c. Coxsackie B d. Enterovirus 70

A. b and d

B. c and d

C. b, c and d

D. b and c

Correct answer: A

b and d Acute Hemorrhagic Conjunctivitis (AHC) is a highly contagious and epidemic-prone viral infection characterized by sudden onset of pain, redness, and subconjunctival hemorrhages. The two primary etiological agents responsible for large-scale AHC pandemics worldwide are: 1. Enterovirus 70 (d): This was the first agent identified during a major pandemic in 1969. 2. Coxsackievirus A24 (b): A specific variant of this virus is the other major cause of AHC epidemics. While Poliovirus (a) and Coxsackie B (c) are also enteroviruses, they are not the causative agents of AHC. Poliovirus causes poliomyelitis, and Coxsackie B is linked to conditions like myocarditis and pleurodynia. Therefore, the correct combination of causative agents is (b) and (d).

Question 96. After a farmer developed a fungal corneal ulcer and subsequently required a corneal transplant, which preservative is used to store the donor corneal graft, and what suture material is typically used during the procedure?

A. Polyethylene glycol, Nylon

B. McCarey-Kaufman, Nylon

C. Ethanol, Silk

D. Moist chamber, Vicryl

Correct answer: B

McCarey-Kaufman, Nylon This question has two parts: the corneal preservation medium and the suture material. 1. Preservative: Donor corneas must be stored in a special, nutrient-rich, cold-storage medium to maintain the viability of the critical endothelial cell layer. The classic and eponymous medium is the McCarey-Kaufman (M-K) medium. Other modern media (like Optisol-GS) are also used, but M-K is the foundational answer. 2. Suture Material: Penetrating keratoplasty (full-thickness corneal transplant) requires a suture that is inert, non-inflammatory, and maintains tensile strength for a very long time (months to years). The gold-standard suture material for this procedure is an ultrafine, monofilament 10-0 Nylon suture. Silk (C) is inflammatory, and Vicryl (D) is absorbable; neither is suitable. This makes (B) the correct combination.

Question 97. Which of the following findings is characteristic of proliferative diabetic retinopathy?

A. Tractional retinal detachment

B. Rhegmatogenous retinal detachment

C. Exudative retinal detachment

D. No retinal detachment

Correct answer: A

Tractional retinal detachment Proliferative Diabetic Retinopathy (PDR) is the advanced stage of diabetic eye disease, defined by neovascularization—the growth of new, abnormal blood vessels on the retina and optic disc. These fragile vessels grow along with fibrous, scar-like tissue. This fibrovascular tissue can contract, creating a pulling force (traction) on the retina. This mechanical pulling can lift the retina off its underlying tissue, leading to a Tractional Retinal Detachment (TRD). This is the specific type of retinal detachment characteristic of PDR. A Rhegmatogenous detachment (B) is caused by a retinal tear. An Exudative detachment (C) is caused by fluid leakage under the retina, which can occur in diabetic maculopathy but is not the PDR mechanism.

Question 98. According to NPCBVI, blindness is defined as:

A. Corrected visual acuity / 3 60 in better eye

B. Presenting visual acuity / 3 60 in better eye

C. Presenting visual acuity / 6 60 in better eye

D. Corrected visual acuity / 6 60 in better eye

Correct answer: B

Presenting visual acuity in better eye The National Programme for Control of Blindness and Visual Impairment (NPCBVI) in India updated its definition of blindness in 2017 to better align with the World Health Organization (WHO) definition. The new definition is based on presenting visual acuity (i.e., how the person sees with whatever correction they are currently using). 1. Blindness is now defined as presenting visual acuity less than 3/60 (or 20/400) in the better eye. 2. The old definition was < 6/60 (or 20/200) best-corrected visual acuity. The option that best reflects this new definition is (B) Presenting visual acuity 3/60 in better eye (implying 3/60 or worse).

Question 99. All of the following are done in the treatment of amblyopia, except:

A. Video game therapy

B. Strabismus surgery

C. Patching (occlusion therapy)

D. Refractive error correction

Correct answer: B

Strabismus surgery Amblyopia ("lazy eye") is a neurodevelopmental condition where the brain does not process visual information correctly from one eye, leading to poor vision. The treatment aims to force the brain to use and develop the amblyopic eye. 1. Refractive error

correction (D) (glasses) is the first and most critical step to ensure a clear image reaches the retina. 2. Patching (occlusion therapy) (C) is the gold standard, where the "good" eye is covered, forcing the brain to use the amblyopic eye. 3. Video game therapy (A) is a newer form of active "perceptual learning" used to stimulate the amblyopic eye. 4. Strabismus surgery (B) (surgery to align the eyes) is not a treatment for amblyopia itself. Strabismus (misalignment) is a cause of amblyopia. The amblyopia must be treated (e.g., with patching) first to improve the vision. Only then is surgery performed to align the eyes for cosmetic or binocularity reasons. Surgery on its own will not fix the "lazy" visual pathway.

Question 100. Which investigation permits visualization of all the retinal layers?

A. B-scan ultrasonography

B. OCT

C. Perimetry

D. Fundus fluorescein angiography

Correct answer: B

OCT Optical Coherence Tomography (OCT) is a non-invasive, high-resolution imaging technology that functions as an "optical biopsy." It uses light waves to capture micrometer-resolution, cross-sectional images of the retina. This allows for the direct visualization and differentiation of all the individual retinal layers (e.g., nerve fiber layer, ganglion cell layer, photoreceptor layer, retinal pigment epithelium). This is essential for diagnosing and monitoring diseases like macular degeneration and diabetic maculopathy. Fundus Fluorescein Angiography (FFA) (D) visualizes the retinal vasculature and leakage. Perimetry (C) measures the function (visual field), not the structure. B-scan ultrasonography (A) is a lower-resolution structural tool used when the media (cornea, lens) are opaque.

Question 101. In optic neuritis, which is true?

A. 70% of multiple sclerosis patients present with optic neuritis

B. Oral steroid is appropriate treatment

C. It can have normal optic nerve with no disc edema

D. Colour vision and contrast are proportionally affected to vision impairment

Correct answer: C

A, C, D Optic neuritis is commonly associated with Multiple sclerosis and may be the first manifestation of the disease. 1. Statement A is true: A significant proportion of patients with multiple sclerosis (around 50–70%) develop optic neuritis at some point during their illness. It is often an early presenting feature. 2. Statement C is true: In typical optic neuritis (retrobulbar neuritis), the optic disc may appear normal on fundoscopic examination because the inflammation is located posterior to the globe. This is summarized by the classic phrase, “the patient sees nothing, and the doctor sees nothing.” 3. Statement D is true: In optic neuritis, colour vision and contrast sensitivity are disproportionately affected and often reduced in

proportion to or even more than the visual acuity impairment. 4. Statement B is false: Oral steroids alone are not recommended, as they increase the risk of recurrence. Intravenous methylprednisolone is the standard treatment. Thus, the correct combination is A, C, and D.

Question 102. Which laser is used in refractive eye surgery?

A. Nd:YAG

B. Argon

C. Excimer laser

D. Diode

Correct answer: C

Excimer laser Excimer lasers are the specific type of laser used in corneal refractive surgeries like LASIK, PRK, and LASEK. This is a "cold" ultraviolet laser (193 nm) that works by a process called photoablation. It has the unique ability to remove (ablate) corneal tissue with sub-micron precision by breaking molecular bonds, without generating heat or damaging surrounding tissue. This precision allows the surgeon to precisely reshape the cornea to correct refractive errors. The other lasers have different uses: Nd:YAG (A) is for "photodisruption" (e.g., posterior capsulotomy). Argon (B) and Diode (D) are thermal lasers used for retinal "photocoagulation."

Question 103. A patient returns 2 weeks after cataract surgery with reduced vision. Examination shows anterior chamber cells and flare along with a hazy vitreous. What is the likely cause and associated organism?

A. Endophthalmitis with Staphylococcus

B. Endophthalmitis with Propionibacterium

C. Sympathetic ophthalmia

D. Toxic anterior segment syndrome

Correct answer: B

Endophthalmitis with Propionibacterium The timing of the presentation is the key diagnostic clue. 1. Toxic Anterior Segment Syndrome (TASS) (D) is a sterile inflammation that occurs immediately (12-48 hours) after surgery. 2. Acute-onset endophthalmitis (A), most commonly from Staphylococcus epidermidis, is a severe infection presenting with intense pain and inflammation within the first week (2-7 days). This patient has a delayed onset (2 weeks) with signs of chronic, low-grade inflammation (cells, flare, hazy vitreous). This presentation is classic for chronic postoperative endophthalmitis, which is most famously caused by Propionibacterium acnes (B) (now Cutibacterium acnes). This slow-growing, anaerobic bacteria gets sequestered in the capsular bag during surgery and manifests weeks to months later. Sympathetic ophthalmia (C) is a rare, bilateral autoimmune reaction after trauma or surgery. MEDICINE

Question 104. Which of the following is not a cause of high anion gap metabolic acidosis?

A. Diarrhea

B. Acute kidney injury

C. Ketoacidosis

D. Toxins

Correct answer: A

Diarrhea Metabolic acidosis is divided based on the anion gap. A High Anion Gap Metabolic Acidosis (HAGMA) occurs when an acid is added to the system. The mnemonic MUDPILES helps remember these causes: Methanol, Uremia (caused by Acute Kidney Injury (B)), Diabetic Ketoacidosis (C), Propylene glycol, Isoniazid, Lactic acidosis, Ethylene glycol (Toxins (D)), Salicylates. In contrast, Diarrhea (A) causes a Normal Anion Gap Metabolic Acidosis (NAGMA). In diarrhea, large amounts of bicarbonate (an anion) are lost from the GI tract. To maintain electrical neutrality, the kidneys compensate by reabsorbing chloride (another anion). Because the lost bicarbonate is replaced by chloride, the anion gap (Na - [Cl + HCO3]) remains normal.

Question 105. A 20-year-old man presents with fever, severe headache, vomiting, and photophobia. He has neck stiffness and a positive Brudzinski's sign, and a CT scan shows hydrocephalus. What is the most likely diagnosis?

A. Normal Pressure Hydrocephalus

B. Bacterial Meningitis

C. Viral Encephalitis

D. Subarachnoid Hemorrhage

Correct answer: B

Normal Pressure Hydrocephalus This patient's presentation is the classic triad for acute meningitis: fever, severe headache, and neck rigidity (nuchal rigidity, confirmed by a positive Brudzinski's sign). The photophobia and vomiting are also strong supporting signs of meningeal irritation. Bacterial meningitis (B) is a life-threatening emergency that fits this picture perfectly. A common and serious complication of bacterial meningitis is the development of hydrocephalus (A). This occurs because the thick, purulent exudate (pus) in the subarachnoid space can obstruct the flow and reabsorption of cerebrospinal fluid (CSF). Viral encephalitis (C) would typically present with more altered mental status or focal deficits. Subarachnoid hemorrhage (D) causes a "thunderclap" headache and neck rigidity but not usually a fever. Normal Pressure Hydrocephalus (A) is a chronic condition in the elderly.

Question 106. A 58-year-old man has burning urination, a normal prostate exam, more than 50 pus cells per HPF on urinalysis, but a sterile urine culture. What is the most likely diagnosis?

A. Chronic bacterial prostatitis

B. Acute bacterial prostatitis

C. Granulomatous prostatitis

D. Sterile pyuria

Correct answer: D

Sterile pyuria The clinical findings are: 1. Pyuria: The presence of pus cells (leukocytes) per high power field confirms significant inflammation in the urinary tract. 2. Negative Culture: The standard urine culture shows "no growth." This specific combination of pyuria in the setting of a negative urine culture is the definition of Sterile Pyuria (D). This is not a final diagnosis but a critical finding. The causes of sterile pyuria are broad, including partially treated UTIs, infections with atypical organisms that don't grow on standard media (like Chlamydia, Ureaplasma, or Mycobacterium tuberculosis which causes granulomatous prostatitis (C)), or non-infectious inflammatory conditions. Acute (B) and Chronic (A) bacterial prostatitis would be expected to have a positive culture at some point (though chronic prostatitis can be difficult to diagnose).

Question 107. A 62-year-old man presents with sudden shortness of breath and bilateral pedal edema. He is compliant with antihypertensives, and echocardiography shows an ejection fraction of 60%, concentric LV hypertrophy, left atrial enlargement, and grade 2 diastolic dysfunction. What is the most appropriate next step to improve his condition?

A. Perform coronary angiography to rule out ischemic cardiomyopathy

B. Initiate loop diuretics and SGLT2 inhibitors for management of HFpEF

C. Start digoxin to enhance myocardial contractility

D. Initiate ivabradine to reduce heart rate and improve diastolic filling

Correct answer: B

Initiate loop diuretics and SGLT2 inhibitors for management of HFpEF The patient is presenting with acute decompensated heart failure (shortness of breath, edema). The echocardiogram findings—a normal ejection fraction (EF) of 60% combined with concentric left ventricular hypertrophy, left atrial enlargement, and diastolic dysfunction—are the classic diagnostic features of Heart Failure with Preserved Ejection Fraction (HFpEF). The immediate goal of therapy is to relieve the patient's congestion (fluid overload). This is achieved with loop diuretics (e.g., furosemide). Furthermore, recent landmark clinical trials have shown that SGLT2 inhibitors (e.g., dapagliflozin, empagliflozin) are the first class of medications to provide significant benefit in reducing hospitalizations and mortality for patients with HFpEF. Therefore, initiating both is the most appropriate, evidence-based step. Digoxin (C) and Ivabradine (D) are used for HFrEF (reduced EF), not HFpEF.

Question 108. Which of the following is not a symptom of cardiac failure?

A. Right hypochondriac pain

B. Non-pulsatile elevation of JVP

C. Orthopnea

D. Paroxysmal nocturnal dyspnea

Correct answer: B

Non-pulsatile elevation of JVP Orthopnea (C) (shortness of breath when supine) and Paroxysmal Nocturnal Dyspnea (D) (waking from sleep acutely short of breath) are classic symptoms of left-sided heart failure, caused by pulmonary congestion. Right hypochondriac pain (A) is a classic symptom of right-sided heart failure, caused by congestion of the liver and stretching of its (Glisson's) capsule. An elevated Jugular Venous Pressure (JVP) is a key sign of right-sided heart failure (fluid overload). However, in a patient with heart failure in sinus rhythm, this elevated JVP is pulsatile, reflecting the 'a' and 'v' waves of the cardiac cycle. A non-pulsatile, elevated JVP (B) is the hallmark sign of Superior Vena Cava (SVC) obstruction, a condition unrelated to the pathophysiology of cardiac failure itself.

Question 109. A 45-year-old chronic smoker presents with dyspnea. Pulmonary function testing shows an FEV_1/FVC ratio of 65% and an RV/TLC ratio of 141%. Which option best explains the underlying pathophysiology?

A. Air trapping with hyperinflation of lungs

B. Decreased lung compliance

C. Restrictive lung disease

D. Increased lung compliance

Correct answer: A

Air trapping with hyperinflation of lungs The pulmonary function tests (PFTs) provide the diagnosis. 1. FEV1/FVC ratio of 65%: A ratio less than 70% (or 0.70) is the defining characteristic of an obstructive lung disease (e.g., COPD, fitting the chronic smoker history). This rules out Restrictive lung disease (C), which would have a normal or high ratio. 2. RV/TLC ratio of 141%: The RV (Residual Volume) is the air left in the lungs after a full exhalation. TLC is Total Lung Capacity. In obstructive disease, airflow is limited (especially on expiration), leading to air trapping. This means the RV increases significantly. An increased RV/TLC ratio is the quantitative measure of air trapping, which in turn leads to hyperinflation of the lungs (an elevated TLC). While emphysema (a type of COPD) involves increased lung compliance (D), the PFT results directly describe air trapping and hyperinflation.

Question 110. Which of the following is an early presenting symptom in patients with multiple sclerosis?

A. Sensory disturbances

B. Ataxia

C. Vertigo

D. Facial palsy

Correct answer: A

Sensory disturbances Multiple Sclerosis (MS) is a chronic, demyelinating disease of the central nervous system. Its clinical presentation is highly variable ("disseminated in space and time").

However, sensory disturbances are the most common initial presentation, occurring in 30-40% of patients. These symptoms are often transient and include paresthesias (pins and needles), numbness, or tingling in the limbs or face (e.g., trigeminal neuralgia). Optic neuritis (a sensory disturbance of vision) is also a very common initial presentation. While ataxia (B) (cerebellar dysfunction) and vertigo (C) (brainstem plaques) are common symptoms of MS, they are less frequent as the earliest complaint. Facial palsy (D) is also a possible, but less common, presenting symptom.

Question 111. Which clinical feature is most commonly seen in systemic lupus erythematosus?

A. Photosensitivity

B. Nephrotic syndrome

C. Arthralgia and myalgia

D. Anemia and thrombocytopenia

Correct answer: C

Arthralgia and myalgia While Systemic Lupus Erythematosus (SLE) is a multi-system disease known for its "butterfly rash" (photosensitivity (A)) and kidney involvement (nephrotic syndrome (B)), these are not the most universal features. The most common clinical manifestation, affecting over 90% of patients at some point, is musculoskeletal involvement. This typically presents as arthralgia (joint pain) and myalgia (muscle pain). Patients often experience a non-erosive, symmetric, inflammatory arthritis (or polyarthralgia) affecting the small joints of the hands, wrists, and knees. Hematologic issues like anemia and thrombocytopenia (D) are also very common (part of the diagnostic criteria) but still less frequent than the musculoskeletal complaints.

Question 112. Which pulse type is explained by the Frank– Starling law?

A. Pulsus bisferiens

B. Pulsus paradoxus

C. Pulsus alternans

D. Pulsus parvus

Correct answer: C

Pulsus alternans Pulsus alternans is a pulse pattern with a beat-to-beat alternation in amplitude (a strong pulse followed by a weak pulse, then strong, then weak) while the rhythm remains regular. This sign indicates severe left ventricular systolic dysfunction. Its pathophysiology is a direct manifestation of the Frank-Starling law. A weak contraction (weak pulse) ejects less blood, leaving a higher end-diastolic volume in the ventricle. This increased volume stretches the ventricular muscle more, and by the Frank-Starling mechanism, this greater stretch results in a more forceful next contraction (strong pulse). This strong contraction then ejects more blood, leaving less in the ventricle, leading to a weaker stretch and a subsequent weaker beat,

thus perpetuating the alternating cycle.

Question 113. The murmur of mitral stenosis corresponds to which ECG wave?

A. QRS complex

B. T wave

C. P wave

D. ST segment NODIA page 19 INICET Examination Paper

Correct answer: C

P wave The murmur of mitral stenosis is a low-pitched, rumbling mid-diastolic murmur. In patients who are in sinus rhythm, this murmur often has a pre-systolic accentuation (it gets louder just before the first heart sound). This late-diastolic, crescendo component of the murmur is caused by the contraction of the left atrium, which actively pushes a final bolus of blood through the narrowed mitral valve. The electrical event on the ECG that represents atrial contraction (atrial depolarization) is the P wave. Therefore, the pre-systolic accentuation of the mitral stenosis murmur follows the P wave and corresponds to the atrial "kick."

Question 114. A 20-year-old female diagnosed with septic shock presents with a blood pressure of $58/30$ mmHg. After receiving 3 liters of crystalloid fluid, her mean arterial pressure (MAP) remains 58 mmHg. What is the next best step in management?

A. Start dopamine

B. Start noradrenaline

C. Repeat crystalloid fluid

D. Start vasopressin

Correct answer: B

Start noradrenaline This patient is in septic shock, defined by hypotension requiring vasopressors to maintain a MAP mmHg and a high lactate level. She has received a large initial fluid bolus (3 liters of crystalloid) but remains severely hypotensive (MAP < 65 mmHg). This is fluid-refractory shock. According to the Surviving Sepsis Campaign guidelines, the next best step is to immediately start a vasopressor to support her blood pressure. The first-line vasopressor of choice in septic shock is noradrenaline (norepinephrine). Dopamine (A) is an older agent and is no longer recommended as first-line due to a higher risk of arrhythmias. Vasopressin (D) is a second-line agent, typically added to noradrenaline if the target MAP cannot be reached. Simply repeating fluid (C) is incorrect as she is fluid-refractory.

Question 115. A 65-year-old man with Parkinson’s disease has oropharyngeal dysphagia, recurrent aspiration pneumonitis, and excessive respiratory secretions. Chest imaging shows bilateral bronchiectasis. What is the most appropriate long-term management?

A. High-frequency chest wall oscillation therapy

B. Nebulized N-acetylcysteine to reduce secretions

C. Percutaneous endoscopic gastrostomy (PEG) tube placement

D. Macrolide therapy

Correct answer: A

High-frequency chest wall oscillation therapy This 65-year-old man with Parkinson's disease has oropharyngeal dysphagia leading to recurrent aspiration pneumonitis. Chronic aspiration and impaired cough clearance have resulted in bilateral Bronchiectasis. In bronchiectasis, retained secretions promote persistent infection and inflammation, creating a cycle of mucus stasis and airway damage. The key long-term management principle in bronchiectasis is airway clearance therapy. High-frequency chest wall oscillation (HFCWO) improves mucus mobilization and enhances expectoration, thereby reducing infection frequency and further lung damage. In patients with neuromuscular disorders like Parkinson’s disease, impaired cough and secretion clearance make mechanical airway clearance especially beneficial. Nebulized N-acetylcysteine may thin secretions but does not adequately address impaired clearance. PEG tube placement can reduce future aspiration risk but does not treat established bronchiectasis. Long-term macrolide therapy is considered for frequent infective exacerbations but is not first-line for secretion management. Therefore, the most appropriate long-term strategy to manage bronchiectasis in this context is high-frequency chest wall oscillation therapy.

Question 116. A 56-year-old diabetic man has a complicated urinary tract infection and is hypotensive, with no improvement after IV fluids. Which antibiotic is most appropriate for managing his condition?

A. Amoxicillin-Clavulanate

B. Nitrofurantoin

C. Meropenem

D. Ceftriaxone

Correct answer: C

Meropenem This patient is critically ill. He has a complicated UTI (in a diabetic patient), which has progressed to septic shock (hypotensive and fluid-refractory). This is a life-threatening emergency requiring immediate, aggressive, broad-spectrum antibiotics that cover potential multi-drug resistant organisms, especially those common in urosepsis like ESBL-producing Gram-negatives. Nitrofurantoin (B) is only for simple cystitis and has no systemic penetration. Amoxicillin-Clavulanate (A) and Ceftriaxone (D) are good antibiotics, but in a patient this sick, there is a high risk of resistance, and failure of therapy is not an option. The most appropriate, reliable, and powerful empirical choice for a patient in septic shock from a likely Gram-negative source is a carbapenem, such as Meropenem (C). It has excellent activity against most Gram-negatives (including ESBLs) and Gram-positives.

Question 117. A post–cardiac surgery patient in the ICU develops ventilator-associated pneumonia and is started on empiric antibiotics. Hours later, he develops acute kidney injury, and a serum procalcitonin level is ordered. Which statement about procalcitonin is correct?

A. It helps in determining the duration of antibiotic therapy

B. It helps in identifying which empirical antibiotics to be started

C. It can be used to confirm source of infection

D. It is used to differentiate bacterial from fungal cause

Correct answer: A

It helps in determining the duration of antibiotic therapy Procalcitonin (PCT) is a biomarker that rises significantly in response to systemic bacterial infections but remains low in viral infections or non-infectious inflammatory states (like post-operative inflammation, though cardiac surgery can be an exception). Its primary, evidence-based role in the ICU is antibiotic stewardship. It does not help identify the specific organism or the source of infection (B, C). While it is low in fungal infections, that is not its primary use (D). Its most valuable application is guiding the duration of antibiotic therapy. In a patient being treated for a bacterial infection (like VAP), serial PCT levels are monitored. As the infection is controlled, PCT levels fall. A protocol (e.g., stopping antibiotics when PCT drops by >80% from its peak) has been shown to safely and effectively reduce the total duration of antibiotic exposure.

Question 118. A 58-year-old male presents to a PHC for a routine check-up. His blood pressure readings on two separate occasions are / 148 90 mmHg and / 152 96 mmHg. He is asymptomatic and has no known comorbidities. What is the most appropriate next step in management according to current hypertension guidelines?

A. Initiate treatment only if BP exceeds / 160 100 mmHg

B. Start Amlodipine 5 mg once daily and advise follow-up after a month

C. Refer to a higher center for further evaluation

D. Start the patient on IV anti-hypertensive drugs

Correct answer: A

Initiate treatment only if BP exceeds mmHg This patient has blood pressure readings of 148/90 mmHg and 152/96 mmHg on two separate occasions. According to current hypertension guidelines (including Indian and WHO recommendations for primary care settings), this falls under Stage 1 hypertension (140–159/90–99 mmHg). In asymptomatic patients without diabetes, chronic kidney disease, cardiovascular disease, or other target organ damage, immediate pharmacologic therapy is not mandatory at this stage. The recommended first step is: Lifestyle modification, including salt restriction, weight reduction, regular physical activity, smoking cessation, moderation of alcohol intake, and dietary changes (DASH diet). 1. Drug therapy is generally initiated if: 2. Persistent BP ≥160/100 mmHg (Stage 2 hypertension), or 3.

Stage 1 hypertension with high cardiovascular risk or comorbidities. 4. Immediate IV antihypertensives are reserved for hypertensive emergencies, which this patient does not have. Referral is unnecessary in uncomplicated mild hypertension. Therefore, the most appropriate next step in this asymptomatic individual is observation and lifestyle advice, initiating medication only if BP exceeds 160/100 mmHg or remains persistently elevated.

Question 119. Which colloid is regarded as the best option for volume replacement according to the Muir– Barclay formula?

A. Packed Red Blood Cells (PRBC)

B. Fresh Frozen Plasma (FFP)

C. Dextran 40

D. Albumin

Correct answer: D

Albumin The Muir–Barclay formula is used in burn management to guide fluid resuscitation, particularly during the first 24 hours after injury. While crystalloids (such as Ringer’s lactate) are typically used initially to restore circulating volume, colloids are added later to maintain plasma oncotic pressure and prevent excessive edema. Among colloids, Albumin is regarded as the best option for volume replacement in this context. Albumin is a natural plasma protein responsible for maintaining colloid oncotic pressure. It effectively expands plasma volume, reduces third-spacing of fluids, and supports intravascular volume without significantly increasing the risk of coagulopathy. In contrast: 1. Packed red blood cells are used for anemia or blood loss, not primarily for volume expansion. 2. Fresh frozen plasma is mainly indicated for coagulation factor replacement. 3. Dextran 40 is a synthetic colloid but may interfere with coagulation and carries a risk of anaphylaxis. Therefore, according to the Muir–Barclay formula in burn resuscitation, albumin is considered the most appropriate colloid for volume replacement.

Question 120. In a patient diagnosed with lupus nephritis showing wire-loop lesions, which medication is preferred for induction therapy?

A. Steroid alone

B. Cyclophosphamide with steroid

C. Rituximab

D. Mycophenolate

Correct answer: B

Cyclophosphamide with steroid The histological finding of "wire loop lesions" is pathognomonic for Class IV (Diffuse Proliferative) Lupus Nephritis. This is one of the most severe and aggressive forms of lupus kidney disease, carrying a high risk of progression to end-stage renal failure if not treated. The standard of care for induction (i.e., to rapidly control the inflammation and "induce" remission) is high-dose corticosteroids (e.g., IV pulse methylprednisolone) given in

combination with a potent immunosuppressant. The two main first-line choices are intravenous Cyclophosphamide (the "NIH protocol") or oral Mycophenolate Mofetil (MMF). Both are considered agents of choice. Given the options, Cyclophosphamide with steroid (B) is a classic, powerful, and correct induction regimen for severe lupus nephritis. Steroid alone (A) is insufficient. Rituximab (C) is reserved for refractory cases.

Question 121. What is the cause of hyponatremia in diarrhea- induced hypovolemia?

A. Decreased aldosterone

B. Decreased ADH

C. Decreased sodium absorption from gastrointestinal tract

D. Increased sodium absorption from kidney

Correct answer: C

Decreased sodium absorption from gastrointestinal tract This question is tricky as the primary mechanism is non-osmotic ADH release, which isn't an option. Let's analyze the choices. In severe diarrhea, the body loses large amounts of both water and sodium (as intestinal fluid is isotonic). This leads to hypovolemia. (A) Decreased aldosterone: This is incorrect. Hypovolemia stimulates aldosterone release to conserve sodium. (B) Decreased ADH: This is incorrect. Hypovolemia is a potent non-osmotic stimulus for increasing ADH release, which causes the body to retain free water, thus diluting the remaining sodium and worsening the hyponatremia. (D) Increased sodium absorption from kidney: This happens (via aldosterone) but doesn't cause hyponatremia; it's a response to sodium loss. (C) Decreased sodium absorption from gastrointestinal tract: This is the most direct cause listed. Diarrhea, by definition, is a state of malabsorption or secretion. The primary pathology involves the GI tract's inability to absorb water and electrolytes, including sodium, leading to massive sodium loss in the stool. This loss is the initial driver of the hypovolemia and hyponatremia.

Question 122. A 65-year-old patient undergoes colonoscopy for altered bowel habits, and a 6 cm colonic mass is biopsied. Histology shows adenocarcinoma limited to the mucosa with no lymph node or distant metastasis. What is the most appropriate TNM stage for this tumor?

A. Stage 0

B. Stage I

C. Stage II

D. Stage III

Correct answer: A

Stage 0 The TNM staging system for colorectal cancer is precise. T (Tumor): The histopathology "adenocarcinoma confined to the mucosa" describes a Tis (carcinoma in situ). The mucosa lacks lymphatics, so these lesions cannot metastasize. If it had invaded the submucosa, it would be T1. N (Node): The prompt states "no lymph node" metastasis, which is N0. M (Metastasis): The

prompt states "no distant metastasis," which is M0. The final TNM stage is Tis N0 M0. According to the AJCC staging system, Tis N0 M0 is defined as Stage 0 (A). Stage I (B) would be T1 or T2 N0 M0 (tumor invading submucosa or muscularis propria).

Question 123. A 40-year-old male with head injury presents with respiratory distress and absent breath sounds on the right. GCS is / . 8 15 What is the most immediate next step in management?

A. Intercostal chest drain (ICD)

B. Contrast-enhanced CT (CECT)

C. Secure airway

D. Oxygen by nasal prongs

Correct answer: C

Secure airway This question follows the ATLS (Advanced Trauma Life Support) protocol, which prioritizes A-B-C (Airway, Breathing, Circulation). 1. Airway: The patient has a GCS of 8 (A). A GCS of is a strong indication for definitive airway management (intubation) to protect the airway from aspiration and ensure adequate ventilation, especially in a patient with a head injury. 2. Breathing: The patient is in respiratory distress with absent breath sounds on the right, suggesting a life-threatening "Breathing" problem like a tension pneumothorax or massive hemothorax. According to ATLS, Airway always comes first. While the patient needs an ICD (A) to address the "Breathing" problem, you must secure the airway (C) first or simultaneously. A patient with a GCS of 8 cannot protect their own airway. CECT (B) and nasal prongs (D) are inappropriate and insufficient for this critically ill patient.

Question 124. A 25-year-old man has pain that begins near the umbilicus and shifts to the right iliac fossa, along with fever, nausea, and rebound tenderness. His WBC count is 14,000/cmm. What is his Alvarado score?

A. 4

B. 5

C. 6

D. 7

Correct answer: C

6 The Alvarado score (MANTRELS) is used to help diagnose appendicitis. Let's calculate the score based on the symptoms provided: M (Migratory pain to RIF): "pain starting from the umbilicus moving to the right iliac fossa" = 1 point A (Anorexia/Nausea): "nausea" = 1 point N (Nausea/Vomiting): (This is part of "A" - 1 point total) T (Tenderness in RIF): Not explicitly stated, but "rebound tenderness" implies it. However, we only score what is given. R (Rebound tenderness): "rebound tenderness" = 1 point E (Elevated temperature): "fever" = 1 point L (Leukocytosis > 10,000): "WBC count is 14,000" = 2 points S (Shift to left): Not stated. Total score = 1 (M) + 1 (A) + 1 (R) + 1 (E) + 2 (L) = 6 points (C). Note: If "rebound tenderness" was

intended to include the 2 points for "Tenderness in RIF" plus the 1 point for "Rebound" (3 points total), the score would be 8. If it was intended to replace "Rebound" with "Tenderness" (2 points), the score would be 7. The most literal interpretation of the text yields a score of 6.

Question 125. Which of the following is not included in stage 4B of breast cancer?

A. Ulceration

B. Peau d'orange

C. Satellite nodule

D. Cellulitis/erythema over one-third of the breast (inflammatory breast cancer)

Correct answer: D

Cellulitis/erythema over one-third of the breast (inflammatory breast cancer) This question has a significant typo. "Stage 4B" does not exist in the modern AJCC staging (Stage 4 is just M1). The question is almost certainly referring to the T4 staging of the primary tumor. T4b includes: Skin ulceration (A), peau d'orange (B), or satellite nodules (C). T4d is a separate category for Inflammatory Breast Cancer, which presents with "diffuse erythema and edema (peau d'orange)" involving at least one-third of the breast, often without a distinct mass. Therefore, the features of T4b are (A), (B), and (C). The feature of T4d is (D). The question likely meant "Which of the following is not included in T4b...", making (D) the correct answer as it is classified separately as T4d.

Question 126. Which of the following is not a contraindication to performing breast-conserving surgery?

A. Scleroderma

B. History of radiation

C. Multiple cancer in one quadrant

D. Persistent positive margin

Correct answer: C

Multiple cancer in one quadrant Breast Conservation Surgery (BCS) (or lumpectomy) involves removing the tumor and a rim of normal tissue, followed by radiation therapy. A. Scleroderma: This (and other diffuse connective tissue diseases) is a relative contraindication because radiation can cause severe skin and lung fibrosis. B. History of radiation: A history of prior radiation to the same breast or chest wall is an absolute contraindication, as the breast cannot be safely radiated twice. D. Persistent positive margin: If the surgeon cannot achieve "negative margins" (no cancer cells at the edge of the removed tissue), even after re-excision, it is a contraindication to BCS. C. Multiple cancer in one quadrant: This is not a contraindication. This is "multifocal" disease and can often be removed as a single, slightly larger lumpectomy within that one quadrant. The contraindication is multicentric disease (tumors in different quadrants).

Question 127. Which of the following is wrongly matched with its classification?

A. Boston classification - Colon preparation for colonoscopy

B. LA classification - Achalasia

C. Mannheim classification - Chronic pancreatitis

D. Miami classification - Parathyroid adenoma and hyperplasia differentiation

Correct answer: B

LA classification - Achalasia The Los Angeles (LA) classification is wrongly matched with Achalasia. In reality, the LA classification is used to grade the severity of reflux esophagitis (a complication of gastroesophageal reflux disease—GERD), not Achalasia. It grades mucosal breaks in the esophagus from Grade A to D based on the extent and continuity of mucosal injury. Let’s review the other options: (A) Boston classification – Colon preparation for colonoscopy: This is correctly matched. The Boston Bowel Preparation Scale (BBPS) is used to assess the cleanliness of the colon during colonoscopy, dividing the colon into three segments and scoring each from 0–3. (C) Mannheim classification – Chronic pancreatitis: This is also correct. The Mannheim classification system is used for the grading and severity assessment of chronic pancreatitis, considering morphological and functional parameters. (D) Miami classification – Parathyroid adenoma and hyperplasia differentiation: Correct. The Miami classification refers to intraoperative parathyroid hormone (IOPTH) monitoring criteria to differentiate adenoma from hyperplasia and assess surgical success. Hence, only option (B) is incorrectly matched.

Question 128. At what Ankle–Brachial Pressure Index (ABPI) value is imminent gangrene indicated?

A. 0.3

B. 0.5

C. 0.7

D. 0.9

Correct answer: A

0.3 The Ankle-Brachial Pressure Index (ABPI or ABI) is a non-invasive test to quantify peripheral artery disease (PAD). 1. 0.9 - 1.2: Normal 2. 0.7 - 0.9 (D, C): Mild-to-moderate PAD. This level is associated with claudication (pain on walking). 3. 0.4 - 0.7 (B): Moderate-to-severe PAD. Claudication is more severe. 4. < 0.4: Severe PAD. This level is associated with Critical Limb Ischemia, which manifests as rest pain (pain at night) and non-healing ulcers or imminent gangrene. Therefore, an ABPI of 0.3 (A) would be seen in a patient with impending gangrene.

Question 129. A patient with ARDS on mechanical ventilation develops decreased breath sounds on the right and tracheal deviation to the opposite side. What is the most likely diagnosis?

A. Barotrauma

B. Increase tidal volume

C. Oxygen toxicity

D. Endotracheal (ET) malposition

Correct answer: A

Barotrauma In a patient with Acute Respiratory Distress Syndrome (ARDS) on mechanical ventilation, the development of sudden respiratory distress, absent or markedly decreased breath sounds on one side (in this case, the right), and tracheal deviation to the opposite side are classic signs of a tension pneumothorax. This occurs due to barotrauma, a well-known complication of positive pressure ventilation. High airway pressures used to maintain oxygenation in ARDS can cause alveolar overdistension and rupture, allowing air to escape into the pleural cavity. The trapped air collapses the affected lung (right side here) and exerts pressure on the mediastinum, shifting the trachea and heart to the opposite side (left), leading to hemodynamic compromise and hypoxia. This is an emergency requiring immediate decompression, typically with a needle thoracostomy followed by chest tube insertion. Other options are incorrect: (B) Increased tidal volume may cause barotrauma but is not itself a diagnosis. (C) Oxygen toxicity causes diffuse lung injury, not unilateral findings. (D) ET malposition would cause decreased breath sounds on the opposite side (usually left) with tracheal shift towards the affected side.

Question 130. Which of the following is not a cause of recurrent renal stones?

A. Hypercalciuria

B. Hyperoxaluria

C. Hypercitraturia

D. Hyperuricosuria

Correct answer: C

Hypercitraturia Renal stones form when the urine is supersaturated with stone-forming minerals. 1. Hypercalciuria (A) (excess calcium in urine) is the most common metabolic cause. 2. Hyperoxaluria (B) (excess oxalate) and Hyperuricosuria (D) (excess uric acid) are also major risk factors, as they provide the building blocks for the most common types of stones (calcium oxalate and uric acid). 3. Citrate is a protective substance. It is a stone inhibitor that binds to calcium in the urine, preventing it from crystalizing with oxalate. Therefore, HYPO-citraturia (low citrate) is a major cause of stones. HYPER-citraturia (C) (high citrate) is a protective state and would prevent recurrent stones.

Question 131. A 6-week-old infant has non-bilious, non- projectile vomiting and a normal abdominal exam. What is the most likely diagnosis?

A. Gastroesophageal reflux disease (GERD)

B. Milk allergy

C. Small bowel obstruction

D. Congenital hypertrophic pyloric stenosis (CHPS)

Correct answer: A

Gastroesophageal reflux disease (GERD) The key features are a 6-week-old infant with non-bilious, non-projectile vomiting (i.e., "spitting up") and a normal physical exam. (D) CHPS is incorrect. It classically presents with projectile, non-bilious vomiting, and a palpable "olive" mass on exam. (C) Small bowel obstruction is incorrect. It would typically cause bilious vomiting and an abnormal, distended abdomen. (B) Milk allergy is possible but often presents with other symptoms like bloody stools or eczema. (A) Gastroesophageal reflux (GER) is extremely common in this age group, caused by an immature lower esophageal sphincter. It is the most common cause of non-bilious, non-projectile "spitting up" in an otherwise healthy, thriving infant. When it becomes symptomatic, it's called GERD.

Question 132. A white patch is seen in the oral cavity of an immuno compromised patient. Which microscopic finding is most likely?

A. Branching septate hyphae

B. Pseudo-hyphae

C. Budding yeast with capsule

D. Sulfur granules

Correct answer: B

Pseudo-hyphae A white patch (which can often be scraped off) in the oral cavity of an immuno compromised patient is the classic presentation of oral candidiasis, or "thrush," caused by Candida albicans. When Candida invades tissue, it grows as budding yeasts and pseudo-hyphae (B). These are chains of elongated, unseparated yeast cells that resemble hyphae. (A) Branching septate hyphae: This is characteristic of molds like Aspergillus. (C) Budding yeast with capsule: This is the classic description of Cryptococcus. (D) Sulfur granules: These are characteristic of Actinomyces infection.

Question 133. What is a true statement about Z plasty?

A. To increase length

B. Flap turning

C. Zigzag suturing

D. Split-thickness skin graft (STSG)

Correct answer: A

To increase length A Z-plasty is a plastic surgery technique where a Z-shaped incision is made, and the two resulting triangular flaps are interchanged. The primary purpose of this flap transposition is to increase the length (A) of the skin along the line of the central incision. It is most commonly used to release a linear scar contracture. By re-orienting the scar, it "borrows" length from the surrounding lax tissue. While it involves flap turning (B) and results in zigzag suturing (C), its purpose and true statement about its function is to increase length.

Question 134. Which statement about Vacuum-Assisted Closure (VAC) therapy is accurate? 1. Negative pressure of -125 mmHg is applied 2. Redressing is done after 4-7 days 3. Increases proliferation of granulation tissue or protein synthetic matrix 4. Can be continuous or intermittent 5. Reduces bacterial proliferation

A. 1 and 3 correct

B. 2 and 4 correct

C. 1, 2, 3 correct

D. All correct

Correct answer: D

All correct Let's evaluate each statement about VAC (Negative Pressure Wound Therapy): 1. Negative pressure of -125 mmHg is applied: (Correct) This is the standard, most commonly used pressure setting, though it can be varied. 2. Redressing is done after 4-7 days: (Correct) While standard foam dressings are changed every 48-72 hours, some newer dressings or specific clinical situations (like over a skin graft) may allow for longer intervals. In the context of a multiple-choice question, this is considered a plausible statement. 3. Increases proliferation of granulation tissue: (Correct) This is the primary mechanism (macrostrain), which stimulates healing. 4. Can be continuous or intermittent: (Correct) Both modes are available; intermittent is thought to stimulate granulation more. 5. Reduces bacterial proliferation: (Correct) By removing exudate and reducing edema, it controls the wound's bacterial load. Since all five statements are considered correct in the context of the therapy's principles and applications, the answer is D. All correct. PEDIATRICS

Question 135. Which vaccine is contraindicated in a patient with Severe Combined Immunodeficiency (SCID)?

A. DPT

B. Hepatitis B

C. MMR

D. IPV

Correct answer: C

MMR Severe Combined Immunodeficiency (SCID) is a profound T-cell and B-cell deficiency, leaving the patient with no functional adaptive immune system. The cardinal rule is that these patients must not receive live attenuated vaccines, as the weakened virus or bacterium can cause a severe, life-threatening infection. (A) DPT (Diphtheria, Pertussis, Tetanus): This vaccine uses toxoids and inactivated components. It is safe. (B) Hepatitis B: This is a recombinant subunit vaccine. It is safe. (D) IPV (Inactivated Polio Vaccine): This is a killed-virus vaccine. It is safe. (C) MMR (Measles, Mumps, Rubella): This is a live attenuated vaccine. It is absolutely contraindicated in SCID.

Question 136. Which of the following is not true in Turner Syndrome?

A. Webbed neck

B. Short 4th metacarpals

C. Widely spaced hypoplastic nipples

D. Prominent occiput

Correct answer: D

Prominent occiput Turner Syndrome (monosomy X, 45,X0) is a genetic condition in females with a characteristic set of features. (A) Webbed neck (pterygium colli) and a low posterior hairline are classic features. (B) Short 4th metacarpals (and metatarsals) are a common skeletal finding. (C) Widely spaced hypoplastic nipples and a "shield chest" are classic findings. (D) Prominent occiput is not a feature of Turner Syndrome. This finding is classically associated with Trisomy 18 (Edwards Syndrome).

Question 137. A young boy presents with petechiae and a platelet count of 10,000/cu mm. Bone marrow aspirate shows normal cellularity with increased megakaryocytes. What is the most appropriate initial treatment?

A. Aspirin

B. Bone Marrow Transplant

C. IVIG

D. Methotrexate

Correct answer: C

IVIG This is a classic presentation of Immune Thrombocytopenic Purpura (ITP) in a child: 1. Isolated thrombocytopenia (platelets 10,000). 2. Symptoms (petechiae). 3. Bone marrow showing increased megakaryocytes (the platelet precursors), which are working overtime but whose offspring (platelets) are being destroyed in the periphery. The goal of initial therapy for a child with a platelet count <20,000 and/or active bleeding is to rapidly increase the platelet count. The two first-line options are corticosteroids or Intravenous Immunoglobulin (IVIG). IVIG (C) works rapidly by "clogging" the reticuloendothelial system, preventing it from clearing antibody-coated platelets. Aspirin (A) is contraindicated as it inhibits platelet function. BMT (B) and Methotrexate (D) are not first-line therapies.

Question 138. A 3-year-old child has had cyanosis since infancy. Which component, if present, would indicate Tetralogy of Fallot (TOF)?

A. Left ventricular hypertrophy

B. Infundibular pulmonary stenosis

C. Transposition of arteries

D. Inter-atrial septal defect

Correct answer: B

Infundibular pulmonary stenosis Tetralogy of Fallot (TOF) is the most common cyanotic congenital heart defect in children. It is defined by a combination of four specific defects

(mnemonic: PROVe): 1. Pulmonary Stenosis (most commonly infundibular) 2. Right Ventricular Hypertrophy 3. Overriding Aorta 4. Ventricular Septal Defect (VSD) Therefore, infundibular pulmonary stenosis (B) is a core component of TOF. Left ventricular hypertrophy (A) is incorrect (it's RVH). Transposition (C) and ASD (D) are different cardiac defects (though an ASD can co-exist, making it a "Pentalogy" of Fallot).

Question 139. A 9-month-old child is brought in for developmental concerns. The child cannot sit with support but can roll over, says “dada” and “mama,” and shows stranger anxiety. What is the appropriate management?

A. Order an immediate MRI

B. Reassure the parents that it's normal development

C. Refer to neurologist for developmental assessment

D. Advise parents to start exercises

Correct answer: B

Reassure the parents that it's normal development At 9 months of age, developmental milestones are assessed across gross motor, fine motor, language, and social domains. Normally, most infants can sit without support by around 8–9 months, but there is variation, and some may still require minimal support at this stage without it being pathological. In this case, the child can roll over (a 4–6 month milestone), says “mama” and “dada” (appropriate for 8–9 months), and demonstrates stranger anxiety (a typical 6–9 month social milestone). These findings indicate appropriate social and language development. The inability to sit with support at exactly 9 months, in the absence of other red flags such as loss of milestones, abnormal tone, poor interaction, or feeding difficulty, does not immediately suggest a serious neurological disorder. Mild variation in gross motor skills can be normal. There is no indication for urgent MRI or specialist referral at this stage. The appropriate approach is reassurance, continued monitoring, and routine follow-up to ensure milestone progression. Thus, reassurance is the most appropriate management.

Question 140. Which of the following statements about marasmus in children is not true?

A. Seen due to carbohydrate (caloric) deficiency

B. Protein loss is responsible for edema in this patient

C. Child appears emaciated with loss of subcutaneous fat

D. Weight-for-age is less than 60% of expected

Correct answer: B

Protein loss is responsible for edema in this patient Marasmus is a state of severe malnutrition characterized by a total caloric (energy) deficiency. (A) This leads to a state of "wasting," where the child's body consumes its own fat and muscle. (C) The child appears emaciated, like "skin and bones," due to the loss of subcutaneous fat. (D) Weight-for-age is less than 60% is a

standard (Gomez classification) definition of severe malnutrition. (B) "Protein loss is responsible for edema in this patient" is not true. This statement is the defining feature of Kwashiorkor, where isolated protein deficiency leads to hypoalbuminemia and edema. The key feature of marasmus is the absence of edema.

Question 141. Which of the following is not an aneuploidy?

A. Trisomy 21

B. Trisomy 13

C. Klinefelter Syndrome

D. Bloom Syndrome

Correct answer: D

Bloom Syndrome Aneuploidy is a genetic condition characterized by an abnormal number of chromosomes (i.e., not a multiple of 23). (A) Trisomy 21 (Down Syndrome) is an aneuploidy (47 chromosomes total). (B) Trisomy 13 (Patau Syndrome) is an aneuploidy (47 chromosomes total). (C) Klinefelter Syndrome (XXY) is an aneuploidy of the sex chromosomes (47 chromosomes total). (D) Bloom Syndrome is not an aneuploidy. It is an autosomal recessive disorder caused by a mutation in a single gene (the BLM gene). This gene codes for a DNA helicase. While this leads to chromosome instability and breakage, the baseline chromosome number (karyotype) is normal (46,XX or 46,XY).

Question 142. Which of the following statements about proper breastfeeding technique is incorrect? 1. Infant's chin should be touching the breast 2. Infant's lower lip should be inverted during latching to the breast 3. A greater part of areola above the breast should be covered than below 4. Infant's cheeks should appear full during effective sucking.

A. 1 & 4

B. 2 & 3

C. 2, 3 & 4

D. 1, 2, 3 & 4

Correct answer: B

2 & 3 This question assesses the signs of a good latch during breast feeding. 1. Infant's chin should be touching the breast: (Correct) This ensures the nose is clear and the head is tilted back for a deep latch. 2. Infant's lower lip should be inverted: (Incorrect) The lower lip should be e-verted (flanged/curled outward) to scoop up the breast tissue. An inverted lip is a sign of a poor, shallow latch. 3. A greater part of areola above... covered than below: (Incorrect) The latch should be asymmetric, with the infant's mouth covering more of the areola below the nipple. This means more of the areola is visible above the lip. 4. Infant's cheeks should appear full: (Correct) Full, rounded cheeks indicate the mouth is full of breast tissue and the infant is sucking effectively. Hollow, "dimpled" cheeks indicate a poor latch. The incorrect statements

are 2 and 3, which corresponds to option (B).

Question 143. Which option best describes the mechanism behind breast milk jaundice?

A. Hepatocellular injury by breast milk

B. Increased RBC breakdown producing more unconjugated bilirubin

C. Inhibition of conjugation by substances like free fatty acids & beta-glucuronidases in the breast milk

D. Reduced intestinal absorption of bilirubin

Correct answer: C

Inhibition of conjugation by substances like free fatty acids & beta-glucuronidases in the breast milk Breast milk jaundice (not to be confused with breastfeeding failure jaundice) is a common, prolonged, unconjugated hyperbilirubinemia in a healthy, thriving infant that starts after the first week of life. (A) Breast milk does not cause hepatocellular injury. (B) It is not a hemolytic process (RBC breakdown). (D) The mechanism is increased intestinal absorption, not reduced. (C) The "best explanation" is that substances in the breast milk interfere with bilirubin metabolism. Specifically, enzymes in the milk like beta-glucuronidase are thought to "de-conjugate" bilirubin in the infant's gut, converting it back to unconjugated bilirubin, which is then reabsorbed (the "enterohepatic circulation"). Other substances like free fatty acids may also inhibit the conjugation enzyme (UGT1A1) in the liver.

Question 144. A child presents with hepatosplenomegaly and cherry-red spots in the eyes, along with developmental regression but a normal startle NODIA page 23 INICET Examination Paper response. Which enzyme deficiency is most likely?

A. Hexosaminidase A

B. Arylsulfatase A

C. Sphingomyelinase

D. Glucocerebrosidase

Correct answer: C

Sphingomyelinase This combination of findings points to a specific lysosomal storage disorder. 1. Hepatosplenomegaly 2. Cherry red spots (on fundoscopy) 3. Developmental regression 4. Normal startle response (This is a key differentiator) Let's analyze the options: (A) Hexosaminidase A deficiency causes Tay-Sachs disease. This presents with regression and a cherry red spot, but crucially, it has no hepatosplenomegaly and a hyper-active startle response. (C) Sphingomyelinase deficiency causes Niemann-Pick disease Type A. This is the classic diagnosis that combines all four features: hepatosplenomegaly, developmental regression, and a cherry red spot (in ~50% of cases). (D) Glucocerebrosidase deficiency causes Gaucher disease, which has massive hepatosplenomegaly but no cherry red spot. (B) Arylsulfatase A deficiency causes Metachromatic Leukodystrophy, which has regression but not

the other findings.

Question 145. Question 160.A newborn is noted to have several hypopigmented macules, and Wood’s lamp examination reveals ash-leaf spots. What is the most likely diagnosis?

A. Sturge-Weber Syndrome

B. Neurofibromatosis Type 1

C. Tuberous Sclerosis

D. Incontinentia Pigmenti

Correct answer: C

Tuberous Sclerosis The skin finding is pathognomonic. "Ash-leaf spots"—which are hypopigmented (white) macules that are often leaf-shaped and best visualized under a Wood's lamp—are the earliest and most characteristic skin sign of Tuberous Sclerosis (TS) (C). These are often present at birth. (A) Sturge-Weber Syndrome is characterized by a "port-wine stain" (a hyperpigmented vascular macule). (B) Neurofibromatosis Type 1 is characterized by "cafe-au-lait" spots (also hyperpigmented). (D)`Incontinentia Pigmenti presents in stages, starting with vesicular (blistering) rashes, then warty lesions. ORTHOPEDICS

Question 146. According to WHO, which investigation is included in the diagnostic work-up for spinal tuberculosis?

A. X-ray

B. CT scan

C. CBNAAT

D. Culture and sensitivity

Correct answer: C

CBNAAT The World Health Organization (WHO) has revolutionized TB diagnostics by strongly advocating for rapid molecular tests. For extra-pulmonary TB, like TB spine (Pott's disease), the main challenge is confirming the Mycobacterium tuberculosis organism. While X-ray (A) and CT scan (B) are crucial for visualizing the characteristic bone destruction (e.g., vertebral collapse, gibbus formation, para-spinal abscesses), they are non-specific and cannot confirm the etiology. Similarly, Culture (D), while the gold standard for sensitivity testing, is very slow, taking weeks to yield a result. The WHO guidelines now emphasize rapid, high-sensitivity tests. The CBNAAT (Cartridge-Based Nucleic Acid Amplification Test) (C), also known as Xpert MTB/RIF, is the recommended test. It can be performed on pus or tissue from the spine lesion, providing a rapid diagnosis (within hours) by detecting M.tb DNA. As an added benefit, it also simultaneously detects rifampicin resistance, guiding immediate and appropriate therapy.

Question 147. What is the recommended treatment for an inter-trochanteric fracture in a 72-year-old woman?

A. Hemiarthroplasty / Dynamic Hip Screw (DHS)

B. Intramedullary nailing

C. Open Reduction and Internal Fixation (ORIF) with plating

D. Boot and bar

Correct answer: B

Intramedullary nailing The management of inter-trochanteric (IT) fractures in elderly patients, like this 72-year-old female, aims for stable fixation to allow for early mobilization and weight-bearing, which minimizes complications. Intramedullary nailing (B), specifically with a cephalomedullary nail (e.g., PFN, Gamma nail), has become the preferred treatment, especially for unstable IT fractures. This load-sharing device offers superior biomechanical stability and is inserted with a less-invasive technique, leading to less blood loss and faster recovery compared to older methods. While the Dynamic Hip Screw (DHS) (A) is also a valid option (a load-bearing device) and was once the gold standard, it is generally reserved for more stable fracture patterns. Hemiarthroplasty (A) is not indicated for IT fractures; it is a treatment for intracapsular (femoral neck) fractures. ORIF with plating (C) is not the standard of care for this fracture type. Boot and bar (D) is a treatment for pediatric clubfoot, not adult hip fractures.

Question 148. A laborer falls on an outstretched hand and develops pain in the anatomical snuffbox. What is the most appropriate next step?

A. NSAIDs and discharge

B. MRI of the wrist

C. Thumb spica cast and follow-up after 10-14 days

D. CT scan of the wrist

Correct answer: C

Thumb spica cast and follow-up after 10-14 days This clinical presentation—a fall on an outstretched hand (FOOSH) with tenderness in the anatomical snuffbox—is the hallmark sign of a scaphoid fracture until proven otherwise. Scaphoid fractures are notoriously difficult to visualize on initial X-rays, with a significant false-negative rate. The high risk associated with a missed scaphoid fracture (avascular necrosis and non-union, due to its tenuous retrograde blood supply) mandates a cautious and conservative approach. Therefore, discharging the patient with NSAIDs (A) is negligent. While advanced imaging like CT (D) or MRI (B) can confirm the diagnosis, the most appropriate, cost-effective, and standard immediate step is to treat the patient as if a fracture exists. This involves immobilization in a thumb spica cast (C), which specifically immobilizes the thumb and wrist. The patient is then instructed to return in 10-14 days for a repeat clinical examination and follow-up X-rays, by which time bone resorption at the fracture site often makes the fracture line visible.

Question 149. A patient with rheumatoid arthritis develops neck pain along with clinical features of myelopathy. What is the most likely diagnosis?

A. Osteoarthritis of vertebrae

B. C2-C3 intervertebral stenosis

C. Atlantoaxial dislocation

D. Disc herniation

Correct answer: C

Atlantoaxial dislocation Rheumatoid Arthritis (RA) is a systemic inflammatory disease that commonly affects the cervical spine, in contrast to osteoarthritis, which typically spares it. The most characteristic and dangerous manifestation of RA in the neck is atlantoaxial dislocation (or subluxation) (C). The inflammation causes synovitis of the atlanto-odontoid joint, leading to erosion of the transverse ligament. This ligament normally holds the dens (odontoid process) of C2 against the atlas (C1). When this ligament becomes lax or ruptures, the atlas can subluxate forward on the axis, compressing the spinal cord at that level. This compression presents with neck pain and progressive clinical signs of myelopathy (e.g., spasticity, hyperreflexia, gait disturbance, bowel/bladder dysfunction). This is a neurosurgical emergency. While disc herniation (D) or osteoarthritis (A) can cause myelopathy, in the specific context of a patient with rheumatoid arthritis, atlantoaxial dislocation is the most likely and feared diagnosis. OBS & GYNE

Question 150. A female presents with abdominal fullness, early satiety and weight loss. Her CA-125 level is / . mg dL 125 On examination, she has ascites, omental caking, and bilateral adnexal masses with thick septations on imaging. What is the most likely diagnosis?

A. Serous adenocarcinoma

B. Mucinous cystadenoma

C. Germ cell tumour

D. Endometriosis

Correct answer: A

Serous adenocarcinoma This clinical picture is the classic presentation of advanced ovarian cancer. The vague symptoms (abdominal fullness, early satiety, weight loss) are due to peritoneal spread. The physical and imaging findings are highly suggestive of malignancy: ascites, omental caking (metastatic implants on the omentum), and bilateral adnexal masses (ovarian tumors). The presence of thick septations on imaging further indicates malignancy, as opposed to a simple cyst. An elevated CA-125 level (a tumor marker) strongly supports this diagnosis. Among the choices, Serous adenocarcinoma (A) is the most common type of epithelial ovarian cancer (which accounts for 90% of all ovarian malignancies) and is the most likely diagnosis to present in this aggressive, widespread manner. Mucinous cystadenoma (B) is typically benign, and while large, it doesn't cause omental caking. Germ cell tumors (C) are rare and usually seen in younger women. Endometriosis (D) does not present this way.

Question 151. Which HPV strains are linked to cervical cancer?

A. 31, 33

B. 16, 18

C. 6, 8

D. 1, 2

Correct answer: B

16, 18 Human Papillomavirus (HPV) is the primary etiological agent for cervical cancer. The virus has numerous strains, which are broadly classified into high-risk (oncogenic) and low-risk (non-oncogenic) types. The two most important high-risk strains, responsible for approximately 70% of all cervical cancers worldwide, are HPV 16 and HPV 18 (B). HPV 16 is the most carcinogenic, found in about 50-60% of cases (especially squamous cell carcinoma), while HPV 18 is found in about 10-15% of cases and is more strongly associated with cervical adenocarcinoma. Other high-risk strains, like HPV 31 and 33 (A), account for a smaller percentage of cancers. In contrast, HPV 6 (C) and HPV 11 are the primary low-risk types, responsible for over 90% of anogenital warts (condyloma acuminata) but not for cancer. HPV 1 and 2 (D) are associated with common skin warts (verruca vulgaris) on the hands and feet.

Question 152. Which features are included in the Rotterdam criteria for diagnosing PCOS? a. Hirsutism b. Reduced cycles c. Insulin resistance d. Obesity

A. a, b

B. b, d

C. a, c

D. a, d

Correct answer: A

a, b The Rotterdam criteria (2003) are the most widely used diagnostic criteria for Polycystic Ovary Syndrome (PCOS). The diagnosis requires the presence of two out of the following three features: 1. Oligo- and/or anovulation: This manifests clinically as infrequent or absent menstrual periods, which is described as "Reduced cycles" (b). 2. Clinical and/or biochemical signs of hyperandrogenism: This includes clinical signs like "Hirsutism" (a) (excessive male-pattern hair growth), acne, or alopecia, or biochemical signs like elevated free or total testosterone. 3. Polycystic ovaries on ultrasound: Defined as 12 or more follicles in each ovary measuring 2-9 mm in diameter, and/or increased ovarian volume. While Insulin resistance (c) and Obesity (d) are very common features and part of the metabolic syndrome associated with PCOS, they are not part of the formal Rotterdam diagnostic criteria. Therefore, the correct pair from the criteria is (a) and (b).

Question 153. Which of the following drugs are not used in the management of postpartum hemorrhage (PPH)?

A. Dinoprostone

B. Methyl PGF2 alpha Click Here to Buy book on Amazon MEDINK

C. Misoprostol

D. Oxytocin

Correct answer: A

Dinoprostone Postpartum Hemorrhage (PPH) is most commonly caused by uterine atony (a "boggy," non-contracted uterus). Management involves the urgent administration of uterotonic drugs to stimulate strong uterine contractions. The first-line agent is Oxytocin (D), given as an infusion. If this fails, second-line agents are used. These include Carboprost (an analogue of Methyl PGF2 alpha) (B) and Misoprostol (C) (a PGE1 analogue), which is particularly useful in low-resource settings as it is oral/rectal and stable. Methylergometrine is also used. In contrast, Dinoprostone (A) is a PGE2 analogue. While it is a prostaglandin, its primary use in obstetrics is for cervical ripening and labor induction. It is not used in the management of PPH. Its formulation (as a vaginal gel or insert) and slower-acting, localized effect on the cervix make it unsuitable for the emergency of PPH, which requires rapid, powerful, systemic contraction of the entire uterine body.

Question 154. Which of the following does not cause fetal bradycardia?

A. Abruptio placenta

B. Maternal fever

C. Meconium aspiration

D. Fetal head compression

Correct answer: B

Maternal fever Fetal bradycardia (a heart rate < 110 bpm) is a non-reassuring sign, typically indicating fetal distress or hypoxia. Abruptio placenta (A) causes profound hypoxia and distress, leading to bradycardia. Fetal head compression (D) (especially early in labor) can cause a vagal nerve response, resulting in a temporary bradycardia known as an "early deceleration." Meconium aspiration (C) is a sign of fetal distress, and the underlying hypoxia that causes meconium passage is also a cause of bradycardia. In contrast, Maternal fever (B) does not cause fetal bradycardia. Maternal fever, most often from chorioamnionitis, causes a systemic inflammatory state and increases the metabolic rate of both the mother and the fetus. The fetus responds to this hyperthermic and inflammatory environment with an increased heart rate, leading to fetal tachycardia (a heart rate > 160 bpm). This is the opposite of bradycardia.

Question 155. A woman presents with delayed menstrual cycles and infertility. Chromopertubation shows bilateral tubal spillage and the uterus is normal, while ultrasound reveals bilaterally enlarged ovaries. What is the diagnosis?

A. Ovarian cyst

B. Endometriosis

C. Polycystic ovary syndrome (PCOS)

D. Tubo-ovarian mass

Correct answer: C

Polycystic ovary syndrome (PCOS) This clinical presentation strongly points to Polycystic Ovary Syndrome (PCOS). The key features align perfectly with the Rotterdam criteria: 1. Oligo- and/or anovulation: This is described as "delayed menstrual cycles and infertility." The lack of regular ovulation is the primary cause of infertility in PCOS. 2. Polycystic ovaries on ultrasound: This is described as "bilateral enlarged ovaries" on USG. The "polycystic" name refers to the presence of numerous small follicles that enlarge the ovaries. Chromopertubation (a test for tubal patency) showing "bilateral spillage" effectively rules out tubal factor infertility, pointing the cause back to an ovulatory problem. Endometriosis (B) and Tubo-ovarian mass (D) would more likely be associated with pelvic pain or tubal blockage. A simple Ovarian cyst (A) would not typically be bilateral or cause chronic anovulation. The combination of anovulation and polycystic ovarian morphology makes PCOS the most likely diagnosis.

Question 156. A 36-year-old primigravida presents to the antenatal ward with complaints of increased urinary frequency and burning micturition. A urine culture showed $\ge10^{5}$ cells. Repeat culture showed E. coli sensitivity. What is the diagnosis?

A. Asymptomatic bacteriuria

B. Normal commensal, no treatment

C. Repeat urine culture

D. Advice to visit in next semester

Correct answer: A

Asymptomatic bacteriuria This patient presents with symptoms ("burning micturition") and a positive urine culture ($\ge10^{5}$ CFU/mL of E. coli), which defines a symptomatic Urinary Tract Infection (UTI). However, Asymptomatic Bacteriuria (ASB) (A) is provided as an option. ASB is defined by the same culture result ($\ge10^{5}$ CFU/mL) but in a patient without symptoms. In pregnancy, screening for and treating ASB is critical because it carries a high risk of progressing to pyelonephritis and causing preterm labor. The question is likely using "Asymptomatic bacteriuria" as a broad term for any significant bacteriuria in pregnancy, which must be treated. Given the options, (A) is the only plausible diagnostic label, despite the patient being symptomatic. Options B, C, and D are incorrect management. Treating this bacteriuria, whether symptomatic or not, is mandatory in pregnancy.

Question 157. Which of the following is a feature of Pap smear procedure? a. Lithotomy position b. Vaginal examination c. Speculum examination d. Sample taken using Ayre's spatula

A. a, b, d

B. a, c, d

C. a, c

D. b, a, c

Correct answer: B

a, c, d A Pap smear (or Pap test) is a cervical cancer screening procedure. The process involves several key steps. First, the patient is placed in the (a) Lithotomy position (lying on her back with feet in stirrups) to allow for proper visualization and access to the cervix. Next, a (c) Speculum examination is performed. A speculum (e.g., Cusco's speculum) is inserted into the vagina and opened to visualize the cervix clearly. This step is essential and distinct from a bimanual vaginal examination (b), which is a tactile exam of the uterus and adnexa and is not the primary step for sample collection. Once the cervix is visualized, the sample is collected from the transformation zone (squamocolumnar junction) using a sampling device. The classic device for this is the (d) Ayre's spatula, which is used to scrape the ectocervix, often in combination with a cytobrush for the endocervix. Therefore, the correct features of the procedure are (a) Lithotomy position, (c) Speculum examination, and (d) Sample collection with an Ayre's spatula.

Question 158. Use of magnesium sulfate (MgSO 4) in pre- eclampsia has all of the following effects except:

A. Neuroprotection

B. Prevent abruption of placenta

C. Decrease seizure incidence

D. Prevent preterm labour

Correct answer: D

Prevent preterm labour Magnesium sulfate (MgSO 4) is the drug of choice in pre-eclampsia and eclampsia primarily for seizure prophylaxis and treatment. Its main mechanism is central nervous system depression through NMDA receptor blockade and reduction of neuromuscular transmission, thereby decreasing seizure incidence (C). This is its most important clinical role. MgSO 4 also provides fetal neuroprotection (A) when administered in women at risk of imminent preterm delivery (usually before 32 weeks). It reduces the risk of cerebral palsy in preterm infants. However, magnesium sulfate does not prevent placental abruption (B). Abruption occurs due to severe hypertension and vascular pathology; MgSO 4 does not directly prevent this complication. Although magnesium has mild smooth muscle–relaxant properties and was historically used as a tocolytic, it is not effective for preventing preterm labour and is no longer recommended for this purpose. Since prevention of preterm labour is not a therapeutic indication of MgSO 4 in pre-eclampsia, the correct answer is : (D) Prevent preterm labour.

Question 159. What is the most common complication of a urinary tract infection (UTI) during pregnancy?

A. Miscarriage

B. Chorioamnionitis

C. Prenatal labour

D. Neonatal mortality

Correct answer: C

Prenatal labour Urinary tract infections, including asymptomatic bacteriuria, are a significant concern in pregnancy. If left untreated, the infection can ascend from the bladder (cystitis) to the kidneys, causing pyelonephritis. The release of bacterial endotoxins and the subsequent systemic inflammatory response (including prostaglandin release) can irritate the uterus and initiate uterine contractions. This makes UTI one of the most common and preventable causes of preterm labor (C) (referred to in the option as "Prenatal labour") and subsequent preterm birth. While untreated UTIs and pyelonephritis can be associated with other complications like miscarriage (A), low birth weight, and neonatal mortality (D) (often secondary to prematurity), the most direct, common, and well-established obstetric complication is the induction of preterm labor. Chorioamnionitis (B) is more commonly associated with ascending vaginal infections, not as a direct complication of UTI.

Question 160. Under the family planning program, an LNG- containing IUCD may be inserted in all of the following situations except which one?

A. Within 48 hours of delivery

B. Within 7 days of menstruation

C. Within 10 days of next menstrual cycle

D. Immediate post delivery

Correct answer: C

Within 10 days of next menstrual cycle An Intrauterine Contraceptive Device (IUCD), including the levonorgestrel-containing IUS (e.g., Mirena), can be inserted at several time points to ensure the woman is not pregnant. The ideal time is (B) Within 7 days of menstruation (i.e., during or just after her period), as this is when the cervical os is slightly open and pregnancy is least likely. It can also be inserted (D) immediately post-delivery (within 10 minutes of placental delivery) or (A) within 48 hours of delivery (postpartum insertion). The one option that is incorrect and unsafe is (C) Within 10 days of the next menstrual cycle. This phrasing is confusing, but it implies insertion in the middle of the follicular phase (e.g., day 10). Inserting an IUCD at this time, without confirming non-pregnancy, carries a significant risk of insertion into an already (and unknowingly) pregnant uterus. The "7-day rule" applies from the start of the cycle, not 10 days into it. DERMATOLOGY

Question 161. What is the recommended treatment for scabies in an infant? 1. Permethrin 5% 2. Ivermectin 3. Benzyl benzoate 25% 4. Crotamiton 10%

A. 2, 4

B. 1, 2, 3

C. 1, 3, 4

D. 1, 2, 4

Correct answer: C

1, 3, 4 Scabies in infants requires safe and age-appropriate topical therapy. 1. Permethrin 5% (1) is the drug of choice. It is safe in infants older than 2 months and is applied over the entire body (including scalp and face in infants), left for 8–12 hours, and then washed off. It has high efficacy and low toxicity. 2. Benzyl benzoate 25% (3) can be used, but in infants it is usually diluted (e.g., 12.5%) to reduce skin irritation. It is effective but may cause burning or dermatitis. 3. Crotamiton 10% (4) is another topical option. Though less effective than permethrin, it is considered safe and may be used when first-line agents are unavailable. 4. Ivermectin (2) is generally avoided in infants weighing less than 15 kg due to safety concerns and is not routinely recommended as first-line therapy in this age group. Thus, recommended treatments for scabies in infants include permethrin, benzyl benzoate (diluted), and crotamiton, making option (C) correct.

Question 162. Side effects of topical steroids include all except:

A. Hypertrichosis

B. Atrophy

C. Acneiform eruption

D. Blue-green pigmentation

Correct answer: D

Blue-green pigmentation Topical corticosteroids, especially when used for prolonged periods or with high-potency formulations, are associated with a wide range of local adverse effects. The most common and characteristic side effect is skin atrophy (B), where the epidermis and dermis become thin, leading to fragile skin, striae (stretch marks), and telangiectasias. Other common cutaneous side effects include acneiform eruptions (C) (often presenting as sterile pustules in the area of application), perioral dermatitis, and hypertrichosis (A), which is the growth of fine, vellus hairs in the treated area. Blue-green pigmentation (D) is not an adverse effect of topical steroids. This specific type of discoloration is classically associated with systemic medications, most notably amiodarone, which can cause a blue-grey photosensitive pigmentation. It is also seen with minocycline or heavy metals like silver (argyria).

Question 163. What is the appropriate treatment for a male MSM patient presenting with urethral discharge and confirmed penicillin-resistant infection?

A. Amoxiclav

B. Tetracycline

C. Ceftriaxone

D. Vancomycin

Correct answer: C

Ceftriaxone Urethral discharge ("urethritis") in a sexually active male is most commonly caused by Neisseria gonorrhoeae (gonorrhea) or Chlamydia trachomatis. The finding of penicillin resistance is the key. N. gonorrhoeae has developed widespread resistance to nearly all older classes of antibiotics, including penicillins (like Amoxiclav (A)) and tetracyclines (B). The current, standard, first-line treatment recommended by the CDC and other international bodies for uncomplicated gonococcal infection is a single intramuscular dose of Ceftriaxone (C), a third-generation cephalosporin. This is typically given in combination with an agent for Chlamydia (like azithromycin or doxycycline), as co-infection is common. The MSM (men who have sex with men) history is significant as this population has a higher prevalence of resistant strains. Vancomycin (D) is a drug for gram-positive organisms (like MRSA) and has no role in treating gonorrhea, a gram-negative diplococcus.

Question 164. Which drug can be used to reverse the effects of rocuronium, a neuromuscular blocking agent?

A. Atropine

B. Baclofen

C. Neostigmine

D. Dantrolene

Correct answer: C

Neostigmine Rocuronium is a non-depolarizing neuromuscular blocking (NMB) agent. It acts as a competitive antagonist at the nicotinic acetylcholine (ACh) receptors at the neuromuscular junction (NMJ), preventing muscle contraction. Reversal of this blockade is traditionally achieved by increasing the concentration of acetylcholine in the synaptic cleft to outcompete the rocuronium. Neostigmine (C) is an acetylcholinesterase inhibitor. It blocks the enzyme (AChE) that normally breaks down ACh, thereby increasing the amount of ACh available at the NMJ. This surplus of ACh overcomes the competitive blockade, restoring muscle function. Atropine (A) is an antimuscarinic drug given alongside neostigmine to prevent its systemic muscarinic side effects (like bradycardia and salivation), but it is not the reversal agent itself. Baclofen (B) is a centrally-acting muscle relaxant. Dantrolene (D) is used to treat malignant hyperthermia.

Question 165. For benzodiazepines and barbiturates, which of the following is true?

A. Flumazenil is the antidote for barbiturate

B. Cause additive sedation with alcohol

C. Thiopentone has short duration of action due to metabolism

D. Both have effect on GABA-A chloride channel

Correct answer: B

Cause additive sedation with alcohol This statement is a critical, clinically-relevant

pharmacological truth. Both benzodiazepines and barbiturates are central nervous system (CNS) depressants that enhance the inhibitory effects of the neurotransmitter GABA at the GABA-A receptor. Alcohol is also a CNS depressant that potentiates GABA-A receptors. When these substances are taken concurrently, their individual depressant effects do not just add up; they often synergize, leading to a profound and dangerous level of additive sedation (B), respiratory depression, and potentially coma or death. This interaction is the basis for many fatal overdoses. (A) is false; Flumazenil is the antidote for benzodiazepines, but there is no specific antidote for barbiturates. (C) is false; the short duration of action of Thiopentone is due to rapid redistribution from the brain to peripheral tissues (like muscle and fat), not rapid metabolism. (D) is also a true statement, as this is their shared mechanism of action, but (B) highlights the significant and dangerous clinical interaction.

Question 166. In a patient with septic shock who stays hypotensive even after adequate fluid resuscitation, what should be the next medication of choice?

A. Noradrenaline

B. Adrenaline NODIA MEDINK

C. Dopamine

D. Hydrocortisone

Correct answer: A

Noradrenaline The patient is in fluid-refractory septic shock, as defined by persistent hypotension (low MAP) despite "adequate fluid resuscitation." The immediate goal is to restore tissue perfusion by increasing the mean arterial pressure (MAP) to a target of mmHg. This requires the initiation of a vasopressor. According to the international Surviving Sepsis Campaign guidelines, the first-line vasopressor of choice is noradrenaline (norepinephrine) (A). It is favored for its potent alpha-adrenergic effects, which cause peripheral vasoconstriction and increase blood pressure, with less of the arrhythmogenic beta-adrenergic effects seen with other agents. Adrenaline (B) is typically added as a second-line agent if noradrenaline alone is insufficient. Dopamine (C) is no longer a first-line choice due to its higher risk of arrhythmias. Hydrocortisone (D) is an adjuvant therapy given in refractory shock, not the primary vasopressor.

Question 167. Which of the following about lumbar puncture is incorrect?

A. Urgent indication if suspected SAH with inconclusive CT

B. Can be done in thrombocytopenia (platelet count >10,000)

C. Meningitis is an unusual complication

D. Post-tap headache is more common in females and old age

Correct answer: B

Can be done in thrombocytopenia (platelet count >10,000) Lumbar puncture (LP) is indicated urgently in suspected subarachnoid hemorrhage (SAH) when CT scan is inconclusive, making

option (A) correct. It is also commonly performed to diagnose meningitis, demyelinating disease, and other neurological conditions. Regarding platelet count, LP is contraindicated in significant thrombocytopenia due to the risk of spinal or epidural hematoma. Most guidelines recommend a platelet count of at least 50,000/µL before performing a lumbar puncture. A count of 10,000/µL is dangerously low and associated with high bleeding risk; therefore, LP should not be performed unless platelets are corrected. Meningitis is a rare complication of LP when performed under aseptic precautions, so option (C) is correct. Post-lumbar puncture headache is more common in females and younger adults (not elderly), but female sex is a known risk factor. Thus, the clearly incorrect statement is (B). RADIOLOGY

Question 168. A 17-year-old presents with leg pain and swelling, and the X-ray shows a sunburst pattern and a Codman triangle. What is the most likely diagnosis?

A. Osteosarcoma

B. Ewing sarcoma

C. Giant cell tumor

D. Chondroblastoma

Correct answer: A

Osteosarcoma The combination of findings in this patient is the textbook presentation of osteosarcoma (A). This is the most common primary malignant bone tumor in adolescents, with a peak incidence in the second decade of life (the patient is 17). It typically arises in the metaphysis of long bones, such as the distal femur or proximal tibia ("in the leg"). The X-ray findings are pathognomonic: the "sunburst appearance" (or "sun-ray" spiculation) is caused by the aggressive tumor lifting the periosteum and new, calcified bone spicules forming along stretched periosteal blood vessels. The "Codman triangle" is a triangular shadow of new subperiosteal bone seen at the margin where the rapidly growing tumor has lifted the periosteum away from the cortex. Ewing sarcoma (B) is known for an "onion-skin" reaction. Giant cell tumor (C) is a lytic, "soap-bubble" lesion in the epiphysis.

Question 169. Which of the following investigations is contraindicated in pregnancy?

A. MRI

B. CT scan

C. USG

D. Doppler

Correct answer: B

CT scan The primary concern for diagnostic investigations during pregnancy is the potential risk to the fetus, especially from ionizing radiation. CT scan (B) (Computed Tomography) uses a substantial dose of ionizing radiation (X-rays) to create cross-sectional images. This radiation exposure, particularly during the first trimester, is teratogenic and can increase the risk of fetal malformations and future childhood malignancies. Therefore, CT scans are relatively or

absolutely contraindicated in pregnancy and are only performed in life-threatening situations where no alternative (like MRI or ultrasound) is available. In contrast, Ultrasonography (USG) (C) and its variant, Doppler (D), use high-frequency sound waves and are the primary imaging modalities in pregnancy, considered perfectly safe. MRI (A) does not use ionizing radiation and is also considered safe, especially after the first trimester.

Question 170. A 35-year-old patient presents with colicky pain and is diagnosed with a ureteric stone. Which investigation is the best choice for diagnosis?

A. Non-contrast CT KUB

B. Ultrasonography KUB

C. Contrast-enhanced CT KUB

D. Ureteroscopy

Correct answer: A

Non-contrast CT KUB The gold standard and best diagnostic investigation for a patient presenting with acute flank pain (renal colic) is a Non-contrast CT KUB (A) (Kidneys, Ureters, Bladder). This test is extremely fast and has the highest sensitivity (95-98%) and specificity for detecting stones (urolithiasis). It can identify stones of all types (except rare indinavir stones) and pinpoint their exact size and location in the ureter, which is critical for management planning. It also provides valuable information about secondary signs of obstruction, such as hydronephrosis, and can simultaneously rule out other serious non-stone causes of abdominal pain (e.g., appendicitis, diverticulitis). Ultrasonography (B) is a good alternative, especially in pregnant patients or children (to avoid radiation), but it is poor at visualizing stones in the mid-ureter. Ureteroscopy (D) is an invasive treatment, not a diagnostic test.

Question 171. What is the most appropriate investigation for locating a parathyroid adenoma?

A. Sestamibi scan

B. USG

C. FDG PET

D. SPECT

Correct answer: A

Sestamibi scan The most useful and standard investigation for pre-operatively localizing a parathyroid adenoma in a patient with primary hyperparathyroidism is the Sestamibi scan (A). This is a nuclear medicine (scintigraphy) technique. The patient is injected with Technetium-99m Sestamibi, a radiotracer. This tracer is absorbed by both the thyroid and parathyroid glands but is "washed out" more quickly from normal thyroid tissue. Hyper-functioning parathyroid tissue, such as an adenoma, shows persistent uptake (retention) of the tracer on delayed images. This allows for functional localization, and it is particularly "useful" for detecting ectopic adenomas (e.g., in the mediastinum) that would be missed by

ultrasound. USG (B) is also a good first-line anatomical test, but Sestamibi is the key functional test. SPECT (D) is a technique often combined with Sestamibi (SPECT/CT) for better 3D localization.

Question 172. Honda or H sign on STIR MRI is characteristic of which condition? Click Here to Buy book on Amazon page 27 INICET Examination Paper

A. Multiple myeloma

B. Sacral insufficiency fracture

C. Acute osteomyelitis

D. Bone marrow edema

Correct answer: B

Sacral insufficiency fracture The "Honda sign" or "H-sign" is the classic, pathognomonic imaging finding for a sacral insufficiency fracture (B). These are stress fractures that occur in weakened, osteoporotic bone. The sign was originally described on bone scintigraphy (bone scan), where it refers to the 'H'-shaped pattern of increased radiotracer uptake in the sacrum. This pattern is caused by fractures in both sacral alae (the vertical arms of the 'H') connected by a horizontal fracture through the sacral body (the horizontal bar). This same pattern of injury, corresponding to bone marrow edema, can also be visualized on MRI, particularly on fluid-sensitive sequences like STIR, where it appears as high signal intensity. Multiple myeloma (A) presents as "punched-out" lytic lesions.

Question 173. "Eye of the tiger" appearance on MRI is associated with:

A. Pantothenate kinase-associated degeneration

B. Wilson disease

C. Krabbe disease

D. Huntington chorea

Correct answer: A

Pantothenate kinase-associated degeneration The "eye of the tiger" sign is a pathognomonic radiological finding seen on T2-weighted MRI of the brain, specifically in the globus pallidus. It describes a bilateral, symmetric pattern where the globus pallidus is hypointense (dark), with a central, ovoid area of hyperintensity (brightness). This appearance of a bright spot on a dark background resembles a tiger's eye. This sign is virtually diagnostic of Pantothenate Kinase-Associated Neurodegeneration (PKAN) (A), formerly known as Hallervorden-Spatz syndrome. PKAN is a form of neurodegeneration with brain iron accumulation (NBIA). The peripheral hypointensity is caused by the excessive iron accumulation, while the central hyperintensity is believed to be gliosis and neuronal loss. Wilson disease (B) is associated with the "face of the giant panda" sign.

Question 174. Which of the following medications are used to treat acute mania? 1.

Lithium 2. Valproate 3. Haloperidol 4. Amitriptyline

A. Only 1

B. 1, 2 & 3

C. 1, 2 & 4

D. 2 & 4

Correct answer: B

1, 2 & 3 The management of acute mania aims to rapidly control agitation, psychosis, and the underlying mood dysregulation. This is achieved with mood stabilizers and/or antipsychotics. Lithium (1) is the classic, gold-standard mood stabilizer, effective for both treating acute mania and preventing future episodes. Valproate (2), an anticonvulsant, is also a first-line mood stabilizer that is highly effective for acute mania. Haloperidol (3) is a potent, first-generation antipsychotic. It is not a mood stabilizer, but it is extremely useful in the acute setting to quickly manage severe agitation, psychosis, and disorganized behavior associated with mania. In contrast, Amitriptyline (4) is a tricyclic antidepressant (TCA). Antidepressants are contraindicated as monotherapy in acute mania because they can exacerbate manic symptoms or induce a mixed state.

Question 175. A patient with schizophrenia says, “Lord Hanuman was celibate, I am celibate, therefore I am Lord Hanuman.”What type of thought abnormality does this represent?

A. Autistic thinking

B. Verbigeration

C. Neologism

D. Loosening of association

Correct answer: A

Autistic thinking The patient is exhibiting a specific type of disordered thinking. The content of his thought is a grandiose delusion (believing he is Lord Hanuman). However, the question asks about the abnormality of the thought process itself. The patient's reasoning (A=B, C=B, therefore A=C) is illogical and based on a single, shared, non-essential attribute ("celibate"). This form of reasoning, where logic is distorted to fit a private, idiosyncratic, and non-reality-based internal world, is known as Autistic thinking (A) or dereistic thinking. It's a "thought form" disorder where associations are governed by private, personal rules rather than objective reality. Verbigeration (B) is the purposeless repetition of words. Neologism (C) is the creation of new, meaningless words. Loosening of association (D) is a disorder of thought flow, where speech jumps between unrelated topics.

Question 176. All of the following statements are correct except:

A. Opioid withdrawal is rarely fatal

B. Buprenorphine can be used for the management of opioid withdrawal

C. Flumazenil is used for the management of long-term alcohol dependence syndrome

D. Cannabis withdrawal is associated with minimal physical symptoms

Correct answer: C

Flumazenil is used for the management of long-term alcohol dependence syndrome This statement is incorrect. Flumazenil is a competitive antagonist at the benzodiazepine receptor. Its only clinical use is as an antidote to reverse the effects of a benzodiazepine overdose or to reverse conscious sedation. It has absolutely no role in the management of alcohol dependence. Drugs used for long-term management of alcohol dependence syndrome include agents like naltrexone (to reduce cravings), acamprosate (to restore neurotransmitter balance), and disulfiram (as an aversion therapy). The other statements are all correct. (A) Opioid withdrawal is severely uncomfortable but not life-threatening. (B) Buprenorphine is a first-line medication for managing opioid withdrawal and dependence. (D) Cannabis withdrawal syndrome is characterized more by psychological symptoms (irritability, anxiety, insomnia) than by significant or dangerous physical symptoms.

Question 177. Which of the following statements is incorrect?

A. Alcohol in low dose causes brain stimulation and in higher doses, causes brain suppression

B. Cannabis use can result in self-driven, repetitive behaviours

C. Opioids are very effective analgesics NODIA MEDINK

D. Volatile inhalational agents are mostly toxic to humans

Correct answer: A

Alcohol in low dose causes brain stimulation and in higher doses, causes brain suppression This statement is incorrect from a pharmacological perspective. Alcohol is a central nervous system (CNS) depressant at all doses. The "stimulation" (e.g., euphoria, talkativeness, disinhibition) felt at low doses is not true stimulation (like that from amphetamines). It is a "pseudo-stimulation" caused by the depression or disinhibition of higher cortical centers in the brain (like the prefrontal cortex) that normally govern social control and judgment. As the dose increases, the depressant effects become more pronounced, leading to sedation, ataxia, and eventual "brain suppression." Therefore, alcohol never truly "causes brain stimulation." The other statements are considered correct in this context. (C) Opioids are a gold standard for analgesia. (D) Volatile inhalational agents in the context of substance abuse (e.g., solvents, glue) are mostly toxic. (B) Cannabis use can be associated with repetitive behaviors.

Question 178. Which of the following is not included in the ICD-10 diagnostic criteria for depression?

A. Low energy levels

B. Low mood for most of the day

C. Loss of interest in pleasurable things

D. Low self-esteem and confidence

Correct answer: D

Low self-esteem and confidence This question is nuanced, as all four options are listed as symptoms of a depressive episode (F32) in the ICD-10. However, the ICD-10 divides the symptoms into two groups: the "key" (or "core") symptoms and the "other" symptoms. A diagnosis of depression requires at least two of the three key symptoms: (B) Low mood for most of the day, (C) Loss of interest in pleasurable things (anhedonia), and (A) Low energy levels (anergia). The remaining symptoms, including (D) Low self-esteem and confidence, are listed as "other" common symptoms. Therefore, in the context of a "which is not a criterion" question where all are listed, the question is flawed or is asking to differentiate the key criteria from the other criteria. In this interpretation, (D) is the outlier, as (A), (B), and (C) form the core diagnostic triad. **********