INI-CET November 2024 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. What deficit results from an injury to the posterior interosseous nerve?

A. Wrist drop

B. Loss of finger extension

C. Inability to extend the wrist

D. Inability to adduct the fingers/thumb

Correct answer: B

Loss of finger extension The posterior interosseous nerve (PIN) is the deep, purely motor branch of the radial nerve. It innervates the muscles in the extensor compartment of the forearm. A crucial anatomical point is that the radial nerve gives off branches to the main wrist extensors (extensor carpi radialis longus and brevis) before the PIN is formed. Therefore, in an isolated PIN palsy, wrist extension is largely preserved, and a complete wrist drop (A) does not occur. However, the PIN supplies the extensor digitorum communis, extensor indicis, extensor digiti minimi, and extensor pollicis longus. Consequently, injury to this nerve results in a characteristic "finger drop," which is an inability to extend the fingers and thumb at the metacarpophalangeal (MCP) joints. Adduction of the fingers (D) is a function of the ulnar nerve.

Question 2. Which cranial nerve is not contained within the superior orbital fissure?

A. III

B. IV

C. II

D. VI

Correct answer: C

II The superior orbital fissure is a crucial opening in the sphenoid bone that connects the middle cranial fossa with the orbit. It transmits several important neurovascular structures. The contents include the oculomotor nerve (CN III), the trochlear nerve (CN IV), the ophthalmic division of the trigeminal nerve (CN V1), and the abducens nerve (CN VI). It also transmits the superior ophthalmic vein. In contrast, the optic nerve (CN II) and the ophthalmic artery pass through a separate, more medially located foramen called the optic canal. Therefore, the optic nerve is not a content of the superior orbital fissure. This anatomical separation is a frequently tested point in neuroanatomy, distinguishing the pathways for vision from those controlling eye

movement and sensation.

Question 3. A patient reports that food gets trapped between the cheek and the teeth. Weakness of which muscle is associated with this complaint?

A. Buccinator

B. Orbicularis Oris

C. Zygomaticus Major

D. Risorius

Correct answer: A

Buccinator The buccinator is a thin, quadrilateral muscle that forms the principal muscular component of the cheek. Its primary function during mastication is to press the cheek firmly against the molar teeth. This action keeps food on the occlusal (chewing) surfaces of the teeth and prevents it from accumulating in the oral vestibule, which is the space between the teeth/ gums and the cheek. Weakness or paralysis of the buccinator muscle, typically due to an injury of the facial nerve (CN VII), results in the inability to perform this function effectively. Consequently, food tends to pocket or get stuck in the oral vestibule during chewing, matching the patient's complaint precisely. The orbicularis oris (B) closes the lips, while the zygomaticus major (D) and risorius (D) are involved in smiling.

Question 4. The first migration of epiblast cells leads to the formation of which germ layer?

A. Ectoderm

B. Endoderm

C. Mesoderm

D. Notochord

Correct answer: B

Endoderm During the third week of embryonic development, a process called gastrulation transforms the bilaminar embryonic disc into a trilaminar disc. This process begins at the primitive streak, where cells of the superficial layer, the epiblast, proliferate and migrate inwards. The very first wave of epiblast cells to invaginate through the primitive streak pushes aside and completely replaces the cells of the underlying hypoblast layer. This newly formed deep layer is the definitive embryonic endoderm. Shortly after, a second wave of migrating epiblast cells positions itself between the epiblast and the new endoderm, forming the middle layer, the mesoderm. The remaining cells of the epiblast that do not migrate constitute the ectoderm. Therefore, the endoderm is the first of the three primary germ layers to be formed from migrating epiblast cells.

Question 5. While receiving the second dose of the COVID vaccine, a patient developed a flabby, flattened, and uneven shoulder. A nurse observed a loss of the

normal shoulder contour. Which anatomical structure is likely to have been damaged, and could this injury have been avoided?

A. Rotator cuff

B. Posterior circumflex artery

C. Lateral cutaneous nerve of arm

D. Axillary nerve

Correct answer: D

Axillary nerve The rounded contour of the shoulder is primarily formed by the deltoid muscle. The symptoms described—a flabby, flat, and asymmetrical shoulder—are indicative of deltoid muscle atrophy or paralysis. The deltoid muscle is responsible for arm abduction and is innervated by the axillary nerve. This nerve courses around the surgical neck of the humerus, approximately 5-7 cm below the acromion. Intramuscular injections, such as vaccines, should be administered into the thickest part of the deltoid muscle, well above the course of the axillary nerve. An injection given too low on the arm can directly injure the axillary nerve, leading to deltoid paralysis, atrophy, and the observed loss of shoulder contour. This is a known iatrogenic injury that is preventable by using the correct injection landmarking technique.

Question 6. Which arteries originate from the anterior division of the internal iliac artery? 1 Superior gluteal artery 2 Inferior gluteal artery 3 Superior vesical artery 4 Middle rectal artery 5 Inferior vesical artery 6 Vaginal artery

A. 1,2,3,5

B. 2,3,4,6

C. 2,3,4,5,6

D. 1,4,5,6

Correct answer: C

2,3,4,5,6 The internal iliac artery divides into a posterior and an anterior division. The posterior division supplies the pelvic wall and gluteal region. Its branches are the iliolumbar, lateral sacral, and superior gluteal artery (1). The anterior division supplies the pelvic viscera, perineum, and medial thigh. Its branches are numerous and include the umbilical artery (which gives off the superior vesical artery (3)), obturator artery, inferior vesical artery (5) in males, uterine artery (which gives off the vaginal artery (6) in females), middle rectal artery (4), internal pudendal artery, and the inferior gluteal artery (2). Therefore, all the listed arteries except the superior gluteal artery are branches of the anterior division. PHYSIOLOGY

Question 7. Match the hormones with their respective receptors: 1. Acetylcholine (Ach) A. JAK-STAT pathway 2. Levothyroxine B. Tyrosine ki- nase receptor 3. Insulin C. Intranuclear receptor 4. Growth hormone D. Ligand-gated ion channel

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

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

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

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

Correct answer: A

1-D, 2-C, 3-B, 4-A 1 Acetylcholine binds to nicotinic receptors, which are classic examples of ligand-gated ion channels that open upon binding to allow ion flux. (1-D) 2 Levothyroxine (T4) is a thyroid hormone. Thyroid hormones are lipophilic and cross the cell membrane to bind to intranuclear receptors, where they act as transcription factors to regulate gene expression. (2-C) 3 Insulin binds to a cell surface receptor that possesses intrinsic tyrosine kinase activity. Binding of insulin causes autophosphorylation of the receptor and phosphorylation of downstream signaling molecules. (3-B) 4 Growth hormone binds to a cell surface receptor that lacks intrinsic kinase activity. Instead, it is associated with Janus Kinase (JAK), and its activation triggers the JAK-STAT signaling pathway. (4-A)

Question 8. Which of the following types of transport does not require ATP? A. Paracellular transport B. Simple diffusion C. Facilitated diffusion D. Na+/K+ ATPase E. Symport/Antiport

A. A, B, C

B. A, B, C, D

C. A, C, D

D. B, D

Correct answer: A

A, B, C Cellular transport can be active or passive. Active transport requires energy, typically from ATP hydrolysis, to move substances against their concentration gradient. Na+/K+ ATPase (D) is the quintessential example of primary active transport. Symport/Antiport (E) are forms of secondary active transport, which use the energy stored in an electrochemical gradient (created by primary active transport) rather than direct ATP hydrolysis. In contrast, passive transport does not require metabolic energy. Simple diffusion (B) is the movement of substances directly across the membrane down their concentration gradient. Facilitated diffusion (C) uses a channel or carrier protein to move substances down their gradient. Paracellular transport (A) is the movement of substances through the tight junctions between cells, also driven by electrochemical gradients. Thus, paracellular transport, simple diffusion, and facilitated diffusion are all passive processes that do not directly consume ATP.

Question 9. What factors contribute to the latent period in a single muscle twitch? 1 Excitation-contraction coupling 2 Time interval from the point of stimulus to the onset of contraction 3 Neuromuscular junction (NMJ) transmission 4 Transfer of calcium back into the sarcoplasmic reticulum via SERCA

A. 1,2,3

B. 2,3,4

C. 1,3,4

D. 1,2,4

Correct answer: A

1,2,3 The latent period is defined as the time interval from the point of stimulus to the onset of muscle contraction (2). It is a brief delay during which a series of electrochemical and mechanical events occur before tension develops. These events include the transmission of the action potential across the neuromuscular junction (NMJ) (3), including the release of acetylcholine and generation of an end-plate potential. Following this, the process of excitation-contraction coupling (1) takes place. This involves the propagation of the muscle action potential along the sarcolemma and into the T-tubules, triggering the release of calcium ions from the sarcoplasmic reticulum and their binding to troponin, which initiates the cross-bridge cycle. The transfer of calcium back into the sarcoplasmic reticulum (4) is the process that causes muscle relaxation and occurs after the contraction phase, not during the latent period.

Question 10. Which of the following helps to decrease the Glomerular Filtration Rate (GFR)?

A. Decreasing filtration constant

B. Decreasing oncotic pressure of glomerulus

C. Increasing hydrostatic pressure of the glomerulus

D. Increasing hydrostatic pressure of Bowman's capsule

Correct answer: D

Increasing hydrostatic pressure of Bowman's capsule The Glomerular Filtration Rate (GFR) is determined by the balance of Starling forces across the glomerular capillaries. Filtration is favored by the glomerular hydrostatic pressure and opposed by the glomerular oncotic pressure and the hydrostatic pressure in Bowman's capsule. Therefore, to decrease GFR, one must either decrease the forces favoring filtration or increase the forces opposing it. Increasing glomerular hydrostatic pressure (C) or decreasing glomerular oncotic pressure (B) would both increase GFR. Decreasing the filtration constant (A) would decrease GFR, but this is a physiological property, not a dynamic pressure. Increasing the hydrostatic pressure of Bowman's capsule (D) directly opposes the hydrostatic pressure in the glomerulus, reducing the net filtration pressure and thereby decreasing GFR. This can occur clinically in cases of urinary tract obstruction, such as from a kidney stone or enlarged prostate.

Question 11. Static 2-point discrimination is primarily assessed by which of the following receptors?

A. Merkel's discs

B. Meissner's corpuscles

C. Pacinian corpuscles

D. All of the above

Correct answer: A

Merkel's discs Two-point discrimination is the ability to perceive two simultaneous points of contact on the skin as distinct. This sensory modality requires mechanoreceptors with small, well-defined receptive fields and high spatial resolution. Merkel's discs are slow-adapting mechanoreceptors that are densely packed in areas like the fingertips and lips. They are specialized for detecting fine touch, pressure, and texture, and their small receptive fields make them the primary receptors responsible for static two-point discrimination. Meissner's corpuscles (B) are rapidly adapting receptors with slightly larger receptive fields, involved in detecting light touch and flutter. Pacinian corpuscles (C) are also rapidly adapting but have very large receptive fields and are responsible for sensing deep pressure and high-frequency vibration, making them unsuitable for fine spatial discrimination.

Question 12. Which of the following statements accurately describes physiological dead space?

A. Inadequately ventilated alveoli

B. Inadequately perfused alveoli

C. Less than anatomical dead space

D. Can be measured by spirometry

Correct answer: B

Inadequately perfused alveoli Dead space refers to the volume of inspired air that does not participate in gas exchange. Anatomical dead space is the volume of the conducting airways. Physiological dead space is the sum of the anatomical dead space and the alveolar dead space. Alveolar dead space is composed of alveoli that are ventilated but not perfused with blood, or are inadequately perfused relative to their ventilation (high V/Q ratio). In a healthy individual, alveolar dead space is negligible, so physiological dead space equals anatomical dead space. However, in lung diseases (e.g., pulmonary embolism), perfusion can be impaired, increasing alveolar dead space and making physiological dead space greater than anatomical dead space (making C incorrect). Physiological dead space is measured using Bohr's equation with expired CO_2, not by simple spirometry (D).

Question 13. Peripheral chemoreceptors exhibit their greatest sensitivity in which of the following conditions?

A. Hypoxia

B. Hypercapnia

C. Alkalosis

D. Acidosis

Correct answer: A

Hypoxia The body has two sets of chemoreceptors that regulate breathing. Central

chemoreceptors in the medulla are highly sensitive to changes in $PaCO_2$ (hypercapnia) and pH in the cerebrospinal fluid. Peripheral chemoreceptors, located in the carotid and aortic bodies, are sensitive to changes in $PaCO_2$, pH, and PaO_2 in the arterial blood. However, their most critical and unique function is the detection of hypoxia (low PaO_2). The central chemoreceptors do not respond directly to hypoxia. The peripheral chemoreceptors' firing rate increases significantly when arterial PaO_2 drops below about 60 mmHg, providing the primary drive to breathe in response to hypoxia. While they do respond to hypercapnia (B) and acidosis (D), the central chemoreceptors provide the dominant response to these stimuli under normal conditions.

Question 14. All of the following are seen in decompression sickness except:

A. Hemodilution

B. Hearing loss

C. Coagulopathy NODIA page 149 INICET Examination Paper

Correct answer: A

Oculomotor nerve The image shows a structure within the cavernous sinus region. In this area, the cranial nerves are arranged in a characteristic pattern: Inside the cavernous sinus (from superior to inferior in the lateral wall): 1. Oculomotor nerve (CN III) 2. Trochlear nerve (CN IV) 3. Ophthalmic nerve (V1) 4. Maxillary nerve (V2) The Abducens nerve (CN VI) runs more medially, close to the internal carotid artery. In the given image, the arrow is pointing to the uppermost nerve in the lateral wall of the cavernous sinus, which corresponds to the Oculomotor nerve (CN III). Therefore, the correct answer is : (A) Oculomotor nerve.

Question 15. The adrenal medulla releases catecholamines in response to all of the following stimuli, except which one?

A. Standing up

B. Hyperglycemia

C. Smoking

D. Exercise

Correct answer: B

Hyperglycemia The adrenal medulla is a key component of the sympathetic nervous system and is responsible for the "fight-or-flight" response. It secretes catecholamines (epinephrine and norepinephrine) in response to various forms of physiological or psychological stress. Exercise (D) is a potent stimulus. The act of standing up from a lying position (A) activates the baroreceptor reflex and sympathetic outflow to maintain blood pressure. Smoking (C) introduces nicotine, which directly stimulates sympathetic ganglia and the adrenal medulla, causing catecholamine release. In contrast, the primary response to hyperglycemia is the release of insulin from the pancreas to lower blood glucose. The adrenal medulla is stimulated by hypoglycemia, not hyperglycemia, as epinephrine promotes glycogenolysis and

gluconeogenesis to raise blood glucose levels.

Question 16. ATP is not required for which of the following transports: 1 Paracellular transport 2 Simple diffusion 3 Facilitated diffusion 4 Na + /K + ATPase 5 Symport/ Antiport

A. 1,2

B. 1,2,3

C. 2,3,4

D. 3,4

Correct answer: B

1,2,3 Cellular transport processes are categorized based on their energy requirements. Active transport requires energy, while passive transport does not. 1. Na + /K + ATPase (4) is a form of primary active transport that directly hydrolyzes ATP. 2. Symport/Antiport (5) are types of secondary active transport that use the energy stored in an electrochemical gradient, which was established using ATP. 3. Sample diffusion (2) is the passive movement of molecules across a membrane down their concentration gradient. 4. Facilitated diffusion (3) uses protein channels or carriers to move molecules down their concentration gradient and is also a passive process. 5. Paracellular transport (1) is the passive movement of substances between cells through tight junctions, driven by gradients. Therefore, paracellular transport, simple diffusion, and facilitated diffusion do not directly require ATP.

Question 17. Which blood product is NOT obtained through centrifugation?

A. Serum albumin

B. Cryoprecipitate

C. Platelets

D. Red Blood Cells (RBCs)

Correct answer: A

Cryoprecipitate Standard blood banking involves separating whole blood into its components primarily through centrifugation. A "hard spin" separates the cellular components, allowing for the collection of packed red blood cells (D). A subsequent "light spin" of the resulting plasma allows for the separation of platelet-rich plasma, from which platelets (C) are concentrated. Serum albumin (A) is a plasma protein that is purified from large pools of plasma through a process called Cohn fractionation, which involves ethanol precipitation and centrifugation. In contrast, cryoprecipitate is a concentrate of specific clotting factors prepared from Fresh Frozen Plasma (FFP). It is isolated not by centrifugation, but by thawing FFP slowly at 1-6°C. The cold-insoluble proteins (including Factor VIII, fibrinogen, and von Willebrand factor) precipitate out and are then collected. BIOCHEMISTRY

Question 18. Which of the following is used in diagnosing aneuploidy? 1 FISH 2

Cytogenetics 3 Sanger sequencing 4 PCR

A. 1,2

B. 1,2,3

C. 2,3

D. 1,2,3,4

Correct answer: A

1,2 Aneuploidy refers to an abnormal number of chromosomes, such as trisomy (an extra chromosome) or monosomy (a missing chromosome). The gold standard method for diagnosing aneuploidy is cytogenetics, specifically karyotyping (2), which involves visualizing and counting all the chromosomes from a cell culture. Fluorescence In Situ Hybridization (FISH) (1) is a rapid molecular cytogenetic technique that uses fluorescent probes to identify and count specific chromosomes or chromosome regions in interphase cells, making it an excellent tool for rapid screening for common aneuploidies like trisomies 21, 18, and 13. In contrast, Sanger sequencing (3) and PCR (4) are techniques used to analyze the nucleotide sequence of DNA. They are ideal for detecting single gene mutations or small insertions/deletions, but not for identifying changes in the number of entire chromosomes.

Question 19. Which enzymes are utilized in recombinant DNA technology? 1 Isomerase 2 Phosphatase 3 Terminal transferase 4 CRISPR-Cas9

A. 1,2,3,4

B. 1,2,3

C. 2,3,4

D. 1,3,4

Correct answer: C

2,3,4 Recombinant DNA technology relies on a toolkit of specific enzymes to manipulate DNA. Key enzymes include restriction endonucleases to cut DNA and DNA ligase to join it. Alkaline phosphatase (2) is used to remove the 5' phosphate group from a vector to prevent it from re-ligating to itself. Terminal transferase (3) is an enzyme that adds nucleotides to the 3' end of a DNA strand without a template, useful for creating sticky ends. CRISPR-Cas9 (4) is a revolutionary gene-editing system consisting of a guide RNA and the Cas9 nuclease, used to create targeted double-strand breaks in DNA. In contrast, isomerase (1) is a broad class of enzymes that catalyze the conversion of a molecule into one of its isomers; they are central to metabolism but are not a standard tool in the recombinant DNA technology toolkit.

Question 20. Which of the following substances does not inhibit cytochrome activity?

A. Nitric oxide

B. Carbon monoxide (CO)

C. Hydrogen sulfide (H2S)

D. Cyanide

Correct answer: A

Nitric oxide Cytochrome c oxidase (Complex IV) is the terminal enzyme of the mitochondrial electron transport chain. Several classic poisons exert their toxicity by inhibiting this enzyme. Cyanide (D) and carbon monoxide (CO) (B) are well-known inhibitors that bind to the ferrous (Fe2+) and ferric (Fe3+) iron in the heme a3 component of the enzyme, blocking electron transfer to oxygen. Hydrogen sulfide (H2S) (C) is another toxic gas that also inhibits cytochrome c oxidase in a manner similar to cyanide. In contrast, nitric oxide (NO) (A), while a potent signaling molecule that can bind to heme iron, acts as a reversible and physiological inhibitor of cytochrome c oxidase. This reversible inhibition plays a role in regulating cellular respiration and is distinct from the irreversible and toxic inhibition caused by the other substances.

Question 21. A diabetic patient has elevated VLDL levels. This increase results from which combination of factors?

A. High Hormone-Sensitive Lipase (HSL), low Lipoprotein Lipase (LPL)

B. High LPL, low HSL

C. High HSL, high LPL

D. Low LPL, low HSL

Correct answer: A

High Hormone-Sensitive Lipase (HSL), low Lipoprotein Lipase (LPL) In type 1 diabetes or poorly controlled type 2 diabetes, insulin deficiency or resistance has profound effects on lipid metabolism. Insulin normally inhibits Hormone-Sensitive Lipase (HSL) in adipose tissue. Lack of insulin leads to disinhibition of HSL, causing massive lipolysis and release of free fatty acids (FFAs) into the circulation. These FFAs are taken up by the liver and used to synthesize triglycerides, which are then packaged into Very Low-Density Lipoprotein (VLDL) and secreted, leading to high VLDL production. Additionally, insulin is required for the synthesis and activation of Lipoprotein Lipase (LPL), the enzyme on endothelial cells that clears triglycerides from VLDL and chylomicrons. Insulin deficiency leads to low LPL activity, impairing the clearance of VLDL. Thus, the hypertriglyceridemia seen in diabetes is due to both increased VLDL production (from high HSL) and decreased VLDL clearance (from low LPL).

Question 22. In the treatment of urea cycle disorders, which amino acid provides the nitrogen that combines with sodium benzoate?

A. Glutamine

B. Glutamate

C. Glycine

D. Arginine

Correct answer: C

Glycine Urea cycle disorders lead to the accumulation of toxic ammonia. Nitrogen-scavenging drugs are used to provide an alternative pathway for nitrogen excretion. Sodium benzoate is

one such drug. It is conjugated with the amino acid glycine to form hippuric acid. This reaction consumes one molecule of glycine, and since glycine synthesis requires nitrogen, this effectively removes one mole of nitrogen from the body for every mole of benzoate given. The resulting hippuric acid is then readily excreted in the urine. Another drug, sodium phenylacetate/phenylbutyrate, is conjugated with glutamine (A) to form phenylacetylglutamine, which removes two moles of nitrogen. However, sodium benzoate specifically utilizes glycine for its nitrogen-scavenging effect.

Question 23. The tube used for serum electrolyte estimation is:

A. Yellow

B. Lavender

C. Green

D. Grey

Correct answer: A

Yellow Serum electrolyte estimation (Na^+, K^+, Cl^-, HCO_3^-) is typically performed on serum, which requires blood to clot before centrifugation. Tube Color Coding Yellow-top tube Contains a clot activator and often a serum separator gel (SST). After centrifugation, serum separates from cells and can be used for biochemical tests, including electrolyte estimation. Other options: 1. Lavender (Purple) → Contains EDTA; used for hematology (CBC). EDTA binds calcium and interferes with electrolyte measurement. 2. Green → Contains heparin; used for plasma electrolytes and ABG in some settings, but the question specifically asks for serum electrolyte estimation. 3. Grey → Contains fluoride/oxalate; used mainly for glucose estimation. Since the question specifies serum electrolyte estimation, the correct tube is : (A) Yellow

Question 24. Deficiency of copper, which is necessary for lysyl oxidase, is seen in:

A. Scurvy NODIA MEDINK c. Smoking cessation 3. Varenicline d. Opioid poisoning 4. Naloxone

B. 1-c, 2-b, 3-d, 4-a

C. 1-b, 2-a, 3-c, 4-d

D. 1-d, 2-b, 3-a, 4-c

Correct answer: C

1-b, 2-a, 3-c, 4-d The correct matches are: Delirium tremens (a), a severe form of alcohol withdrawal, is managed with benzodiazepines to control agitation and prevent seizures. Oxazepam (2) is a suitable choice, especially in patients with impaired liver function. So, a-2. Acute alcoholism (b) in this context likely refers to the management of alcohol dependence to maintain abstinence. Acamprosate (1) is a medication used to reduce alcohol cravings and support abstinence. So, b-1. Smoking cessation (c) is aided by medications that reduce cravings and withdrawal symptoms. Varenicline (3) is a first-line therapy that acts as a partial agonist at nicotinic receptors. So, c-3. Opioid poisoning/overdose (d), characterized by respiratory depression, is treated with the specific opioid antagonist Naloxone (4), which rapidly reverses

the effects. So, d-4. The option that matches this pairing (a-2, b-1, c-3, d-4) is C, which is formatted as 1-b, 2-a, 3-c, 4-d. FORENSIC MEDICINE

Question 25. Match the following amino acids with their derivatives: 1. Histidine a. Catecholamines 2. Tyrosine b. Histamine 3. Tryptophan c. Glutathione 4. Cysteine d. Melatonin

A. 1-b, 2-a, 3-d, 4-c

B. 1-a, 2-c, 3-b, 4-d

C. 1-d, 2-c, 3-b, 4-a

D. 1-b, 2-c, 3-d, 4-a

Correct answer: A

1-b, 2-a, 3-d, 4-c This question tests knowledge of the metabolic origins of important biological molecules. 1 Histidine is the precursor for histamine, a key mediator of allergic reactions and gastric acid secretion. This is achieved through the decarboxylation of histidine. (1 - b) 2 Tyrosine is the starting point for the synthesis of catecholamines (dopamine, norepinephrine, and epinephrine). (2 - a) 3 Tryptophan is the precursor for the synthesis of both the neurotransmitter serotonin and the hormone melatonin. (3 - d) 4 Cysteine is one of the three amino acids (along with glutamate and glycine) that make up the important antioxidant tripeptide glutathione. (4 - c) Therefore, the correct matching is 1-b, 2-a, 3-d, 4-c.

Question 26. Sickle cell anemia is caused by which of the following changes?

A. Val → Glu

B. Lys → Glu

C. Glu → Lys

D. Glu → Val

Correct answer: D

Glu → Val Sickle cell anemia is a genetic disorder caused by a specific point mutation in the gene encoding the beta-globin chain of hemoglobin. This mutation occurs at the sixth codon of the beta-globin gene. The normal DNA codon (GAG) codes for the amino acid glutamic acid (Glu), which is hydrophilic and negatively charged. In sickle cell disease, a single nucleotide substitution (A to T) changes the codon to GTG. This altered codon codes for the amino acid valine (Val), which is hydrophobic and uncharged. This seemingly minor change from glutamic acid to valine at the sixth position of the beta-globin chain dramatically alters the properties of the hemoglobin molecule (creating HbS), causing it to polymerize under deoxygenated conditions and leading to the sickling of red blood cells.

Question 27. Which protein plays a role in the process of epithelial–mesenchymal transition (EMT)?

A. SNAIL & TWIST

B. TF1 & TF2

C. MMP9

D. Cathepsin

Correct answer: A

SNAIL & TWIST Epithelial-mesenchymal transition (EMT) is a fundamental biological process where epithelial cells lose their cell-cell adhesion and polarity, and acquire a migratory, mesenchymal phenotype. This process is crucial in embryonic development and wound healing, and it is co-opted by cancer cells to promote invasion and metastasis. The EMT is driven by a network of key transcription factors that repress epithelial genes (like E-cadherin) and activate mesenchymal genes. Among the most important and well-studied of these master regulators are the zinc-finger transcription factor SNAIL and the basic helix-loop-helix transcription factor TWIST. Matrix metalloproteinases (MMPs) like MMP9 (C) and cathepsins (D) are proteases that are often upregulated during EMT and help degrade the extracellular matrix, facilitating invasion, but they are downstream effectors, not the primary transcription factors driving the transition.

Question 28. Which is the most essential fatty acid?

A. Linoleic acid

B. Linolenic acid

C. Arachidonic acid

D. Oleic acid

Correct answer: A

Linoleic acid Essential fatty acids are polyunsaturated fatty acids that humans must obtain from their diet because the body cannot synthesize them. There are two primary essential fatty acids: linoleic acid (LA), an omega-6 fatty acid, and alpha-linolenic acid (ALA), an omega-3 fatty acid. From these two precursors, the body can synthesize other important long-chain fatty acids. Arachidonic acid (C) can be synthesized from linoleic acid, making it conditionally essential. Oleic acid (D) is a monounsaturated omega-9 fatty acid that the body can synthesize and is therefore non-essential. Between the two essential fatty acids, linoleic acid is often considered the most essential because its deficiency is more readily produced and has more prominent clinical signs, and the quantitative requirement for it is higher than for alpha-linolenic acid. PATHOLOGY

Question 29. Which anticoagulant is most suitable for collecting blood samples for HbA1c testing?

A. EDTA

B. Fluoride

C. Citrate

D. Heparin

Correct answer: A

EDTA Glycated hemoglobin (HbA1c) is a measure of long-term glycemic control, reflecting the average blood glucose level over the preceding 2-3 months. For this test, a whole blood sample is required, and it is crucial to prevent the blood from clotting after collection. The anticoagulant of choice for HbA1c estimation, as well as for most hematological tests like a complete blood count, is EDTA (ethylenediaminetetraacetic acid), which is found in lavender-top tubes. EDTA works by chelating calcium ions, which are essential for the coagulation cascade, thereby preventing clotting and preserving the integrity of the red blood cells that contain the hemoglobin. A fluoride tube (B) is used for glucose estimation as it inhibits glycolysis, but it is not ideal for HbA1c. Citrate (C) is used for coagulation studies, and heparin (D) is used for plasma chemistry.

Question 30. Which of the following is true regarding serum calcium estimation?

A. Clenching the fist is advised

B. Tight tourniquet is to be applied

C. Prolonged immobilization causes increased free and total calcium

D. Citrate and oxalate tubes are to be used

Correct answer: C

Prolonged immobilization causes increased free and total calcium Several pre-analytical factors can affect the accuracy of serum calcium measurements. Fist clenching (A) and prolonged or tight tourniquet application (B) can cause a localized increase in lactate and a decrease in pH, which displaces calcium from albumin, and can cause hemoconcentration, falsely elevating the total calcium level. Citrate and oxalate tubes (D) are not used because these anticoagulants chelate calcium, making it unmeasurable. Statement (C) is true; prolonged immobilization or bed rest leads to increased bone resorption without a compensatory increase in bone formation. This imbalance results in the release of calcium from the bones into the bloodstream, causing a true physiological increase in both total and ionized (free) serum calcium levels (disuse hypercalcemia).

Question 31. Umbilical cord bleeding with normal BT, PT, and APTT, along with a positive urea clot solubility test, suggests a deficiency of which coagulation factor?

A. Factor XIII

B. Factor IX

C. Factor XII

D. Factor VIII

Correct answer: A

Factor XIII This is a classic presentation for congenital Factor XIII deficiency. Factor XIII, also known as fibrin-stabilizing factor, is responsible for cross-linking fibrin strands to form a strong, stable clot. Its deficiency results in a fragile clot that is easily broken down, leading to a

characteristic pattern of delayed bleeding. Bleeding from the umbilical stump in the neonatal period is a hallmark sign. Because the initial formation of the fibrin clot is normal, the standard coagulation screening tests—PT, APTT, and Bleeding Time—are all normal. The diagnosis is confirmed by a specific assay, the urea clot solubility test. A normal, cross-linked clot is insoluble in 5M urea, whereas the weak, un-cross-linked clot found in Factor XIII deficiency will readily dissolve, yielding a positive test result.

Question 32. Which option most accurately characterizes the amino acid–level genetic alteration found in sickle cell anemia?

A. Substitution of glutamic acid by valine at position 6 of the β -globin chain

B. Praziquantel

C. Triclabendazole

D. Mebendazole

Correct answer: C

Triclabendazole Fasciola hepatica, the sheep liver fluke, causes the disease fascioliasis. Triclabendazole (C) is the undisputed drug of choice for treating human fascioliasis. It is a benzimidazole anthelmintic that is highly effective against both the adult and immature migrating stages of the fluke. This is a notable exception in the treatment of trematodes. Praziquantel (B) is the drug of choice for most other fluke (trematode) infections (e.g., Schistosomiasis, Clonorchiasis) and tapeworm (cestode) infections. However, it has very poor efficacy against Fasciola species and is not used. Albendazole (A) and Mebendazole (D) are broad-spectrum benzimidazoles primarily used for nematode (roundworm) infections. They are not effective for fascioliasis. 77. Which of the following is true about Cryptococcus? (A) Seen in AIDS (B) Associated with bird droppings (C) All pathogenic species are urease positive (D) CD4 > 500 AAns (B) Associated with bird droppings Cryptococcus is an encapsulated yeast, most commonly Cryptococcus neoformans, which is strongly associated with pigeon droppings and soil contaminated with bird excreta. The organism survives and multiplies in nitrogen-rich environments such as dried bird droppings. Humans acquire infection by inhalation of aerosolized yeast cells or spores from the environment. Although Cryptococcus infection is frequently seen in AIDS patients, especially when CD4 counts fall below 100 cells/µL, option (A) is not the most specific identifying feature because the organism can also infect other immuno compromised individuals and occasionally immunocompetent hosts. Option (C) is incorrect because while Cryptococcus species are typically urease positive, stating “all pathogenic species” makes the statement less precise for exam purposes. Option (D) is incorrect because cryptococcal infections are classically associated with low CD4 counts, not CD4 > 500. Therefore, the most accurate and characteristic statement about Cryptococcus is its association with bird droppings. 78. All of the following drugs are used in the management of uncomplicated Plasmodium falciparum malaria, except: (A) Artemether (B) Primaquine (C)

Chloroquine (D) Sulphadoxine/pyrimethamine AAns (B) Primaquine Uncomplicated Plasmodium falciparum malaria is primarily treated with artemisinin-based combination therapy (ACT). Drugs such as artemether (usually combined with lumefantrine) are first-line treatments because they rapidly reduce parasite load and are highly effective against resistant strains. Sulphadoxine–pyrimethamine has also been used in combination regimens, although resistance limits its use in many regions. Chloroquine was previously used for P. falciparum, but widespread resistance has made it ineffective in most endemic areas; however, it may still be used in specific regions where sensitivity is documented. Primaquine, on the other hand, is not used for treating uncomplicated P. falciparum blood-stage infection. Its primary role is in eliminating hypnozoites (dormant liver forms) of Plasmodium vivax and Plasmodium ovale to prevent relapse. In P. falciparum, primaquine may be given as a single low dose to reduce gametocyte carriage and transmission, but it is not used as a standard treatment for uncomplicated infection. Therefore, primaquine is the correct exception. PSM 79. Which of the following is not included in the criteria for Severe Acute Malnutrition (SAM)? (A) Low weight for height (B) Mid-upper arm circumference (C) Low height for age (D) Pedal edema AAns (C) Low height for age The World Health Organization (WHO) defines Severe Acute Malnutrition (SAM) in children (6-59 months) by the presence of at least one of the following three criteria: 1 Low weight for height (A) : A weight-for-height Z-score of less than -3 standard deviations below the WHO growth standard median. This indicates severe wasting. 2 Mid-upper arm circumference (MUAC) (B) : A MUAC measurement of less than 11.5 cm. 3 Pedal edema (D) : The presence of bilateral pitting nutritional edema. Low height for age (C), defined as a height-for-age Z-score of less than -2, is the definition of stunting. Stunting is an indicator of chronic malnutrition, reflecting a long-term failure to grow. While a child with SAM may also be stunted, stunting itself is not a diagnostic criterion for the acute condition of SAM. 80. Which of the following is not a live vaccine? (A) Hepatitis B (B) Varicella (C) Measles (D) Rotavirus AAns (A) Hepatitis B Vaccines are broadly classified as live attenuated or inactivated (killed). Hepatitis B vaccine (A) is an inactivated vaccine. Specifically, it is a recombinant subunit vaccine, containing only the Hepatitis B surface antigen (HBsAg), which is produced by genetically engineered yeast. It contains no viral genetic material and cannot cause infection. (B) Varicella vaccine is a live attenuated vaccine containing a weakened form of the varicella-zoster virus to protect against chickenpox. (C) Measles vaccine is a live attenuated vaccine, usually administered as part of the combined MMR (Measles, Mumps, Rubella) vaccine. (D) Rotavirus vaccine is an oral live attenuated vaccine containing weakened strains of human rotavirus. 81. Screening family members of hypertension and diabetes in a village is best classified as: (A) Selective screening (B) Multiphasic screening (C) Mass screening (D) Anonymous screening AAns (A) Selective screening This scenario describes a specific type of screening strategy. Selective screening (A), also known as high-risk screening, involves targeting specific subgroups of the population who are identified as having a higher risk of developing a particular disease. Family members of

individuals with chronic, heritable conditions like hypertension and diabetes constitute a well-defined high-risk group due to shared genetic predispositions and environmental factors. Screening this group is a classic example of a selective approach. (C) Mass screening would involve screening everyone in the village, regardless of their family history or risk factors. (B) Multiphasic screening refers to the application of multiple tests at the same time (e.g., checking BP, blood sugar, and cholesterol), but the defining feature here is the population being targeted, not the number of tests. (D) Anonymous screening is done for surveillance purposes where results are delinked from personal identifiers. 82. Which of the following is NOT a component of the Anemia Mukt Bharat (AMB) initiative? (A) 6 beneficiaries (B) 6 health functionaries (C) 6 institutional mechanisms (D) 6 interventions AAns (B) 6 health functionaries The Anemia Mukt Bharat (AMB) strategy, launched by the Government of India, is built upon a comprehensive 6x6x6 framework to combat anemia. This framework includes: Six Beneficiary Groups (A): Children (6-59 months), Children (5-9 years), Adolescents (10-19 years), Pregnant women, Lactating women, and Women of Reproductive Age (15-49 years). Six Interventions (D): Prophylactic Iron and Folic Acid supplementation, deworming, intensified behavior change communication, testing and treatment, mandatory provision of iron-fortified foods in government programs, and addressing non-nutritional causes. Six Institutional Mechanisms (C): Includes inter-ministerial coordination, a national AMB unit, strengthening of supply chains, a national center of excellence, a digital portal for monitoring, etc. The framework does not explicitly define a component of "6 health functionaries." While various functionaries (ASHA, ANM, Anganwadi workers) are critical for implementation, they are not one of the three core pillars of the 6x6x6 strategy. 83. What is the best level of evidence in research? (A) Case-control study (B) Cohort study (C) Randomized Controlled Trial (RCT) (D) Meta-analysis AAns (D) Meta-analysis The hierarchy of evidence is a model used to rank the relative strength of results obtained from different types of research studies. At the pinnacle of this hierarchy are Systematic Reviews and Meta-analyses (D). A systematic review critically appraises all relevant studies on a specific topic, and a meta-analysis uses statistical methods to combine the results of several of these studies (ideally, multiple high-quality RCTs). This synthesis provides a more powerful and precise estimate of an intervention's effect than any single study alone. A single Randomized Controlled Trial (RCT) (C) is the next highest level and is considered the gold standard for a primary experimental study. Below RCTs are observational studies, with Cohort studies (B) generally providing stronger evidence than Case-control studies (A). Expert opinion and case reports are at the bottom of the pyramid. 84. What is the correct sequence of steps in a randomized controlled trial (RCT)? (A) Randomization, Exclusion and Inclusion, Blinding, Analysis (B) Exclusion and Inclusion, Randomization, Blinding, Analysis (C) Blinding, Randomization, Analysis, Exclusion and Inclusion (D) Analysis, Blinding, Exclusion and Inclusion, Randomization AAns (B) Exclusion and Inclusion, Randomization, Blinding, Analysis A randomized controlled trial follows a logical and standardized sequence to ensure its validity

and minimize bias. The correct order is: 1 Exclusion and Inclusion : The process begins by defining the target population and screening potential participants against a set of predefined inclusion and exclusion criteria. This ensures that a suitable and relatively homogenous group of subjects is enrolled in the study. 2 Randomization : Once eligible participants have provided informed consent and been enrolled, they are randomly assigned to one of the study arms (e.g., the intervention group or the control group). This is the core step that minimizes selection bias. 3 Blinding : During the intervention phase of the trial, blinding (masking) of participants, investigators, and/or outcome assessors to the treatment allocation is implemented whenever feasible to prevent performance and detection bias. 4 Analysis : After the follow-up period is complete, the collected data is analyzed to compare the outcomes between the groups and draw conclusions about the intervention's effectiveness. 85. Which of the following is a key feature of a randomized controlled trial (RCT)? (A) Participants are randomly assigned to groups to reduce bias. (B) The study design always uses a placebo in the control group. (C) Results are always applicable to the general population. (D) All of the Above AAns (A) Participants are randomly assigned to groups to reduce bias. The defining, core feature of an RCT is the random allocation of participants to study groups. (A) The process of randomization is the cornerstone of the RCT design. It aims to ensure that both known and unknown confounding variables are distributed evenly between the intervention and control groups. This minimizes selection bias and allows for a more valid comparison, strengthening the inference of causality. (B) This is incorrect. While a placebo is a common type of control, the control group in an RCT can also receive the current standard of care (an active comparator), usual care, or no intervention at all. (C) This is incorrect. RCTs often have strict inclusion and exclusion criteria, which can limit the study sample's diversity. This can affect the generalizability (or external validity) of the results to the broader, more heterogeneous general population. (D) Incorrect, as B and C are false. 86. The analysis that uses ICER (Incremental Cost- Effectiveness Ratio) as a model is: (A) Cost-effective analysis (B) Cost analysis (C) Cost-benefit analysis (D) Cost evaluation AAns (A) Cost-effective analysis Incremental Cost-Effectiveness Ratio (ICER) is the principal measure used in cost-effectiveness analysis (CEA). ICER compares two interventions by calculating the additional cost required to gain one additional unit of health outcome. It is expressed as: ICER = (Cost of Intervention A − Cost of Intervention B) ÷ (Effect of A − Effect of B) The outcome is measured in natural health units such as life-years gained, cases prevented, or quality-adjusted life years (QALYs). In contrast, cost analysis only compares expenses without considering outcomes. Cost-benefit analysis converts both costs and benefits into monetary terms. Cost evaluation is a broader, less specific term and does not specifically rely on ICER. Therefore, ICER is specifically associated with cost-effectiveness analysis, making option (A) correct. 87. In a field setting, malaria diagnosis is done by: (A) Buffy coat examination MEDINK (D) Medullary Thyroid Carcinoma (MTC) AAns (A) Parathyroid hyperplasia Multiple Endocrine Neoplasia (MEN) syndromes are inherited disorders causing tumors in multiple endocrine glands. MEN 2B is an

aggressive subtype caused by a specific mutation in the RET proto-oncogene. Its three core components are: 1 Medullary Thyroid Carcinoma (MTC) (D), which is present in virtually all patients and occurs at a very early age. 2 Pheochromocytoma. 3 A characteristic phenotype including mucosal neuromas (on lips, tongue, eyelids) (B), a Marfanoid habitus (tall, slender build with long limbs) (C), and intestinal ganglioneuromatosis. Parathyroid hyperplasia or adenoma, leading to primary hyperparathyroidism, is a hallmark of MEN 1 and MEN 2A, but it is notably absent in MEN 2B. 48. Which finding is commonly associated with glomerular hematuria? (A) Dysuria (B) Crystals (C) Brown urine (D) Edema AAns (C) Brown urine Hematuria originating from the glomerulus has distinct features compared to bleeding from the lower urinary tract. When red blood cells (RBCs) pass through the damaged glomerular basement membrane, they are often misshapen (dysmorphic RBCs) and can form RBC casts. As this blood travels down the nephron, the hemoglobin is exposed to the acidic environment of the tubular fluid, which converts it to methemoglobin. This gives the urine a characteristic smoky, brown, or "cola-colored" appearance. In contrast, bleeding from the lower tract (e.g., bladder, prostate) results in bright red urine. Dysuria (A) points to lower tract inflammation. Crystals (B) are related to stone disease. Edema (D) is a feature of nephrotic or nephritic syndrome but is not a direct characteristic of the urine itself. 49. Which of the following is not a germ cell tumor? (A) Granulosa cell tumor (B) Dysgerminoma (C) Yolk sac tumor (D) Teratoma

Question 33. Match the following genetic disorders with their inheritance pattern: 1. Mitochondrial inheri- tance A. Leber's optic neuropathy 2. Autosomal Recessive B. Spinal Mus- cular Atro- phy 3. X-Linked Recessive C. Cystic Fibro- sis 4. Autosomal Dominant D. Duchenne Muscular Dystrophy

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

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

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

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

Correct answer: A

1-A, 2-C, 3-D, 4-B (Note: There seems to be an error in the question's provided table, as both Spinal Muscular Atrophy and Cystic Fibrosis are autosomal recessive, and both Duchenne Muscular Dystrophy is X-linked recessive. Assuming B is Autosomal Dominant for matching purposes) 1. Leber's hereditary optic neuropathy (A) is a classic example of a disease caused by mutations in the mitochondrial DNA, showing mitochondrial inheritance (1-A). 2. Cystic Fibrosis (C) is a well-known autosomal recessive disorder (2-C). 3. Duchenne Muscular Dystrophy (D) is a classic X-linked recessive disorder, primarily affecting males (3-D). 4. Spinal Muscular Atrophy (B) is also autosomal recessive. If we assume a typo and that the question intended to list an autosomal dominant condition for B, the match would be made accordingly. However, based on the options, this seems like a flawed question.

Question 34. Match the following tumor markers with the associated conditions: 1. AFP A. Choriocarcinoma 2. Beta-HCG B. Medullary Thyroid Carcinoma 3. Calcitonin C. Hepatoblastoma 4. Catecholamines D. Pheochromocyto- ma

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

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

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

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

Correct answer: C

1-C, 2-A, 3-B, 4-D 1 Alpha-fetoprotein (AFP) is a major tumor marker for hepatocellular carcinoma and germ cell tumors, particularly hepatoblastoma in children and yolk sac tumors. (1 -> C) 2 Beta-human chorionic gonadotropin (beta-HCG) is a key marker for gestational trophoblastic disease and germ cell tumors, especially choriocarcinoma. (2 -> A) 3 Calcitonin is a hormone produced by the parafollicular C-cells of the thyroid. Markedly elevated levels are diagnostic for Medullary Thyroid Carcinoma. (3 -> B) 4 Catecholamines (epinephrine, norepinephrine) and their metabolites (metanephrines) are secreted in excess by tumors of the adrenal medulla, making them the primary markers for pheochromocytoma. (4 -> D)

Question 35. Which of the following is NOT a component of Thrombotic Thrombocytopenic Purpura (TTP)?

A. Microangiopathic hemolytic anemia

B. Thrombocytopenia

C. Hematuria

D. Thrombosis

Correct answer: C

Hematuria Thrombotic Thrombocytopenic Purpura (TTP) is a life-threatening thrombotic microangiopathy. The classic pentad of features includes: 1 Microangiopathic hemolytic anemia (MAHA) (A), caused by RBC shearing in small vessels. 2 Thrombocytopenia (B), due to platelet consumption in microthrombi. 3 Neurological abnormalities. 4 Fever. 5 Renal dysfunction. The underlying pathology is widespread thrombosis (D) in the microvasculature. While renal dysfunction is a feature, severe acute kidney injury with significant hematuria is much more characteristic of the other major thrombotic microangiopathy, Hemolytic Uremic Syndrome (HUS), which primarily affects the kidneys. In TTP, neurological symptoms are typically more prominent than severe renal failure.

Question 36. All of the following are hereditary causes of thrombosis, except:

A. Homocystinuria

B. Protein S deficiency

C. Anti-thrombin deficiency

D. PNH

Correct answer: D

PNH A hereditary thrombophilia is an inherited genetic condition that predisposes an individual to thrombosis. Classic examples include deficiencies of natural anticoagulants, such as Protein S deficiency (B) and Anti-thrombin III deficiency (C). Other inherited causes include Factor V Leiden and prothrombin gene mutations. Homocystinuria (A) is an inherited metabolic disorder that leads to high levels of homocysteine, which is prothrombotic. In contrast, Paroxysmal Nocturnal Hemoglobinuria (PNH) is an acquired clonal hematopoietic stem cell disorder. It is caused by a somatic mutation in the PIGA gene, leading to a complement-mediated prothrombotic state. Because it arises from a somatic mutation and is not inherited from a parent, it is an acquired, not hereditary, cause of thrombosis.

Question 37. A 5-year-old child presents with gum bleeding and an abnormal peripheral smear, and flow cytometry reveals CD19, CD22, and TDT positivity. What is the most probable diagnosis?

A. Acute Myeloid Leukemia (AML)

B. Acute Lymphoblastic Leukemia (ALL) - B lymphocyte type

C. Acute Lymphoblastic Leukemia (ALL) - T lymphocyte type

D. Chronic Myeloid Leukemia

Correct answer: B

Acute Lymphoblastic Leukemia (ALL) - B lymphocyte type The patient is a child presenting with signs of bone marrow failure (gum bleeding, likely due to thrombocytopenia), which is a common presentation for acute leukemia. The key diagnostic information comes from the flow cytometry results. CD19 and CD22 are specific cell surface markers for the B-lymphocyte lineage. Terminal deoxynucleotidyl transferase (TdT) is an enzyme expressed by immature lymphoid progenitor cells (lymphoblasts) but not by mature lymphocytes or myeloid cells. The combination of B-cell markers (CD19, CD22) with a marker of immaturity (TdT) on the blast cells is diagnostic for B-cell Acute Lymphoblastic Leukemia (B-ALL). T-cell ALL (C) would express T-cell markers like CD3 and CD7. AML (A) would express myeloid markers like CD13, CD33, and myeloperoxidase.

Question 38. Which of the following is the most common genetic cause of a hypercoagulable state?

A. Factor V Leiden mutation

B. Protein C deficiency

C. Antithrombin deficiency

D. Prothrombin gene mutation

Correct answer: A

Factor V Leiden mutation Hereditary thrombophilias are inherited disorders that increase the risk of venous thromboembolism. Among these, the Factor V Leiden mutation is by far the most

common. It is a specific point mutation (G1691A) in the Factor V gene that makes the Factor Va protein resistant to inactivation by activated protein C (APC resistance). This leads to a prolonged procoagulant state. The prevalence of this mutation is around 5% in Caucasian populations. The prothrombin gene mutation G20210A (D) is the second most common. Deficiencies of the natural anticoagulants, Protein C (B) and Antithrombin (C), are much rarer causes of hereditary thrombophilia.

Question 39. Match the following syndromes with the associated gene mutation: 1. Juvenile Polyposis A. APC 2. Familial Adenomatous Polyposis B. STK11 3. Peutz-Jeghers Syndrome C. SMAD4 4. Tuberous Sclerosis D. TSC1,2

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

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

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

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

Correct answer: C

1-C, 2-A, 3-B, 4-D (Note: The provided table has an error listing TSC1,2 for both Tuberous Sclerosis and another option. The matching is based on correct associations.) 1 Juvenile Polyposis Syndrome is an autosomal dominant condition characterized by hamartomatous polyps, most commonly caused by mutations in the SMAD4 or BMPR1A genes. (1-C) 2 Familial Adenomatous Polyposis (FAP) is caused by germline mutations in the APC (Adenomatous Polyposis Coli) tumor suppressor gene. (2-A) 3 Peutz-Jeghers Syndrome, characterized by hamartomatous polyps and mucocutaneous pigmentation, is caused by mutations in the STK11 (also known as LKB1) gene. (3-B) 4 Tuberous Sclerosis Complex is caused by mutations in either the TSC1 or TSC2 genes. (4-D)

Question 40. Which of the following is NOT associated with Multiple Endocrine Neoplasia Type 2B (MEN 2B)?

A. Parathyroid hyperplasia

B. Mucosal neuromas

C. Marfanoid habitus NODIA MEDINK

D. HRP2 detection/Rapid Diagnostic Test

Correct answer: D

HRP2 detection/Rapid Diagnostic Test For malaria diagnosis in a field or remote community setting, practicality and speed are paramount. HRP2 detection/Rapid Diagnostic Test (RDT) (D) is the method of choice in most field settings. RDTs are immuno chromatographic tests that detect specific malaria parasite antigens (like Histidine-Rich Protein 2 for P. falciparum) in a small sample of blood. They are simple to use, require minimal training, provide results within 15-20 minutes, and do not need electricity or complex laboratory equipment, making them ideal for use by community health workers. Microscopy using Thick (C) and Thin (B) blood

smears is the gold standard for laboratory diagnosis, allowing for species identification and quantification of parasitemia. However, it requires a trained microscopist, a quality microscope, and electricity, which are often unavailable in the field. Buffy coat examination (A) (e.g., QBC) is a sensitive microscopic method but requires specialized equipment.

Question 41. Which finding is commonly associated with glomerular hematuria?

A. Dysuria

B. Crystals

C. Brown urine

D. Edema

Correct answer: C

Brown urine Hematuria originating from the glomerulus has distinct features compared to bleeding from the lower urinary tract. When red blood cells (RBCs) pass through the damaged glomerular basement membrane, they are often misshapen (dysmorphic RBCs) and can form RBC casts. As this blood travels down the nephron, the hemoglobin is exposed to the acidic environment of the tubular fluid, which converts it to methemoglobin. This gives the urine a characteristic smoky, brown, or "cola-colored" appearance. In contrast, bleeding from the lower tract (e.g., bladder, prostate) results in bright red urine. Dysuria (A) points to lower tract inflammation. Crystals (B) are related to stone disease. Edema (D) is a feature of nephrotic or nephritic syndrome but is not a direct characteristic of the urine itself.

Question 42. Which of the following is not a germ cell tumor?

A. Granulosa cell tumor

B. Dysgerminoma

C. Yolk sac tumor

D. Teratoma

Correct answer: A

Granulosa cell tumor Ovarian tumors are classified based on their cell of origin. Germ cell tumors arise from the primordial germ cells of the ovary. This category includes dysgerminoma (B) (the ovarian equivalent of seminoma), yolk sac tumor (endodermal sinus tumor) (C), choriocarcinoma, and teratoma (D). In contrast, the granulosa cell tumor (A) is the most common malignant tumor in the sex cord-stromal category. These tumors arise from the supporting cells of the ovary—the granulosa, theca, Sertoli, or Leydig cells—which are responsible for hormone production. Therefore, a granulosa cell tumor is of stromal origin, not germ cell origin.

Question 43. Which of the following is not a part of Carney's complex?

A. Atrial myxoma

B. Neurofibroma

C. Lentiginosis

D. Rhabdomyoma

Correct answer: D

Rhabdomyoma Carney complex is a rare autosomal dominant multiple neoplasia syndrome most commonly caused by mutations in the PRKAR1A gene. It classically includes: 1. Cardiac and extracardiac myxomas (especially atrial myxoma) 2. Spotty skin pigmentation (lentigines / lentiginosis) 3. Endocrine overactivity (e.g., Cushing syndrome due to primary pigmented nodular adrenal disease) 4. Certain neural tumors such as psammomatous melanotic schwannomas (not neurofibromas) Now evaluating the options: (A) Atrial myxoma : Classic feature of Carney complex (B) Neurofibroma : Not a typical component (neurofibromas are associated with Neurofibromatosis type 1) (C) Lentiginosis : Characteristic skin manifestation (D) Rhabdomyoma : Not part of Carney complex (cardiac rhabdomyoma is associated with Tuberous sclerosis) Therefore, the most appropriate answer is : (D) Rhabdomyoma

Question 44. Match the following pathological bodies with their associated condition: Pathological Body Associated Condition 1. Lewy Bodies A. Parkinsonism 2. Negri Bodies B. Multiple Myelo- ma 3. Dutcher Bodies C. Rabies 4. Michaelis-Gut- mann Bodies D. Malakoplakia

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

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

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

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

Correct answer: D

1-A, 2-C, 3-B, 4-D This question tests the association between specific microscopic inclusion bodies and their corresponding diseases. (1) Lewy Bodies are eosinophilic, intracytoplasmic neuronal inclusions that are the pathological hallmark of Parkinsonism (A) and dementia with Lewy bodies. They are found primarily in the neurons of the substantia nigra. (2) Negri Bodies are eosinophilic, sharply outlined, intracytoplasmic inclusions found in the pyramidal cells of the hippocampus and Purkinje cells of the cerebellum. They are considered pathognomonic for Rabies (C) infection. (3) Dutcher Bodies are intranuclear inclusions of immunoglobulin seen in neoplastic plasma cells. They are characteristically associated with lymphoplasmacytic disorders such as Multiple Myeloma (B) and Waldenström's macroglobulinemia. (4) Michaelis-Gutmann Bodies are laminated, calcified concretions resulting from the deposition of calcium and iron salts on bacterial degradation products within macrophages. They are the hallmark of Malakoplakia (D), a rare chronic inflammatory condition, most commonly affecting the urinary tract. Therefore, the correct matching sequence is 1-A, 2-C, 3-B, and 4-D.

Question 45. When collecting a blood sample for serum calcium estimation, which practice must be avoided to prevent incorrect or misleading calcium results? a.

Collection in a sodium citrate vial b. Forearm exercise and fist clenching c. Prolonged immobilization of the patient d. Rapid removal of the tourniquet

A. a, b, d

B. a, b, c

C. b, c, d

D. a, b, c, d

Correct answer: B

a, b, c Several pre-analytical factors can significantly alter serum calcium levels, leading to erroneous results. (a) Collection in a sodium citrate vial : This must be avoided. Anticoagulants like citrate and EDTA chelate (bind) calcium ions, which will falsely decrease the measured calcium level in the sample. Serum samples should be collected in plain red-top or serum separator tubes. (b) Forearm exercise and fist clenching : This action during phlebotomy can cause localized lactic acidosis. The resulting decrease in pH causes more calcium to dissociate from its protein carrier, albumin, thereby falsely increasing the ionized (free) calcium concentration. (c) Prolonged immobilization : While a physiological state rather than a collection error, prolonged bed rest or immobilization leads to bone resorption, which genuinely increases total serum calcium levels. If a baseline calcium is desired, this confounding factor must be considered. (d) Rapid removal of the tourniquet : This is a correct procedure. It is prolonged tourniquet application (>1 minute) that should be avoided, as it causes hemoconcentration and protein leakage, falsely elevating the concentration of total calcium (since about 45% of calcium is protein-bound). Thus, factors a, b, and c must be avoided or accounted for to prevent erroneous reporting. PHARMACOLOGY

Question 46. Which drug attaches to the CD4 receptor and exhibits activity at both CXCR4 and CCR5?

A. Maraviroc

B. Ibalizumab

C. Dolutegravir

D. Tenofovir

Correct answer: B

Ibalizumab This question concerns the mechanism of action of different antiretroviral drugs. The HIV virus requires binding to the primary CD4 receptor and a coreceptor (either CCR5 or CXCR4) to enter a T-helper cell. Ibalizumab (B) is a humanized monoclonal antibody. It is a post-attachment inhibitor that binds to domain 2 of the CD4 receptor on the host T-cell. This binding induces a conformational change that prevents the HIV-1 gp120 protein from interacting with the CCR5 or CXCR4 coreceptors, thereby blocking viral entry into the cell. Because it acts on the CD4 receptor itself after the virus has attached, it is effective against HIV strains that use either the CCR5 or CXCR4 coreceptor for entry (dual-tropic activity). Maraviroc

(A) is a CCR5 antagonist; it blocks only the CCR5 coreceptor and is ineffective against viruses that use the CXCR4 coreceptor. Dolutegravir (C) is an integrase inhibitor, acting inside the cell to prevent viral DNA integration. Tenofovir (D) is a nucleotide reverse transcriptase inhibitor, also acting inside the cell.

Question 47. Which topical antifungal agent is approved for treating toenail onychomycosis?

A. Caspofungin

B. Tavaborole

C. Itraconazole

D. Griseofulvin

Correct answer: B

Tavaborole The treatment of onychomycosis (fungal infection of the nail) can be either oral or topical. The question specifically asks for a topical agent approved for toenails. Tavaborole (B) is an oxaborole antifungal agent that is available as a topical solution (brand name Kerydin). It is specifically approved by the FDA for the topical treatment of onychomycosis of the toenails caused by the dermatophytes Trichophyton rubrum or Trichophyton mentagrophytes. It works by inhibiting fungal leucyl-tRNA synthetase, an enzyme essential for fungal protein synthesis. Other approved topical agents include efinaconazole and ciclopirox. Caspofungin (A) is an echinocandin antifungal administered only intravenously for serious systemic fungal infections. Itraconazole (C) and Griseofulvin (D) are both oral antifungal agents that can be used for onychomycosis. They are not used topically for this indication. Itraconazole and terbinafine are the most commonly used oral agents today.

Question 48. Which of the following is correctly matched as an antidote with the given drug toxicity?

A. Benzodiazepines : Flumazenil

B. Atropine : L-carnitine

C. Barbiturates : Fomepizole

D. Arsenic : Desferrioxamine

Correct answer: A

Benzodiazepines: Flumazenil This question tests knowledge of specific antidotes for various poisonings. (A) Benzodiazepines : Flumazenil : This is a correct match. Flumazenil is a competitive antagonist at the benzodiazepine binding site on the GABA-A receptor. It is used to reverse the sedative and central nervous system depressant effects of a benzodiazepine overdose. (B) Atropine : L-carnitine : This is incorrect. The antidote for atropine (anticholinergic) toxicity is a cholinesterase inhibitor like physostigmine. L-carnitine is used to treat hyperammonemia associated with valproic acid toxicity. (C) Barbiturates : Fomepizole : This is incorrect. There is no specific antidote for barbiturate poisoning; management is supportive.

Fomepizole is an alcohol dehydrogenase inhibitor used as an antidote for methanol and ethylene glycol poisoning. (D) Arsenic : Desferrioxamine : This is incorrect. The antidotes for arsenic poisoning are chelating agents such as Dimercaprol (BAL) and Succimer (DMSA). Desferrioxamine is a specific iron chelator used for iron overdose.

Question 49. Which of the following binds to the GAT-1 receptor and inhibits it?

A. Ganaxolone

B. Tiagabine

C. Phenytoin

D. Valproate

Correct answer: B

Tiagabine The question asks for the drug that specifically inhibits the GABA transporter 1 (GAT-1). Tiagabine (B) is an antiepileptic drug whose primary mechanism of action is the selective inhibition of GAT-1. GAT-1 is a protein responsible for the reuptake of the inhibitory neurotransmitter GABA from the synaptic cleft into presynaptic neurons and glial cells. By blocking this reuptake, Tiagabine increases the concentration and prolongs the action of GABA in the synapse, enhancing GABAergic inhibitory neurotransmission and reducing neuronal excitability. This makes it effective in treating focal seizures. Ganaxolone (A) is a neurosteroid that acts as a positive allosteric modulator of the GABA-A receptor. Phenytoin (C) is a classic antiepileptic that primarily blocks voltage-gated sodium channels. Valproate (D) has a broad spectrum of action, including sodium channel blockade, T-type calcium channel blockade, and increasing GABA levels, but it does not act by inhibiting GAT-1.

Question 50. Which drug modulates voltage-gated sodium channels by specifically enhancing their slow inactivation?

A. Lacosamide

B. Phenytoin

C. Lamotrigine Click Here to Buy book on Amazon page 151 INICET Examination Paper

D. Vision loss

Correct answer: A

Hemodilution Decompression sickness, or "the bends," occurs when a person is exposed to a rapid decrease in ambient pressure, such as during a rapid ascent from a deep-sea dive. The drop in pressure causes dissolved inert gases, primarily nitrogen, to come out of solution and form bubbles in the blood and tissues. These bubbles can cause a wide range of symptoms by obstructing blood flow and triggering inflammation. Neurological symptoms are common, including vision loss (D) and hearing loss or vertigo (B) if the inner ear is affected. The bubbles can activate the coagulation cascade, leading to a consumptive coagulopathy (C). The inflammatory response and endothelial damage also cause a fluid shift from the intravascular to the extravascular space, leading to hemoconcentration (an increase in hematocrit), not

hemodilution.

Question 51. Which of the following statements regarding Thiopentone is false?

A. It is lipid soluble

B. It is maximally excreted by the kidney, so it has a short duration of action

C. It is redistributed to adipose tissue and muscles

D. It reaches maximum concentration in the brain after IV infusion

Correct answer: B

It is maximally excreted by the kidney, so it has a short duration of action This question concerns the pharmacokinetics of the intravenous anesthetic Thiopentone. (A) It is lipid soluble : True. Thiopentone is highly lipid-soluble, which allows it to rapidly cross the blood-brain barrier and induce anesthesia within seconds. (C) It is redistributed to adipose tissue and muscles : True. The termination of its clinical effect after a single bolus dose is due to rapid redistribution from the vessel-rich central compartment (like the brain) to less perfused tissues, initially muscle and later adipose tissue. (D) It reaches maximum concentration in the brain after IV infusion : True. Due to its high lipophilicity and the brain's high blood flow, it achieves a peak concentration in the brain very quickly (within one minute) after intravenous injection. (B) It is maximally excreted by the kidney, so it has a short duration of action : This statement is false. The short duration of action is due to redistribution, not elimination. The actual elimination of Thiopentone from the body is a slow process involving hepatic metabolism followed by renal excretion of its inactive metabolites. Its elimination half-life is long (10-12 hours).

Question 52. Which of the following drugs used in the treatment of breast cancer is a PARP inhibitor?

A. Rucaparib

B. Palbociclib

C. Vemurafenib

D. Gemcitabine

Correct answer: A

Rucaparib This question asks to identify the PARP inhibitor from a list of cancer drugs. (A) Rucaparib is a Poly (ADP-ribose) polymerase (PARP) inhibitor. PARP enzymes are critical for repairing single-strand DNA breaks. In cancer cells that have a pre-existing defect in DNA repair via homologous recombination (e.g., those with BRCA1 or BRCA2 mutations), inhibiting PARP leads to the accumulation of lethal double-strand breaks and cell death (a concept known as synthetic lethality). PARP inhibitors like olaparib, talazoparib, and rucaparib are approved for treating breast cancer with germline BRCA mutations. (B) Palbociclib is a CDK4/6 inhibitor used for HR-positive, HER2-negative breast cancer. (C) Vemurafenib is a BRAF kinase inhibitor used primarily for BRAF V600E-mutated melanoma. (D) Gemcitabine is a pyrimidine analog chemotherapeutic agent (an antimetabolite).

Question 53. A patient with rheumatoid arthritis (RA) is intolerant to anti-TNF- α inhibitors. Which JAK inhibitor is used to treat this condition?

A. Tofacitinib

B. Leflunomide

C. Erenumab

D. Sulfasalazine

Correct answer: A

Tofacitinib The question asks for a specific class of medication, a Janus kinase (JAK) inhibitor, used for rheumatoid arthritis (RA). Tofacitinib (A) is an oral medication that belongs to the class of targeted synthetic DMARDs known as JAK inhibitors. It works by blocking the intracellular JAK-STAT signaling pathway, which is essential for the production of several pro-inflammatory cytokines implicated in the pathogenesis of RA. Tofacitinib is indicated for the treatment of moderate to severe active RA in adult patients who have had an inadequate response or intolerance to methotrexate or other DMARDs, including biologic agents like TNF- α inhibitors. Other JAK inhibitors used in RA include baricitinib and upadacitinib. Leflunomide (B) and Sulfasalazine (D) are conventional synthetic DMARDs (csDMARDs). Erenumab (C) is a CGRP receptor antagonist used for migraine prevention, not RA.

Question 54. A patient came in for a follow-up after a myocardial infarction. He has cholesterol levels of 238 mg/dL, triglyceride levels of 125 mg/ dL, and HDL of 50 mg/ dL. He is already taking atorvastatin, metoprolol, and aspirin. Which medication should be added to his regimen? 1 Ezetimibe 2 Bempedoic acid 3 Evolocumab 4 Gemfibrozil

A. 1, 2

B. 2, 3

C. 1, 2, and 3

D. 1, 2, and 4

Correct answer: C

1, 2, and 3 This patient has established atherosclerotic cardiovascular disease (myocardial infarction), placing him in the very-high-risk category. Current guidelines recommend an LDL-cholesterol (LDL-C) target of <55 mg/dL. His calculated LDL-C is approximately 163 mg/dL (238 - 50 - [125/5]), which is significantly above the goal despite being on atorvastatin. Aggressive LDL-C lowering is required. (1) Ezetimibe : A cholesterol absorption inhibitor, it is the standard first add-on therapy to a statin and typically lowers LDL-C by an additional 15-20%. (2) Bempedoic acid : An ATP-citrate lyase inhibitor that lowers cholesterol synthesis. It is another oral option to add to a statin for further LDL-C reduction. (3) Evolocumab : A PCSK9 inhibitor. These are highly potent injectable biologic agents that can lower LDL-C by an additional 50-60% on top of statin therapy. They are indicated for very-high-risk patients who are not at goal on

maximally tolerated oral therapy. (4) Gemfibrozil : A fibrate used primarily to lower triglycerides. This patient's triglycerides are normal (125 mg/dL), so it is not indicated. Given the very high LDL-C, all three agents (Ezetimibe, Bempedoic acid, and Evolocumab) are valid therapeutic options to be added sequentially or in combination to reach the stringent LDL-C goal.

Question 55. Choose the correct option from the choices given below:

A. The maximum oral dose of fosphenytoin causes cerebellar degeneration and brain atrophy

B. High doses of fosphenytoin cause cardiotoxicity in elderly patients and nephrotoxicity in young patients

C. The safe dose of phenytoin is 250 mg/kg

D. Fosphenytoin is given to all seizure patients in the ER, regardless of CNS side effects and hypertension

Correct answer: B

High doses of fosphenytoin cause cardiotoxicity in elderly patients and nephrotoxicity in young patients (A) Fosphenytoin is a prodrug of phenytoin and is usually given IV/IM, not orally. Chronic phenytoin toxicity (not “maximum oral dose of fosphenytoin”) may cause cerebellar atrophy, but this statement is incorrectly framed. (B) High doses of fosphenytoin (like phenytoin) can cause cardiotoxicity such as hypotension and arrhythmias, especially in elderly patients due to rapid IV administration. Nephrotoxicity is not a typical dose-related toxicity of fosphenytoin. The key adverse effect with rapid IV infusion is cardiovascular toxicity. Among the given options, this is the most appropriate. (C) The safe dose of phenytoin is not 250 mg/kg. The loading dose is about 15–20 mg/kg, so this statement is grossly incorrect. (D) Fosphenytoin is not given to all seizure patients in the ER. It is mainly used in status epilepticus after benzodiazepines. CNS side effects and cardiovascular risks must be considered.

Question 56. What is the half-life (t½) of digoxin?

A. 12 hours

B. 24 hours

C. 36 hours

D. 48 hours

Correct answer: D

48 hours Digoxin is a cardiac glycoside used in heart failure and atrial fibrillation. In patients with normal renal function, the elimination half-life (t½) of digoxin is approximately 36–48 hours, most commonly cited as about 48 hours. Since digoxin is primarily eliminated by the kidneys, its half-life becomes significantly prolonged in renal impairment, sometimes extending to 3–5 days. Therefore, the correct answer is : (D) 48 hours

Question 57. Fall in diastolic blood pressure due to the loss of sympathetic outflow is

mediated by which receptor?

A. Alpha-1 receptor

B. Beta-1 receptor

C. Beta-2 receptor

D. Alpha-2 receptor

Correct answer: D

Alpha-2 receptor A fall in diastolic blood pressure due to loss of sympathetic outflow occurs primarily because of reduced peripheral vascular resistance. Diastolic BP is mainly determined by arteriolar tone, which is controlled by sympathetic stimulation acting on α_1 receptors in vascular smooth muscle. Let's analyze the receptors: 1 Alpha-1 receptors (a) Located on vascular smooth muscle (b) Cause vasoconstriction when stimulated (c) Loss of sympathetic outflow → decreased α_1 stimulation → vasodilation → ↓ peripheral resistance → ↓ diastolic BP 2 Beta-1 receptors (a) Located in the heart (b) Affect heart rate and contractility, mainly influencing systolic BP 3 Alpha-2 receptors (a) Presynaptic inhibitory receptors (b) Reduce norepinephrine release when stimulated (c) Not directly responsible for maintaining baseline arteriolar tone Therefore, fall in diastolic BP due to loss of sympathetic outflow is mediated by reduced stimulation of : (A) Alpha-1 receptor

Question 58. Which drug is preferred for treating diastolic hypertension?

A. ACE inhibitors

B. Beta-blockers

C. Calcium channel blockers

D. Diuretics

Correct answer: A

ACE inhibitors Diastolic hypertension refers to a condition in which the diastolic blood pressure (the lower reading) is persistently elevated, usually above 90 mmHg. It is commonly seen in younger individuals and is primarily related to increased peripheral vascular resistance. The main goal of treatment is to reduce systemic vascular resistance and prevent long-term complications such as stroke, myocardial infarction, and renal damage. ACE inhibitors (Angiotensin-Converting Enzyme inhibitors) are preferred because they block the conversion of angiotensin I to angiotensin II, a potent vasoconstrictor. By reducing angiotensin II levels, these drugs cause vasodilation, decrease peripheral resistance, and lower diastolic blood pressure effectively. They also reduce aldosterone secretion, which decreases sodium and water retention, further helping in blood pressure control. In addition, ACE inhibitors provide protective effects on the heart and kidneys. They are especially beneficial in patients with diabetes, chronic kidney disease, or heart failure. Compared to some other antihypertensive drugs, they have a favorable side-effect profile and improve long-term cardiovascular outcomes, making them a preferred choice in diastolic hypertension management.

Question 59. Pretomanid is used in the treatment of:

A. Multidrug-resistant tuberculosis

B. Malaria

C. Fungal infections

D. Leprosy

Correct answer: A

Multidrug-resistant tuberculosis Pretomanid is a nitroimidazooxazine antimicrobial agent that was specifically developed for treating tuberculosis (TB). It is a crucial component of the all-oral, six-month "BPaL" regimen, which consists of Bedaquiline, Pretomanid, and Linezolid. This combination therapy is recommended by the WHO and approved in many countries for the treatment of adult patients with highly resistant forms of pulmonary TB, including extensively drug-resistant TB (XDR-TB) and treatment-intolerant or nonresponsive multidrug-resistant TB (MDR-TB). Its mechanism of action includes inhibiting the synthesis of mycolic acids, which are essential for the mycobacterial cell wall. It has no therapeutic role in the management of malaria, fungal infections, or leprosy.

Question 60. Marshall's triad of abrasion, bruise, and punctate laceration is seen in which phase of bomb blast injury?

A. Primary

B. Secondary

C. Tertiary

D. Quaternary

Correct answer: A

Primary Marshall’s triad of abrasion, bruise, and punctate laceration is classically associated with the primary phase of blast injury. Primary blast injuries are caused directly by the blast wave (overpressure wave) generated at the moment of explosion. This high-intensity pressure wave travels rapidly through air and impacts the body surface, especially affecting air-filled organs such as the lungs, ears, and gastrointestinal tract. In addition to internal injuries like tympanic membrane rupture and blast lung, the sudden pressure changes can produce characteristic superficial skin findings. The force of the blast wave against the body surface leads to abrasions and bruising, while small punctate lacerations may occur due to rapid pressure differentials acting on the skin. Secondary blast injuries, in contrast, are caused by flying debris and shrapnel. Tertiary injuries occur when the victim is thrown against objects. Quaternary injuries include burns and inhalation injuries. Thus, Marshall’s triad is most specifically linked to the primary blast injury phase, caused directly by the pressure wave itself.

Question 61. A patient was brought to the emergency with a history of consuming an unknown poisonous substance. The patient was diagnosed with shock and pulmonary edema. A silver nitrate breath test is positive. Which of the following

drugs is used to treat this condition?

A. MgSO 4 (Magnesium sulfate)

B. Atropine

C. BAL (British Anti-Lewisite)

D. Pralidoxime

Correct answer: C

BAL (British Anti-Lewisite) A positive silver nitrate breath test indicates the presence of phosphine gas, which is typically seen in aluminium phosphide poisoning. When aluminium phosphide is ingested, it reacts with gastric acid and releases phosphine gas. This toxic gas is absorbed systemically and leads to severe cellular hypoxia by inhibiting mitochondrial oxidative phosphorylation. Clinically, patients present with refractory shock, severe hypotension, metabolic acidosis, and pulmonary edema, which are hallmark features of aluminium phosphide poisoning. Cardiovascular collapse is common and is the main cause of death. BAL (Dimercaprol) is used as an antidotal therapy in this condition. It acts by binding toxic metabolites and reducing cellular damage. Although no completely specific antidote exists for aluminium phosphide poisoning, BAL has been used as part of management along with aggressive supportive care, including fluid resuscitation, vasopressors, correction of acidosis, and ventilatory support. Atropine and pralidoxime are used in organophosphate poisoning, while magnesium sulfate is mainly supportive. Therefore, BAL is the correct choice in this scenario.

Question 62. Which of the following rules are utilized as tests for determining insanity in a given situation? 1 Durham's rule 2 Curren's rule 3 Ashley's rule 4 Murphy's rule

A. 1,2,3 and 4

B. 2,3,4 only

C. 1,2 only

D. 3,4 only

Correct answer: C

1,2 only This question refers to various legal standards used historically and in different jurisdictions to determine criminal responsibility when a defendant's mental state is in question (the insanity defense). 1 Durham's rule : Also known as the "product test," it was established in the U.S. in 1954. It stated that a defendant is not criminally responsible if their unlawful act was the "product of mental disease or defect." 2 Curren's rule : This refers to the standard adopted in the case United States v. Currens (1961), which was a variation of the American Law Institute (ALI) Model Penal Code test. It focused on whether the defendant, as a result of mental disease or defect, lacked substantial capacity to conform their conduct to the requirements of the law. 3 Ashley's rule and 4. Murphy's rule : These are not recognized legal tests for insanity. Murphy's

Law is a well-known adage ("Anything that can go wrong, will go wrong") and has no legal standing in this context. Therefore, only Durham's rule and Curren's rule are actual legal tests for insanity among the options listed.

Question 63. Which of the following chelating agents is indicated in iron overdose?

A. Desferrioxamine

B. BAL

C. Calcium Edetate

D. DTPA

Correct answer: A

Desferrioxamine Chelating agents are used in toxicology to bind with metals, forming a stable, water-soluble complex that can then be excreted from the body. Desferrioxamine (A) is the specific chelating agent used in the management of acute iron poisoning. It has a very high binding affinity for ferric iron (Fe^{3+}), forming a complex called ferrioxamine. This complex is water-soluble and is renally excreted, characteristically turning the urine a "vin rosé" (pinkish-red) color. It is administered parenterally (usually via continuous IV infusion) for patients with systemic toxicity. BAL (Dimercaprol) (B) is a chelator for arsenic, mercury, and lead. Calcium Disodium Edetate (EDTA) (C) is primarily used for lead poisoning. DTPA (D) is used for internal contamination with radioactive elements like plutonium. MICROBIOLOGY

Question 64. Which of the following cancers are preventable by vaccination?

A. Cervical cancer

B. Hepatocellular carcinoma (HCC)

C. Merkel cell carcinoma

D. Burkitt's lymphoma

Correct answer: A

Cervical cancer Cervical cancer is largely preventable through vaccination against Human Papillomavirus (HPV). Persistent infection with high-risk HPV types, particularly HPV-16 and HPV-18, is the primary cause of cervical cancer. Prophylactic HPV vaccines (such as bivalent, quadrivalent, and nonavalent vaccines) protect against these oncogenic strains and significantly reduce the risk of developing cervical intraepithelial neoplasia and invasive cervical cancer. Vaccination is most effective when given before the onset of sexual activity, typically in early adolescence. Although Hepatocellular carcinoma (HCC) is associated with chronic Hepatitis B infection and can be reduced by Hepatitis B vaccination, the most classically recognized and widely emphasized cancer preventable by vaccination in public health programs is cervical cancer. Merkel cell carcinoma is linked to Merkel cell polyomavirus, but no routine vaccine exists. Burkitt’s lymphoma is associated with Epstein–Barr virus (EBV), and no licensed vaccine is currently available. Therefore, cervical cancer is the best and most definitive answer among the options.

Question 65. Which of the following hepatitis viruses is spread by contaminated water?

A. Hepatitis A

B. Hepatitis B

C. Hepatitis C

D. Hepatitis D

Correct answer: A

Hepatitis A The modes of transmission are a key distinguishing feature among the hepatitis viruses. Hepatitis A Virus (HAV) (A) is transmitted via the fecal-oral route. Infection occurs through the ingestion of food or water that has been contaminated with the feces of an infected person. This makes it a common cause of foodborne and waterborne outbreaks of acute hepatitis, especially in areas with poor sanitation. Hepatitis E virus (not an option) is also transmitted this way. Hepatitis B Virus (HBV) (B), Hepatitis C Virus (HCV) (C), and Hepatitis D Virus (HDV) (D) are all transmitted parenterally, through contact with infected blood and certain body fluids. Common routes include sexual contact, intravenous drug use with shared needles, vertical transmission from mother to child, and unsafe medical practices.

Question 66. Which of the following is wrong about Ascaris lumbricoides?

A. Mostly asymptomatic

B. Unembryonated fertilized egg takes time to infect after it goes in soil

C. Heavy infection causes rectal prolapse

D. Asthma-like symptoms

Correct answer: C

Heavy infection causes rectal prolapse This question assesses knowledge of the giant roundworm, Ascaris lumbricoides. (A) Mostly asymptomatic : True. Light infections are very common and usually do not cause any noticeable symptoms. (B) Unembryonated egg needs time in soil : True. The fertilized eggs passed in feces are not immediately infective. They require a period of 2-4 weeks in warm, moist, shady soil to develop into the infective embryonated stage. (D) Asthma-like symptoms : True. During its life cycle, the ingested larvae penetrate the intestinal wall, travel to the lungs, and mature. This larval migration through the lungs can cause an eosinophilic pneumonitis known as Loeffler's syndrome, which presents with cough, wheezing, and dyspnea. (C) Heavy infection causes rectal prolapse : This statement is wrong. Rectal prolapse is a classic complication of heavy infection with the whipworm, Trichuris trichiura, not Ascaris. Heavy Ascaris infection can lead to complications like intestinal obstruction from a bolus of worms, malnutrition, and biliary obstruction.

Question 67. What is the drug of choice (DOC) for Fasciola hepatica?

A. Albendazole

B. Praziquantel

C. Triclabendazole

D. Mebendazole

Correct answer: C

Triclabendazole Fasciola hepatica, the sheep liver fluke, causes the disease fascioliasis. Triclabendazole (C) is the undisputed drug of choice for treating human fascioliasis. It is a benzimidazole anthelmintic that is highly effective against both the adult and immature migrating stages of the fluke. This is a notable exception in the treatment of trematodes. Praziquantel (B) is the drug of choice for most other fluke (trematode) infections (e.g., Schistosomiasis, Clonorchiasis) and tapeworm (cestode) infections. However, it has very poor efficacy against Fasciola species and is not used. Albendazole (A) and Mebendazole (D) are broad-spectrum benzimidazoles primarily used for nematode (roundworm) infections. They are not effective for fascioliasis.

Question 68. Which of the following is true about Cryptococcus?

A. Seen in AIDS

B. Associated with bird droppings

C. All pathogenic species are urease positive

D. CD4 > 500

Correct answer: B

Associated with bird droppings Cryptococcus is an encapsulated yeast, most commonly Cryptococcus neoformans, which is strongly associated with pigeon droppings and soil contaminated with bird excreta. The organism survives and multiplies in nitrogen-rich environments such as dried bird droppings. Humans acquire infection by inhalation of aerosolized yeast cells or spores from the environment. Although Cryptococcus infection is frequently seen in AIDS patients, especially when CD4 counts fall below 100 cells/µL, option (A) is not the most specific identifying feature because the organism can also infect other immuno compromised individuals and occasionally immunocompetent hosts. Option (C) is incorrect because while Cryptococcus species are typically urease positive, stating “all pathogenic species” makes the statement less precise for exam purposes. Option (D) is incorrect because cryptococcal infections are classically associated with low CD4 counts, not CD4 > 500. Therefore, the most accurate and characteristic statement about Cryptococcus is its association with bird droppings.

Question 69. All of the following drugs are used in the management of uncomplicated Plasmodium falciparum malaria, except:

A. Artemether

B. Primaquine

C. Chloroquine

D. Sulphadoxine/pyrimethamine

Correct answer: B

Primaquine Uncomplicated Plasmodium falciparum malaria is primarily treated with artemisinin-based combination therapy (ACT). Drugs such as artemether (usually combined with lumefantrine) are first-line treatments because they rapidly reduce parasite load and are highly effective against resistant strains. Sulphadoxine–pyrimethamine has also been used in combination regimens, although resistance limits its use in many regions. Chloroquine was previously used for P. falciparum, but widespread resistance has made it ineffective in most endemic areas; however, it may still be used in specific regions where sensitivity is documented. Primaquine, on the other hand, is not used for treating uncomplicated P. falciparum blood-stage infection. Its primary role is in eliminating hypnozoites (dormant liver forms) of Plasmodium vivax and Plasmodium ovale to prevent relapse. In P. falciparum, primaquine may be given as a single low dose to reduce gametocyte carriage and transmission, but it is not used as a standard treatment for uncomplicated infection. Therefore, primaquine is the correct exception. PSM

Question 70. Which of the following is not included in the criteria for Severe Acute Malnutrition (SAM)?

A. Low weight for height

B. Mid-upper arm circumference

C. Low height for age

D. Pedal edema

Correct answer: C

Low height for age The World Health Organization (WHO) defines Severe Acute Malnutrition (SAM) in children (6-59 months) by the presence of at least one of the following three criteria: 1 Low weight for height (A) : A weight-for-height Z-score of less than -3 standard deviations below the WHO growth standard median. This indicates severe wasting. 2 Mid-upper arm circumference (MUAC) (B) : A MUAC measurement of less than 11.5 cm. 3 Pedal edema (D) : The presence of bilateral pitting nutritional edema. Low height for age (C), defined as a height-for-age Z-score of less than -2, is the definition of stunting. Stunting is an indicator of chronic malnutrition, reflecting a long-term failure to grow. While a child with SAM may also be stunted, stunting itself is not a diagnostic criterion for the acute condition of SAM.

Question 71. Which of the following is not a live vaccine?

A. Hepatitis B

B. Varicella

C. Measles

D. Rotavirus

Correct answer: A

Hepatitis B Vaccines are broadly classified as live attenuated or inactivated (killed). Hepatitis B

vaccine (A) is an inactivated vaccine. Specifically, it is a recombinant subunit vaccine, containing only the Hepatitis B surface antigen (HBsAg), which is produced by genetically engineered yeast. It contains no viral genetic material and cannot cause infection. (B) Varicella vaccine is a live attenuated vaccine containing a weakened form of the varicella-zoster virus to protect against chickenpox. (C) Measles vaccine is a live attenuated vaccine, usually administered as part of the combined MMR (Measles, Mumps, Rubella) vaccine. (D) Rotavirus vaccine is an oral live attenuated vaccine containing weakened strains of human rotavirus.

Question 72. Screening family members of hypertension and diabetes in a village is best classified as:

A. Selective screening

B. Multiphasic screening

C. Mass screening

D. Anonymous screening

Correct answer: A

Selective screening This scenario describes a specific type of screening strategy. Selective screening (A), also known as high-risk screening, involves targeting specific subgroups of the population who are identified as having a higher risk of developing a particular disease. Family members of individuals with chronic, heritable conditions like hypertension and diabetes constitute a well-defined high-risk group due to shared genetic predispositions and environmental factors. Screening this group is a classic example of a selective approach. (C) Mass screening would involve screening everyone in the village, regardless of their family history or risk factors. (B) Multiphasic screening refers to the application of multiple tests at the same time (e.g., checking BP, blood sugar, and cholesterol), but the defining feature here is the population being targeted, not the number of tests. (D) Anonymous screening is done for surveillance purposes where results are delinked from personal identifiers.

Question 73. Which of the following is NOT a component of the Anemia Mukt Bharat (AMB) initiative?

A. 6 beneficiaries

B. 6 health functionaries

C. 6 institutional mechanisms

D. 6 interventions

Correct answer: B

6 health functionaries The Anemia Mukt Bharat (AMB) strategy, launched by the Government of India, is built upon a comprehensive 6x6x6 framework to combat anemia. This framework includes: Six Beneficiary Groups (A): Children (6-59 months), Children (5-9 years), Adolescents (10-19 years), Pregnant women, Lactating women, and Women of Reproductive Age (15-49 years). Six Interventions (D): Prophylactic Iron and Folic Acid supplementation, deworming,

intensified behavior change communication, testing and treatment, mandatory provision of iron-fortified foods in government programs, and addressing non-nutritional causes. Six Institutional Mechanisms (C): Includes inter-ministerial coordination, a national AMB unit, strengthening of supply chains, a national center of excellence, a digital portal for monitoring, etc. The framework does not explicitly define a component of "6 health functionaries." While various functionaries (ASHA, ANM, Anganwadi workers) are critical for implementation, they are not one of the three core pillars of the 6x6x6 strategy.

Question 74. What is the best level of evidence in research?

A. Case-control study

B. Cohort study

C. Randomized Controlled Trial (RCT)

D. Meta-analysis

Correct answer: D

Meta-analysis The hierarchy of evidence is a model used to rank the relative strength of results obtained from different types of research studies. At the pinnacle of this hierarchy are Systematic Reviews and Meta-analyses (D). A systematic review critically appraises all relevant studies on a specific topic, and a meta-analysis uses statistical methods to combine the results of several of these studies (ideally, multiple high-quality RCTs). This synthesis provides a more powerful and precise estimate of an intervention's effect than any single study alone. A single Randomized Controlled Trial (RCT) (C) is the next highest level and is considered the gold standard for a primary experimental study. Below RCTs are observational studies, with Cohort studies (B) generally providing stronger evidence than Case-control studies (A). Expert opinion and case reports are at the bottom of the pyramid.

Question 75. What is the correct sequence of steps in a randomized controlled trial (RCT)?

A. Randomization, Exclusion and Inclusion, Blinding, Analysis

B. Exclusion and Inclusion, Randomization, Blinding, Analysis

C. Blinding, Randomization, Analysis, Exclusion and Inclusion

D. Analysis, Blinding, Exclusion and Inclusion, Randomization

Correct answer: B

Exclusion and Inclusion, Randomization, Blinding, Analysis A randomized controlled trial follows a logical and standardized sequence to ensure its validity and minimize bias. The correct order is: 1 Exclusion and Inclusion : The process begins by defining the target population and screening potential participants against a set of predefined inclusion and exclusion criteria. This ensures that a suitable and relatively homogenous group of subjects is enrolled in the study. 2 Randomization : Once eligible participants have provided informed consent and been enrolled, they are randomly assigned to one of the study arms (e.g., the intervention group or the control

group). This is the core step that minimizes selection bias. 3 Blinding : During the intervention phase of the trial, blinding (masking) of participants, investigators, and/or outcome assessors to the treatment allocation is implemented whenever feasible to prevent performance and detection bias. 4 Analysis : After the follow-up period is complete, the collected data is analyzed to compare the outcomes between the groups and draw conclusions about the intervention's effectiveness.

Question 76. Which of the following is a key feature of a randomized controlled trial (RCT)?

A. Participants are randomly assigned to groups to reduce bias.

B. The study design always uses a placebo in the control group.

C. Results are always applicable to the general population.

D. All of the Above

Correct answer: A

Participants are randomly assigned to groups to reduce bias. The defining, core feature of an RCT is the random allocation of participants to study groups. (A) The process of randomization is the cornerstone of the RCT design. It aims to ensure that both known and unknown confounding variables are distributed evenly between the intervention and control groups. This minimizes selection bias and allows for a more valid comparison, strengthening the inference of causality. (B) This is incorrect. While a placebo is a common type of control, the control group in an RCT can also receive the current standard of care (an active comparator), usual care, or no intervention at all. (C) This is incorrect. RCTs often have strict inclusion and exclusion criteria, which can limit the study sample's diversity. This can affect the generalizability (or external validity) of the results to the broader, more heterogeneous general population. (D) Incorrect, as B and C are false.

Question 77. The analysis that uses ICER (Incremental Cost- Effectiveness Ratio) as a model is:

A. Cost-effective analysis

B. Cost analysis

C. Cost-benefit analysis

D. Cost evaluation

Correct answer: A

Cost-effective analysis Incremental Cost-Effectiveness Ratio (ICER) is the principal measure used in cost-effectiveness analysis (CEA). ICER compares two interventions by calculating the additional cost required to gain one additional unit of health outcome. It is expressed as: ICER = (Cost of Intervention A − Cost of Intervention B) ÷ (Effect of A − Effect of B) The outcome is measured in natural health units such as life-years gained, cases prevented, or quality-adjusted life years (QALYs). In contrast, cost analysis only compares expenses without considering

outcomes. Cost-benefit analysis converts both costs and benefits into monetary terms. Cost evaluation is a broader, less specific term and does not specifically rely on ICER. Therefore, ICER is specifically associated with cost-effectiveness analysis, making option (A) correct.

Question 78. In a field setting, malaria diagnosis is done by:

A. Buffy coat examination NODIA MEDINK

D. Medullary Thyroid Carcinoma (MTC)

Correct answer: A

Parathyroid hyperplasia Multiple Endocrine Neoplasia (MEN) syndromes are inherited disorders causing tumors in multiple endocrine glands. MEN 2B is an aggressive subtype caused by a specific mutation in the RET proto-oncogene. Its three core components are: 1 Medullary Thyroid Carcinoma (MTC) (D), which is present in virtually all patients and occurs at a very early age. 2 Pheochromocytoma. 3 A characteristic phenotype including mucosal neuromas (on lips, tongue, eyelids) (B), a Marfanoid habitus (tall, slender build with long limbs) (C), and intestinal ganglioneuromatosis. Parathyroid hyperplasia or adenoma, leading to primary hyperparathyroidism, is a hallmark of MEN 1 and MEN 2A, but it is notably absent in MEN 2B.

Question 79. What is Universal Health Coverage (UHC)?

A. UHC primarily targets primary health care services since that is the need of most of the population.

B. UHC provides free services to all at the point of care, regardless of countries' resources.

C. UHC ensures that all individuals have access to a comprehensive range of quality health services they need, whenever and wherever they require them, without experiencing financial hardship.

D. It encompasses the entire continuum of essential health services, including health promotion, disease prevention, treatment, rehabilitation, and palliative care, covering all stages of life.

Correct answer: C

UHC ensures that all individuals have access to a comprehensive range of quality health services they need, whenever and wherever they require them, without experiencing financial hardship. Universal Health Coverage (UHC), as defined by the [World Health Organization (WHO)] means that all people should receive the health services they need without suffering financial difficulties. UHC has three main components: 1. Population Coverage : Health services should be available to everyone. 2. Service Coverage : Services should include health promotion, prevention, treatment, rehabilitation, and palliative care. 3. Financial Protection : People should not face financial hardship while accessing health care. Why other options are incorrect : (A) is too limited because UHC includes all essential health services, not only primary health care. (B) is incorrect because UHC does not necessarily mean every service is completely free; it focuses on affordability and financial protection. (D) correctly explains the service

component of UHC but does not include universal access and financial protection, so it is incomplete. Therefore, Option (C) is the most complete and accurate definition of Universal Health Coverage.

Question 80. A 2-year-old child with diarrhea and severe dehydration. What is the most common causative agent?

A. Escherichia coli (E. coli)

B. Shigella species

C. Rotavirus

D. Giardia lamblia

Correct answer: C

Rotavirus Among young children, especially those under five years of age, Rotavirus (C) is the single most common cause of severe, dehydrating gastroenteritis worldwide. While the implementation of the rotavirus vaccine has significantly reduced its burden, it remains the leading etiologic agent for diarrhea-related hospitalizations and deaths in this age group globally. The virus causes an acute, watery diarrhea, often accompanied by vomiting and fever, which can rapidly lead to severe dehydration if not managed promptly. While pathogenic strains of E. coli (A), Shigella (B) (which typically causes dysentery), and the protozoan Giardia (D) are also important causes of diarrheal disease in children, rotavirus is epidemiologically the most frequent cause of severe episodes.

Question 81. Which among the following is not high-risk for HIV transmission?

A. Long-distance truck drivers

B. MSM (Men who have Sex with Men)

C. Intravenous drug abusers

D. Commercial sex workers (CSW)

Correct answer: A

Long-distance truck drivers Public health programs for HIV prevention often focus on "key populations" who are at the highest risk of acquiring or transmitting HIV. MSM (B), Intravenous drug abusers (C) (people who inject drugs), and Commercial sex workers (CSW) (D) are globally recognized as key populations. Their risk is directly linked to highly efficient modes of transmission (unprotected anal intercourse, sharing contaminated needles) and/or having a high number of sexual partners. Long-distance truck drivers (A) are often categorized as a "bridge population" or a group with high-risk behaviors, rather than a primary key population. While their profession may place them in situations where they are more likely to engage in high-risk behaviors (e.g., sex with multiple partners), the group itself is not defined by the risk behavior in the same way as the others. Therefore, relative to the other three options, they are considered a different category of risk group, not a core "key population" for transmission.

Question 82. Which vaccine is not required for a person >65 years of age?

A. Hepatitis B

B. Varicella zoster

C. HPV

D. Influenza A

Correct answer: C

HPV Vaccination recommendations are age-specific, focusing on the risks relevant to each age group. HPV (Human Papillomavirus) vaccine (C) is recommended to prevent HPV-related cancers, primarily cervical cancer. It is most effective when given before the onset of sexual activity. The routine recommendation is for preteens aged 11-12, with catch-up vaccination up to age 26. It is not routinely recommended or required for adults over 65 years. Influenza A vaccine (D) (the annual flu shot) is strongly recommended for all adults, especially those over 65, who are at high risk of severe complications. Varicella zoster vaccine (B) (recombinant zoster vaccine, Shingrix) is strongly recommended for all adults aged 50 and older to prevent shingles. Hepatitis B vaccine (A) is recommended for adults who have specific risk factors, such as diabetes (which is common in older adults), chronic liver disease, or those who are otherwise at risk of exposure.

Question 83. Which of the following statements is accurate regarding a child who has been bitten by a stray dog? On examination, there is an abrasion measuring 1.5 cm with minimal oozing. 1 Category 3 wound 2 Wash the wound with normal tap water for 15-20 minutes 3 Clean the wound with spirit 4 Loose suturing of the wound with a proper dressing 5 Equine immunoglobulin is given at a dose of 40 IU/kg of body weight 6 The intra-dermal vaccine is administered on days 0, 3, 7, 28

A. 2,3,5,6

B. 1,2,3,6

C. 1,2,3,5

D. 1,2,5,6

Correct answer: D

1,2,5,6 Let's analyze each statement for post-exposure prophylaxis (PEP) for rabies. 1 Category 3 wound : Correct. Any transdermal bite (one that breaks the skin), including scratches or abrasions with oozing, especially from a high-risk animal like a stray dog, is managed as a Category III exposure. 2 Wash the wound : Correct. Immediate and thorough washing of the wound with soap and water for at least 15 minutes is the most critical step in wound management to reduce the viral load. 3 Clean the wound with spirit : Incorrect. Spirit can cause tissue damage and is not recommended. Virucidal agents like povidone-iodine or chlorhexidine should be used after washing. 4 Loose suturing : Incorrect. Animal bite wounds should ideally be left open. Suturing is discouraged as it can inoculate the virus deeper. If unavoidable, it

should be done loosely after infiltration of rabies immunoglobulin (RIG). 5 Equine immunoglobulin : Correct. For Category III exposure, RIG is essential. The dose for equine RIG (ERIG) is 40 IU/kg body weight. 6 Intra-dermal vaccine schedule : This represents an older or variant schedule. The current WHO-recommended intradermal schedule is 2 sites on days 0, 3, and 7. However, given that statements 3 and 4 are definitively wrong, the combination of 1, 2, and 5 (which are correct) makes option D the most plausible answer, despite the schedule in statement 6 being debatable. ENT

Question 84. Carhart Notch is seen in which disease?

A. Otosclerosis

B. Meniere's disease

C. CHL (Conductive Hearing Loss)

D. SCC (Superior Canal Dehiscence)

Correct answer: A

Otosclerosis Carhart's notch is a highly specific audiometric finding that is considered pathognomonic for stapedial otosclerosis (A). Otosclerosis is a condition of abnormal bone remodeling in the otic capsule that leads to fixation of the stapes footplate in the oval window, causing a progressive conductive hearing loss. The Carhart notch is a distinctive dip in the bone conduction threshold, typically maximal at 2000 Hz (2 kHz). It is thought to be a mechanical artifact related to the loss of ossicular inertial bone conduction when the stapes is fixed. Despite being a finding on bone conduction audiometry, it is a sign of a conductive pathology and characteristically resolves after successful stapedectomy surgery restores the mobility of the ossicular chain.

Question 85. What is the most common test used in screening for neonatal hearing loss?

A. OAE (Otoacoustic Emissions)

B. BERA (Brainstem Evoked Response Audiometry)

C. PTA (Pure Tone Audiometry)

D. None of the above

Correct answer: A

OAE (Otoacoustic Emissions) Universal Newborn Hearing Screening (UNHS) programs are designed to detect hearing loss in infants shortly after birth. The most widely used initial screening method is Otoacoustic Emissions (OAE) (A). OAEs are low-intensity sounds that are generated by the outer hair cells of a healthy cochlea in response to auditory stimulation. The test is objective, rapid, non-invasive, and cost-effective. A small probe placed in the baby's ear canal emits a sound and a sensitive microphone records the "echo" produced by the cochlea. A "pass" result indicates that the peripheral auditory pathway is likely intact. Automated Auditory Brainstem Response (AABR), a simplified version of BERA (B), is also used, often as a

second-tier screen for infants who fail the OAE or as a primary screen for high-risk infants (e.g., in the NICU). PTA (C) is a behavioral test that requires patient cooperation and is unsuitable for newborns.

Question 86. Which of the following conditions shows maximum hearing loss?

A. Serous otitis media

B. Partial fixation of the footplate of the stapes

C. Ossicular discontinuity with intact TM (Tympanic Membrane)

D. Ossicular discontinuity with perforated TM

Correct answer: C

Ossicular discontinuity with intact TM (Tympanic Membrane) The maximum possible conductive hearing loss (CHL) is approximately 60 dB. The severity of CHL depends on how effectively the middle ear's transformer mechanism is disrupted. (C) Ossicular discontinuity with intact TM: This scenario creates the largest hearing loss. The mechanical link between the eardrum and the oval window is completely broken. The intact tympanic membrane continues to function normally, creating a significant pressure difference between the sound waves hitting it (and transmitted to the oval window via the remaining ossicles/air) and the shielded round window. This maximal impedance mismatch results in a profound CHL, approaching 60 dB. (D) Ossicular discontinuity with perforated TM: With a perforation, the shielding effect of the TM on the round window is lost. Sound waves can now directly strike both the oval and round windows. This reduces the crucial phase difference between the two windows, leading to some sound cancellation. The resulting CHL is significant but less severe (around 50 dB) than with an intact TM. Serous otitis media (A) and partial stapes fixation (B) cause less severe CHL, typically 20-40 dB.

Question 87. Among the nerve injuries, which has a poor prognosis?

A. Bilateral ILN (Inferior Laryngeal Nerve) injury

B. Unilateral ILN injury

C. Bilateral RLN (Recurrent Laryngeal Nerve) injury

D. Unilateral RLN injury

Correct answer: C

Bilateral RLN (Recurrent Laryngeal Nerve) injury The prognosis of laryngeal nerve injuries is primarily related to their impact on the airway and voice. The Recurrent Laryngeal Nerve (RLN) innervates all intrinsic laryngeal muscles except the cricothyroid, including the posterior cricoarytenoid (PCA), which is the sole abductor of the vocal cords. Bilateral RLN injury (C) has the poorest prognosis because it is a life-threatening airway emergency. With both nerves damaged, both vocal cords are paralyzed and lie in the median or paramedian position (adducted) due to the unopposed action of the cricothyroid muscles. The patient cannot abduct the cords to breathe, leading to acute airway obstruction and stridor. This condition often

requires an emergency tracheostomy to secure the airway. Unilateral RLN injury (D) causes paralysis of one vocal cord, resulting in hoarseness (dysphonia) and a weak cough, but the airway is typically patent as the contralateral cord can still abduct. The Inferior Laryngeal Nerve (ILN) is the terminal part of the RLN, so an ILN injury is functionally equivalent to an RLN injury.

Question 88. Croup is caused by?

A. Streptococcus

B. Influenza virus

C. Hemophilus influenza

D. Parainfluenza virus

Correct answer: D

Parainfluenza virus Croup, or acute laryngotracheobronchitis, is a common pediatric respiratory illness characterized by a barking cough, inspiratory stridor, and hoarseness due to inflammation in the larynx and subglottic airway. The most common cause of croup by a significant margin is the Parainfluenza virus (D), with Parainfluenza type 1 being the most frequent isolate, responsible for up to 75% of cases, especially in autumn outbreaks. Other viruses like Influenza virus (B), Respiratory Syncytial Virus (RSV), and adenovirus are less common causes. Haemophilus influenzae type b (C) is the classic bacterial cause of epiglottitis, a distinct and more severe medical emergency involving inflammation of the epiglottis, now rare due to vaccination. Bacterial causes like Streptococcus (A) can lead to bacterial tracheitis, which can be a complication of viral croup, but they are not the primary cause of typical croup.
OPHTHALMOLOGY

Question 89. Pterygium can lead to:

A. Corneal scarring/Eye pain

B. Macular edema

C. Astigmatism

D. Purulent discharge

Correct answer: C

Astigmatism A pterygium is a common ocular surface condition characterized by a triangular, fibrovascular growth of the conjunctiva that extends onto the cornea. While it is benign, its growth can have significant consequences for vision. The most common and optically significant complication is the induction of corneal astigmatism. As the pterygium grows and adheres to the corneal surface, it exerts a pulling force that physically flattens the cornea in the horizontal meridian. This alteration of the cornea's normally spherical shape leads to "with-the-rule" astigmatism, which causes blurred and distorted vision. The amount of astigmatism is directly proportional to the size of the pterygium. This is often the primary indication for surgical excision. While a large, inflamed pterygium can cause irritation, foreign body sensation, and even corneal scarring (A) at its leading edge, astigmatism is the most

characteristic and frequent vision-affecting complication. Macular edema (B) and purulent discharge (D) are unrelated pathologies.

Question 90. Which of the following is seen in FFA (Fundus Fluorescein Angiography) in microaneurysm?

A. Hyperfluorescent dots NODIA MEDINK

B. Hypo fluorescent dots

C. Hyper fluorescent lines

D. Hyper fluorescent branching pattern

Correct answer: A

Hyperfluorescent dots Fundus fluorescein angiography (FFA) is a diagnostic procedure used to visualize retinal and choroidal circulation. Microaneurysms, which are saccular outpouchings of the retinal capillary walls, are often the earliest clinically detectable sign of diabetic retinopathy. During an FFA, fluorescein dye is injected intravenously and travels through the retinal vasculature. As the capillaries fill with dye during the arterial and early venous phases, the dye also fills these small, dilated sacs. Consequently, microaneurysms appear on the angiogram as small, discrete, well-demarcated points of increased brightness, which are best described as hyperfluorescent dots. In later phases of the angiogram, these microaneurysms may leak dye, leading to a more diffuse, hazy hyperfluorescence in the surrounding retina, indicative of macular edema. Hypofluorescence (B) would indicate a blockage of circulation, while hyperfluorescent lines or branching patterns (C, D) are more characteristic of neovascularization, a sign of advanced proliferative disease.

Question 91. Which of the following is the cause of bilateral sudden painless diminution of vision?

A. Keratoconus

B. Glaucoma

C. Iridocyclitis

D. Diabetic

Correct answer: D

Diabetic Retinopathy Bilateral, sudden, and painless vision loss can be caused by several conditions, but among the given options, diabetic retinopathy is the most plausible cause. Specifically, proliferative diabetic retinopathy (PDR), an advanced stage of the disease, is characterized by the growth of fragile new blood vessels (neovascularization). These abnormal vessels can easily rupture and bleed into the vitreous cavity, causing a vitreous hemorrhage. A significant vitreous hemorrhage presents as a sudden, painless loss of vision, which can range from a shower of floaters to a complete blackout of vision. While this event is often unilateral, patients with bilateral PDR can experience hemorrhages in both eyes, leading to bilateral symptoms. In contrast, acute angle-closure glaucoma (B) and iridocyclitis (C) are typically very

painful. Keratoconus (A) causes a gradual and progressive, not sudden, decline in vision.

Question 92. A 1400-gram child was referred to the ophthalmology department with leukocoria and calcification. What is the probable diagnosis?

A. Coats' disease

B. Retinopathy of prematurity

C. Congenital cataract

D. Retinoblastoma

Correct answer: D

Retinoblastoma Leukocoria, or a "white pupil," in a child is a serious sign that requires immediate ophthalmological evaluation to rule out life-threatening conditions. The most common cause of leukocoria is a congenital cataract, but the most serious cause is retinoblastoma, a primary intraocular malignancy of childhood. The combination of leukocoria with the finding of calcification on imaging (such as ultrasound or CT scan) is highly specific and virtually pathognomonic for retinoblastoma. While a congenital cataract (C) causes leukocoria, it does not calcify. Coats' disease (A) is characterized by retinal telangiectasias and massive exudation, which can cause leukocoria but rarely calcifies. Retinopathy of prematurity (B) is a consideration in a low-birth-weight infant (1400g), but it does not typically present with calcification. The presence of both leukocoria and calcification makes retinoblastoma the most probable diagnosis until proven otherwise.

Question 93. What is the normal artery-to-vein ratio in the optic disc?

A. 2 :3

B. 1 :3

C. 2 :5

D. 1 :5

Correct answer: A

2:3 On fundoscopic examination, the ratio of the caliber (diameter) of the retinal arterioles to the retinal venules is an important clinical sign, particularly in the evaluation of hypertensive and atherosclerotic retinopathy. The retinal veins are normally wider than the corresponding arteries. The normal artery-to-vein (A/V) ratio is approximately 2:3. This means that a retinal arteriole is typically about two-thirds the diameter of its accompanying venule. A decrease in this ratio, such as to 1:2 or 1:3 (B), indicates arteriolar narrowing or "attenuation," which is a common finding in hypertensive retinopathy. An A/V ratio of 1:3 or lower signifies significant arteriolar narrowing. The other options represent abnormal ratios. Therefore, the standard normal A/V ratio used as a baseline for comparison during a fundus examination is 2:3, reflecting the naturally wider appearance of the retinal veins compared to the arteries.

Question 94. Which of the following is not derived from the neural crest?

A. Retinal pigment epithelium

B. Choroidal melanocytes

C. Ciliary ganglion

D. Ciliary muscles

Correct answer: A

Retinal pigment epithelium Neural crest cells are a multipotent population of migratory cells that give rise to a vast array of structures throughout the body, including many in the eye. The choroidal melanocytes (B), which provide pigment to the choroid, are derived from the neural crest. The parasympathetic ciliary ganglion (C), which controls pupillary constriction and accommodation, is also a neural crest derivative. The ciliary muscle (D), along with the corneal stroma and endothelium, trabecular meshwork, and sclera, originates from the periocular mesenchyme, which is derived from the neural crest. In contrast, the retinal pigment epithelium (RPE), along with the neural retina, optic nerve fibers, and the sphincter and dilator muscles of the iris, is derived from the neuroectoderm of the optic cup, which is an outpouching of the developing forebrain. Therefore, the RPE is of neuroectodermal origin, not neural crest origin.

Question 95. Which of the following is seen in macular corneal opacity?

A. Both iris and pupil details visible

B. Details of iris visible

C. Only pupil margin visible

D. Both iris and pupil margins not visible

Correct answer: C

Only pupil margin visible Macular corneal opacity refers to a moderate-grade corneal opacity that partially obstructs the passage of light. Corneal opacities are clinically classified into nebular, macular, and leucomatous types based on their density and the visibility of underlying iris details. 1. In nebular opacity (mild), the cornea has a faint haze and both the iris and pupil details are clearly visible. 2. In macular opacity (moderate), the opacity is denser and partially blocks visualization. In this stage, the fine details of the iris are not clearly seen, but the pupil margin is still visible. 3. In leucomatous opacity (dense), the opacity is thick and white, and neither iris details nor pupil margin can be visualized. Thus, macular opacity lies between nebular and leucoma in severity. Because the opacity is moderate, only the outline of the pupil margin can be appreciated while iris details are obscured. Therefore, the correct answer is (C) Only pupil margin visible.

Question 96. What is the investigation of choice for Best disease?

A. Electrooculogram

B. Multifocal ERG

C. Electroretinogram

D. Visual evoked potential

Correct answer: A

Electrooculogram Best vitelliform macular dystrophy, or Best disease, is an inherited retinal dystrophy characterized by the accumulation of yellowish lipofuscin material in a classic "egg-yolk" pattern in the macula. The underlying pathology is a dysfunction of the retinal pigment epithelium (RPE). The diagnostic test of choice for Best disease is the electrooculogram (EOG). The EOG measures the standing potential that exists between the cornea and the back of the eye, which is generated by the RPE. A key component of the EOG is the calculation of the Arden ratio, which is the ratio of the light peak to the dark trough of the potential. In healthy individuals, this ratio is typically greater than 1.8. A severely reduced or absent Arden ratio in the presence of a normal full-field electroretinogram (ERG) is the pathognomonic finding for Best disease, confirming widespread RPE dysfunction even when the fundus appearance is normal.

Question 97. A patient from a factory presented with a chemical injury to the eye a few hours back. What is the first step in management?

A. IOP measurement

B. Visual acuity

C. Copious irrigation

D. Take history

Correct answer: C

Copious irrigation A chemical burn to the eye is a true ophthalmological emergency where time is critical. The absolute first and most important step in management, which should be initiated immediately at the scene if possible and continued upon arrival at a medical facility, is copious and prolonged irrigation of the affected eye. The goal is to dilute and wash away the offending chemical to minimize its contact time with the ocular surface and limit the extent of the tissue damage. Sterile solutions like normal saline or Ringer's lactate are ideal, but any clean, neutral water source can be used. Irrigation should be performed for at least 15-30 minutes, or until the conjunctival pH normalizes. All other steps, such as taking a detailed history (D), measuring visual acuity (B), or checking intraocular pressure (A), should only be performed after adequate irrigation has been completed.

Question 98. Which of the following is true regarding OVDs (Ophthalmic Viscoelastic Devices) used in cataract surgery?

A. Maintain anterior chamber in capsulorhexis and IOL insertion

B. Can be left in the eye because they are inert

C. Corneal epithelium is damaged

D. SF6 and Perfluorane are commonly used viscoelastic substances

Correct answer: A

Maintain anterior chamber in capsulorhexis and IOL insertion Ophthalmic viscoelastic devices

(OVDs) are gel-like substances that are indispensable in modern cataract surgery. Their primary and most crucial function is to maintain the space and shape of the anterior chamber during delicate intraocular maneuvers. By filling the anterior chamber, they prevent its collapse, providing a stable environment for critical steps such as creating the capsulorhexis (the circular opening in the lens capsule) and for the safe insertion of the intraocular lens (IOL). OVDs must be thoroughly removed from the eye at the end of surgery, as retained viscoelastic material (B) can obstruct the trabecular meshwork and cause a significant postoperative spike in intraocular pressure. They protect the corneal endothelium, not damage the epithelium (C). SF6 and perfluorocarbon liquids (D) are heavy gases and liquids used in retinal surgery, not as viscoelastic devices in cataract surgery.

Question 99. Which of the following is seen in Diabetic Retinopathy?

A. Retinoschisis

B. Tractional retinal detachment

C. Myopia

D. Posterior staphyloma

Correct answer: B

Tractional retinal detachment Proliferative diabetic retinopathy (PDR) is an advanced stage of the disease where retinal ischemia triggers the growth of abnormal new blood vessels (neovascularization) on the surface of the retina and optic disc. These new vessels are fragile and are accompanied by a fibrous tissue component. This fibrovascular tissue can grow and adhere to the vitreous gel. As the vitreous contracts and pulls away from the retina, it exerts traction on these adhesion points. This progressive pulling force can physically lift the retina off its underlying retinal pigment epithelium, leading to a tractional retinal detachment (TRD). This is a severe, sight-threatening complication that is a hallmark of advanced PDR. Retinoschisis (A), pathological myopia (C), and posterior staphyloma (D) are associated with other retinal and ocular conditions, not typically with diabetic retinopathy. MEDICINE

Question 100. Which of the following is not a high anion gap metabolic acidosis?

A. Diabetic ketoacidosis

B. Renal failure

C. Diarrhea

D. Inborn errors of metabolism

Correct answer: C

Diarrhea Metabolic acidosis is categorized based on the anion gap (AG = Na + - [Cl - + HCO 3 -]). A high anion gap metabolic acidosis (HAGMA) is caused by the accumulation of unmeasured acids. Common causes are remembered by the mnemonic MUDPILES, which includes Ketoacidosis (e.g., diabetic ketoacidosis, A), Uremia (from renal failure, B), and various poisonings and inborn errors of metabolism (D) that produce organic acids. In contrast, a

normal anion gap metabolic acidosis (NAGMA) is caused by the loss of bicarbonate (HCO_3^-). The classic cause of NAGMA is diarrhea. In diarrhea, large amounts of bicarbonate-rich fluid are lost from the gastrointestinal tract. To maintain electrical neutrality, the kidneys compensate by reabsorbing chloride ions. This results in a hyperchloremic, normal anion gap metabolic acidosis, where the drop in bicarbonate is matched by a rise in chloride, keeping the anion gap within the normal range.

Question 101. Which of the following is incorrect in the context of celiac disease?

A. IgA Tissue Transglutaminase antibodies present

B. Anti-gliadin antibodies are present

C. Marsh criteria is used for diagnosis

D. It is associated with HLA DQ6

Correct answer: D

It is associated with HLA DQ6 Celiac disease is an autoimmune disorder triggered by gluten ingestion in genetically susceptible individuals. Serological testing is key for diagnosis, with IgA anti-tissue transglutaminase (tTG) antibodies being the most sensitive and specific test (A). Anti-gliadin (B) and anti-endomysial antibodies are also found. The definitive diagnosis relies on a duodenal biopsy, with the histological findings of villous atrophy and crypt hyperplasia graded according to the Marsh classification (C). The genetic susceptibility is very strongly linked to specific Human Leukocyte Antigen (HLA) class II haplotypes. Over 95% of patients with celiac disease carry either the HLA-DQ2 or HLA-DQ8 gene. The absence of both DQ2 and DQ8 has a very high negative predictive value, essentially ruling out the disease. The association is not with HLA-DQ6 (D), which is linked to other conditions like narcolepsy and multiple sclerosis. page 161 INICET Examination Paper

Question 102. COVID-19 can be prevented through all of the following EXCEPT:

A. Wearing a mask

B. Following cough etiquette

C. Taking ivermectin

D. Getting vaccinated

Correct answer: C

Taking ivermectin The prevention of COVID-19, caused by the SARS-CoV-2 virus, relies on a multi-pronged public health approach. This includes non-pharmacological interventions to reduce transmission, such as wearing masks (A) to block respiratory droplets, maintaining physical distance, and practicing good hand hygiene and respiratory etiquette (B) (e.g., coughing into one's elbow). The most effective single intervention for preventing severe disease, hospitalization, and death is getting vaccinated (D) with one of the approved COVID-19 vaccines, which generate a robust protective immune response. In contrast, ivermectin (C), an anti-parasitic drug, has been extensively studied in numerous large-scale, randomized

controlled trials. These studies have consistently shown that ivermectin provides no clinical benefit in preventing or treating COVID-19. Major health organizations, including the WHO and NIH, do not recommend its use for this purpose.

Question 103. A 45-year-old woman presents with a history of her fingers turning pale, blue, and then red in response to cold temperatures. Telangiectasias are noted, and ANA shows a centromeric pattern. What is the diagnosis?

A. SLE

B. Scleroderma with centromeric positive

C. Scleroderma with nuclear positive

D. Sjogren syndrome

Correct answer: B

Scleroderma with centromeric positive This patient's presentation is highly characteristic of the limited cutaneous form of systemic sclerosis (scleroderma), formerly known as CREST syndrome. The triphasic color change in her fingers (white, blue, red) is Raynaud's phenomenon. The presence of telangiectasias is another key feature. The most crucial diagnostic clue is the laboratory finding of an Antinuclear Antibody (ANA) test with a centromeric pattern. This specific ANA pattern is strongly associated with, and highly specific for, limited cutaneous systemic sclerosis. In contrast, diffuse scleroderma is typically associated with anti-Scl-70 (topoisomerase I) antibodies. Systemic Lupus Erythematosus (SLE) (A) is associated with anti-dsDNA and anti-Smith antibodies. Sjögren's syndrome (D) is associated with anti-Ro/SSA and anti-La/SSB antibodies. The combination of clinical signs and the specific anti-centromere antibody positivity points directly to limited scleroderma.

Question 104. Lewy bodies are associated with which of the following conditions?

A. Huntington's disease

B. Parkinson's disease

C. Alzheimer's disease

D. All of the above

Correct answer: B

Parkinson's disease Lewy bodies are abnormal, eosinophilic, spherical intracytoplasmic inclusions found within neurons. They are composed primarily of aggregated alpha-synuclein protein. The presence of Lewy bodies in the dopaminergic neurons of the substantia nigra is the classic pathological hallmark of Parkinson's disease. The accumulation of these protein aggregates is believed to lead to neuronal dysfunction and death, causing the characteristic motor symptoms of the disease. Lewy bodies are also the defining feature of Dementia with Lewy Bodies (DLB), a related neurodegenerative disorder. While Lewy body pathology can sometimes co-exist with the amyloid plaques and neurofibrillary tangles of Alzheimer's disease (C), they are not its primary feature. Huntington's disease (A) is characterized by neuronal loss

in the striatum and the presence of intranuclear inclusions of mutant huntingtin protein, not Lewy bodies.

Question 105. Which of the following is not a feature of APS- 1 (Autoimmune Polyendocrine Syndrome Type 1)?

A. Mucocutaneous candidiasis

B. Onset in infancy

C. Type 1 Diabetes mellitus

D. Hyperparathyroidism

Correct answer: C

Type 1 Diabetes mellitus Autoimmune Polyendocrine Syndrome Type 1 (APS-1), also known as APECED (Autoimmune Polyendocrinopathy-Candidiasis-Ectodermal Dystrophy), is a rare autosomal recessive disorder caused by mutations in the AIRE gene. It typically presents in infancy or early childhood (B). The classic diagnostic triad consists of: 1 Chronic mucocutaneous candidiasis (A), which is often the first manifestation. 2 Hypoparathyroidism (Note : not hyperparathyroidism as listed in option D, which seems to be a typo in the question paper; hypoparathyroidism is the feature). 3 Autoimmune adrenal insufficiency (Addison's disease). While patients can develop a wide range of other autoimmune conditions, Type 1 Diabetes Mellitus is notably rare in APS-1. In contrast, Type 1 Diabetes is a common component of the much more prevalent Autoimmune Polyendocrine Syndrome Type 2 (APS-2), which is associated with different HLA haplotypes and does not involve AIRE mutations.

Question 106. Which of the following statements about Behçet's disease is incorrect?

A. Pathergy test is done under the ISG criteria

B. Intestinal manifestations resemble those of Crohn's disease

C. Oral and genital ulcers on the dorsal aspect of the penis are common features

D. It is associated with a higher risk of thrombosis

Correct answer: C

Oral and genital ulcers on the dorsal aspect of the penis are common features Behçet's disease is a multisystem inflammatory disorder of unknown etiology. Recurrent oral aphthous ulcers are a hallmark, and painful genital ulcers are another key feature. In males, these ulcers typically occur on the scrotum, not the dorsal aspect of the penis, which makes statement (C) incorrect. The International Study Group (ISG) criteria for diagnosis include the presence of a positive pathergy test (A), which is an exaggerated skin reaction to minor trauma. Intestinal involvement can occur and may mimic Crohn's disease both clinically and endoscopically (B). A major cause of morbidity and mortality in Behçet's disease is vasculitis, which can affect both arteries and veins, leading to a significantly higher risk of both arterial and venous thrombosis (D), including deep vein thrombosis and pulmonary embolism.

Question 107. A patient presents with a history of multiple peptic ulcers located in the jejunum and duodenum. Workup shows gastric pH of ~2 and elevated fasting serum gastrin levels. What is the most likely diagnosis, and what are the boundaries of the triangle where it commonly occurs?

A. Gastrinoma : confluence of cystic duct and CBD, neck and body of the pancreas; D2 and D3

B. Gastrinoma : confluence of cystic artery and CBD, neck and body of the pancreas; D2 and D3

C. Insulinoma : confluence of cystic duct and CBD, neck and body of the pancreas; D2 and T

D. Insulinoma : confluence of cystic artery and CBD, neck and body of the pancreas; D2

Correct answer: A

Gastrinoma: confluence of cystic duct and CBD, neck and body of the pancreas; D2 and D3 The clinical presentation of multiple, refractory, and atypically located (e.g., jejunal) peptic ulcers, combined with profound gastric acid hypersecretion (pH ~2) and a markedly elevated fasting serum gastrin level, is diagnostic for Zollinger-Ellison syndrome. This syndrome is caused by a gastrin-secreting neuroendocrine tumor, a gastrinoma. Over 80% of gastrinomas are located within the "gastrinoma triangle" in the abdomen. The boundaries of this triangle are classically defined by three points: (1) the confluence of the cystic duct and the common bile duct (CBD) superiorly, (2) the junction of the second and third portions of the duodenum (D2 and D3) inferiorly, and (3) the junction of the neck and body of the pancreas medially. An insulinoma (C, D) would cause hypoglycemia, not peptic ulcers.

Question 108. Which JAK inhibitor is used in severe ulcerative colitis (UC)?

A. Vedolizumab

B. Tofacitinib

C. Ustekinumab

D. Ozanimod

Correct answer: B

Tofacitinib The treatment of moderate to severe ulcerative colitis that is refractory to conventional therapies involves biologic agents and small molecules. Tofacitinib is an oral small molecule that acts as a Janus kinase (JAK) inhibitor, blocking the signaling pathways of several pro-inflammatory cytokines. It is approved for the treatment of adult patients with moderately to severely active ulcerative colitis. Vedolizumab (A) is an integrin receptor antagonist (a biologic). Ustekinumab (C) is a monoclonal antibody that targets the p40 subunit of IL-12 and IL-23 (a biologic). Ozanimod (D) is a sphingosine 1-phosphate (S1P) receptor modulator (a small molecule, but not a JAK inhibitor). Among the options listed, tofacitinib is the only JAK inhibitor approved for use in severe ulcerative colitis.

Question 109. Which of the following statements regarding Guillain–Barré Syndrome (GBS) is incorrect?

A. IVIG is the first-line treatment

B. Cyto-albuminological dissociation is seen in CSF

C. Areflexia in weak limbs is included in criteria

D. Plasmapheresis is only done in medically refractory GBS

Correct answer: D

Plasmapheresis is only done in medically refractory GBS Guillain-Barré Syndrome (GBS) is an acute, immune-mediated polyradiculoneuropathy. The Brighton criteria for diagnosis include progressive, fairly symmetric weakness and areflexia or decreased reflexes in weak limbs (C). A classic laboratory finding in the cerebrospinal fluid (CSF) is cyto-albuminological dissociation (B): a high protein level with a normal or near-normal white blood cell count. The mainstays of treatment are immunomodulatory therapies aimed at hastening recovery. Both Intravenous Immunoglobulin (IVIG) (A) and plasmapheresis (plasma exchange) have been shown to be equally effective as first-line treatments for patients with significant weakness (e.g., unable to walk). The choice between them often depends on local availability and patient factors. The statement that plasmapheresis is reserved only for refractory cases (D) is incorrect; it is a primary, first-line treatment option, equivalent in efficacy to IVIG.

Question 110. Which of the following statements about celiac disease is incorrect

A. Anti-IgA tissue transglutaminase (TTG) is a key diagnostic marker

B. Modified Marsh criteria is used for histological classification

C. Anti-IgG gliadin antibodies are highly specific for celiac disease

D. HLA-DQ2/DQ8 are genetic markers associated with the disease

Correct answer: C

Anti-IgG gliadin antibodies are highly specific for celiac disease Let's evaluate the statements about celiac disease. The most sensitive and specific serological test for celiac disease is the IgA anti-tissue transglutaminase (tTG) antibody test (A). The Modified Marsh criteria (B) are used by pathologists to grade the degree of villous atrophy and crypt hyperplasia seen on duodenal biopsy. The disease has a strong genetic predisposition, with nearly all patients carrying the HLA-DQ2 or HLA-DQ8 haplotypes (D). However, older tests for anti-gliadin antibodies (AGA), especially the IgG-AGA, are no longer recommended for routine diagnosis because they have very low specificity (C). Many individuals without celiac disease can have positive IgG-AGA, leading to a high rate of false positives. More modern deamidated gliadin peptide (DGP) antibody tests have much better specificity, but the classic anti-gliadin antibody test is not considered specific.

Question 111. eGFR Grade 3B corresponds to which range?

A. 60-89

B. 45-59

C. 30-44

D. 15-29

Correct answer: C

30-44 The Kidney Disease: Improving Global Outcomes (KDIGO) guidelines classify chronic kidney disease (CKD) into stages or grades based on the estimated glomerular filtration rate (eGFR) in mL/min/1.73m². Stage 3, representing moderate CKD, is subdivided to better stratify risk. 1. Grade 1 : eGFR ≥ 90 (Normal or high) 2. Grade 2 : eGFR 60-89 (Mildly decreased) 3. Grade 3a : eGFR 45-59 (Mildly to moderately decreased) 4. Grade 3b : eGFR 30-44 (Moderately to severely decreased) 5. Grade 4 : eGFR 15-29 (Severely decreased) 6. Grade 5 : eGFR < 15 (Kidney failure) Therefore, the eGFR range corresponding to Grade 3B is 30-44 mL/min/1.73m².

Question 112. Which test is recommended as the initial investigation for diagnosing pheochromocytoma?

A. Plasma catecholamines

B. Urinary total Metanephrines

C. USG whole abdomen

D. Urinary Vanillylmandelic acid (VMA) levels

Correct answer: B

Urinary total Metanephrines The initial step in diagnosing a pheochromocytoma or paraganglioma is biochemical confirmation of excessive catecholamine production. The recommended first-line tests are the measurement of metanephrines (metabolites of epinephrine and norepinephrine) in either plasma or urine. Measurements of fractionated metanephrines and normetanephrines in a 24-hour urine collection have very high sensitivity and are considered one of the best initial tests. Plasma free metanephrines are also highly sensitive but require specific collection conditions (supine rest). Measuring plasma catecholamines (A) is less reliable as their secretion is episodic and they have a short half-life. Urinary VMA (D) has lower sensitivity and specificity compared to metanephrines and is no longer a preferred initial test. Imaging like ultrasound (C) should only be performed after biochemical evidence of the tumor has been established.

Question 113. The Truelove and Witts criteria are used to determine the severity of which condition?

A. Ulcerative colitis

B. Acute pancreatitis

C. Crohn's disease

D. Cholecystitis

Correct answer: A

Ulcerative colitis The Truelove and Witts criteria are a widely used clinical scoring system specifically designed to classify the severity of an acute attack of ulcerative colitis. The criteria were first published in 1955 and remain relevant today. They classify a flare as mild, moderate, or severe based on a combination of clinical parameters, including the number of bowel

movements per day, the presence of blood in the stool, fever, tachycardia, anemia (low hemoglobin), and an elevated erythrocyte sedimentation rate (ESR). This classification is crucial as it helps guide management decisions, such as the need for hospitalization, intravenous corticosteroids, or second-line biologic therapies. The criteria are not used for assessing the severity of Crohn's disease (C), pancreatitis (B), or cholecystitis (D), which have their own specific scoring systems.

Question 114. In renal allograft transplantation, which finding is indicative of acute rejection?

A. Creatinine > 10% elevation from baseline

B. Creatinine >5% elevation from baseline

C. Any creatinine elevation above pre- transplant values

D. Creatinine elevation is not suggestive of rejection

Correct answer: A

Creatinine > 10% elevation from baseline Acute rejection of a renal allograft is a common complication, typically occurring within the first few months post-transplant. It is often clinically silent initially and is primarily detected through routine monitoring of graft function. The most important biochemical marker of graft function is the serum creatinine level. A sudden and sustained rise in serum creatinine from the patient's established baseline is the hallmark sign of acute rejection. While there is no universally agreed-upon absolute value, a rise of 20-25% over baseline is a widely accepted threshold that should trigger further investigation, including a graft biopsy, to confirm rejection. Among the given choices, a creatinine elevation of >10% from baseline is the most appropriate indicator of potential rejection that warrants concern and further evaluation. A 5% rise may be within normal fluctuation, and any elevation above pre-transplant values is expected as the graft is not perfect.

Question 115. Which of the following suggests glomerular hematuria? A. Rare edema B. Cola-colored urine C. Crystals present D. Dysuria

A. A,B

B. B,C

C. C,D

D. B,D

Correct answer: A

A,B Glomerular hematuria originates from pathology within the glomerulus and has characteristic clinical features. One important feature is cola-colored or smoky urine, which occurs due to oxidation of hemoglobin as red blood cells pass through the nephron and remain in the urinary tract for some time. This discoloration is typical of glomerular bleeding rather than lower urinary tract bleeding. Another associated feature is edema, which may be present due to associated glomerulonephritis causing protein loss and salt-water retention. Although

edema is not always severe, it is commonly seen in glomerular causes of hematuria. In contrast, crystals in urine usually suggest urolithiasis or metabolic disorders, not glomerular pathology. Dysuria (painful urination) is more typical of lower urinary tract infections or urethral/bladder irritation rather than glomerular disease. Therefore, the combination of cola-colored urine and the presence of edema supports glomerular hematuria, making option (A) correct. SURGERY

Question 116. True regarding pancreatitis:

A. Lipase indicates severity

B. Amylase remains high for 30 days

C. Lipase is more specific than amylase

D. Amylase is more specific than lipase

Correct answer: C

Lipase is more specific than amylase For the biochemical diagnosis of acute pancreatitis, both serum amylase and lipase are used. However, lipase is considered more specific to the pancreas than amylase. While amylase is also produced by the salivary glands and other tissues, lipase is predominantly produced by the pancreas, so its elevation is more indicative of pancreatic injury. Furthermore, serum lipase levels remain elevated for a longer duration (typically 8-14 days) compared to amylase, which has a shorter half-life and may return to normal within 3-5 days (making statement B incorrect). The magnitude of the elevation of either amylase or lipase does not correlate with the severity of pancreatitis or predict the prognosis (making statement A incorrect). Because of its higher specificity and longer diagnostic window, lipase is often the preferred enzyme for diagnosing acute pancreatitis.

Question 117. Neurological symptoms following ileal resection are typically due to a deficiency of which nutrient?

A. Iron deficiency

B. Vitamin B12 deficiency

C. Folate deficiency

D. Zinc deficiency

Correct answer: B

Vitamin B12 deficiency The absorption of various nutrients occurs at specific sites along the gastrointestinal tract. The terminal ileum is the exclusive site for the absorption of vitamin B12 (cobalamin), which requires binding to intrinsic factor produced in the stomach. Surgical resection of the terminal ileum, often performed for conditions like Crohn's disease, removes this absorptive surface. Consequently, patients with an ileal resection are unable to absorb dietary vitamin B12, leading to a deficiency over time as the body's liver stores (which can last for several years) become depleted. Vitamin B12 deficiency can cause a megaloblastic anemia and a wide range of neurological complications, including peripheral neuropathy, ataxia, and a

myelopathy known as subacute combined degeneration of the spinal cord. Iron (A) is primarily absorbed in the duodenum, and folate (C) is absorbed in the jejunum.

Question 118. A trauma patient arrives with a blood pressure of 80/60 mmHg, absent breath sounds on one side, a weak pulse, and a GCS score of 8. What should be the next step in management?

A. Secure airway, oxygenation, insert ICD, IV fluids

B. Secure airway, assess head injury & do bedside CXR NODIA page 167 INICET Examination Paper a bluish vaginal bulge. What is the likely diagnosis?

C. OHVIRA syndrome

D. Mullerian agenesis

Correct answer: A

Imperforate hymen This is a classic presentation of an imperforate hymen in an adolescent girl. The patient has reached puberty and is having menstrual cycles, but the menstrual blood is trapped in the vagina because the hymen completely obstructs the vaginal outlet. This leads to a progressive accumulation of blood in the vagina (hematocolpos) and often the uterus (hematometra). The cyclical abdominal pain corresponds to menstruation without external bleeding. The collected blood behind the hymen creates a tense, bulging, bluish-tinged membrane visible at the vaginal introitus. As the hematocolpos enlarges, it can exert significant pressure on the adjacent urethra, compressing it against the pubic symphysis and leading to acute urinary retention. A transverse vaginal septum (B) would cause similar obstructive symptoms but the bulge would be located higher up within the vaginal canal.

Question 119. A 40-year-old woman with a history of previous neck irradiation is diagnosed with papillary thyroid carcinoma and shows lymph node metastasis. What is the preferred treatment approach in this situation?

A. Hemithyroidectomy

B. Total Thyroidectomy

C. Hemithyroidectomy + MRND

D. Total Thyroidectomy + MRND

Correct answer: D

Total Thyroidectomy + MRND The management of well-differentiated thyroid cancer like papillary carcinoma depends on risk stratification. This patient has two high-risk features. First, a history of neck radiation is a significant risk factor for more aggressive thyroid cancer. Second, and more importantly, the presence of lymph node metastasis (clinically positive nodes) is a clear indication for more extensive surgery. The standard of care for a patient with papillary thyroid cancer and clinically evident cervical lymph node metastasis is a total thyroidectomy to remove the entire thyroid gland, followed by a therapeutic neck dissection to remove the involved lymph node compartments. A modified radical neck dissection (MRND) is

one type of comprehensive neck dissection performed in this setting. A hemithyroidectomy (A, C) would be inadequate in the presence of nodal disease.

Question 120. Which among the following is not a part of the primary survey?

A. CECT

B. Extended FAST

C. Pelvic X-ray

D. Chest X-ray

Correct answer: A

CECT The primary survey in trauma is a rapid assessment (ABCDE) to identify and treat immediate life-threatening injuries. Certain investigations, known as adjuncts to the primary survey, can be performed to aid this process without delaying resuscitation. These include a portable anteroposterior chest X-ray (D) to evaluate for conditions like pneumothorax or hemothorax, and an AP pelvic X-ray (C) to look for unstable pelvic fractures that can cause massive hemorrhage. The Extended Focused Assessment with Sonography for Trauma (eFAST) (B) is another crucial adjunct used at the bedside to rapidly detect pericardial tamponade, hemoperitoneum, and pneumothorax. In contrast, a Contrast-Enhanced Computed Tomography (CECT) scan (A) is a time-consuming, advanced imaging study that is part of the secondary survey. It is only performed after the patient has been fully resuscitated and stabilized.

Question 121. A patient was brought to the trauma unit after chest trauma with a chief complaint of breathlessness. On examination: • Systolic BP: 88 mmHg (hypotension). • GCS: <8 (compromised airway). • Breath sounds: Absent on auscultation. What is the next best step?

A. Airway securing and ICD placement

B. Send for Chest X-ray

C. Send for CT

D. USG

Correct answer: A

Airway securing and ICD placement This patient presents with multiple critical injuries requiring immediate intervention based on the ATLS (Advanced Trauma Life Support) principles. The Glasgow Coma Scale (GCS) of less than 8 is an indication for definitive airway management (intubation) to protect against aspiration and ensure ventilation. The combination of hypotension and absent breath sounds on one side following chest trauma is the classic clinical diagnosis of a tension pneumothorax, a life-threatening emergency. This requires immediate needle decompression followed by the definitive treatment of intercostal drain (ICD) placement to relieve the pressure and re-expand the lung. Sending the unstable patient for imaging like a chest X-ray (B) or CT scan (C) would cause a fatal delay. The diagnosis is clinical, and treatment should not be delayed. Therefore, securing the airway and placing a chest tube are the

immediate, life-saving priorities.

Question 122. A patient who has undergone gastrectomy now reports weakness in the lower limbs. What is the most likely underlying cause?

A. Vitamin B12 deficiency

B. Vitamin B6 deficiency

C. Vitamin B3 deficiency

D. Folate deficiency

Correct answer: A

Vitamin B12 deficiency Gastrectomy, the surgical removal of all or part of the stomach, has significant nutritional consequences. The stomach is the site of production of intrinsic factor by the parietal cells. Intrinsic factor is essential for the absorption of vitamin B12 (cobalamin) in the terminal ileum. Following a total or subtotal gastrectomy, the loss of intrinsic factor leads to an inability to absorb dietary vitamin B12. Over time, as the body's substantial liver stores of B12 are depleted (which can take several years), a deficiency develops. A well-known complication of severe vitamin B12 deficiency is a myelopathy known as subacute combined degeneration of the spinal cord, which affects the posterior and lateral columns, leading to symptoms like lower limb weakness, ataxia, and paresthesias. This neurological complication is a classic long-term sequela of gastrectomy.

Question 123. What is the angle formed between the laparoscopic working port and the telescope called?

A. Azimuth angle

B. Elevation angle

C. Working angle

D. Manipulation angle

Correct answer: A

Azimuth angle In laparoscopy, proper port placement is crucial for optimal visualization and instrument handling. The azimuth angle refers to the angle formed between the telescope (camera port) and the working instrument port in the horizontal plane. It represents the degree of separation between the optical axis and the instrument axis around the target organ. An appropriate azimuth angle ensures good triangulation, allowing effective depth perception, precise dissection, and ergonomic movement of instruments. Ideally, this angle is maintained around 30–60 degrees to provide adequate visualization and minimize instrument clashing. The elevation angle refers to the vertical angle between the instrument and the target organ. The manipulation angle is the angle between two working instruments. The term working angle is less specific and not the standard term for the angle between the telescope and the working port. Thus, the angle formed between the laparoscopic working port and the telescope is called the azimuth angle, making option (A) correct.

Question 124. A male mine worker living in an urban slum presents with mild but persistent pain in the right hypochondrium. Examination shows hepatomegaly, and ultrasound reveals a liver cyst. Aspiration yields clear fluid containing sand-like granules with high protein content. Which organism is the most likely cause?

A. Echinococcus

B. Taenia saginata

C. Taenia solium

D. Supination of forearm

Correct answer: C

Extension of fingers The posterior interosseous nerve (PIN) is the deep motor branch of the radial nerve, which innervates the extensor muscles of the forearm. An important anatomical distinction is that the radial nerve supplies the primary wrist extensors (extensor carpi radialis longus and brevis) before it divides into the PIN. As a result, in an isolated PIN palsy, wrist extension is often preserved, and a complete wrist drop is not a typical feature. However, the PIN provides motor innervation to the muscles responsible for finger and thumb extension, including the extensor digitorum communis and extensor pollicis longus. Therefore, the characteristic clinical sign of PIN palsy is a "finger drop," which is the inability to actively extend the fingers at the metacarpophalangeal joints. Extension of the elbow is a function of the triceps, which is innervated by the radial nerve proper in the upper arm. 159. FRAX stands for: (A) Fracture Risk Assessment Tool (B) Fracture Rehabilitation Assessment (C) Fracture Reducibility Assessment Tool (D) Fracture Reduction and Alignment Tool AAns (A) Fracture Risk Assessment Tool FRAX is an acronym that stands for the Fracture Risk Assessment Tool. It is a computer-based algorithm and clinical tool developed by the World Health Organization to predict the 10-year probability of major osteoporotic fractures in men and women. The tool integrates a combination of easily obtainable clinical risk factors, such as age, sex, body mass index, a prior fragility fracture, parental history of hip fracture, current smoking, high alcohol intake, and glucocorticoid use. It can be used either with or without the inclusion of a femoral neck bone mineral density (BMD) measurement. The calculated risk percentage helps clinicians to identify patients who may benefit from further investigation or pharmacological intervention to reduce their future fracture risk, thereby guiding treatment decisions for osteoporosis. The other options describe different, unrelated concepts in fracture management. OBS & GYNE 160. Which diameter of the female pelvis is the smallest? (A) True conjugate (B) Obstetric conjugate (C) Diagonal conjugate (D) Transverse diameter AAns (B) Obstetric conjugate The anteroposterior (AP) diameters of the pelvic inlet are of critical importance in obstetrics as they represent the narrowest passage through which the fetal head must descend. The true conjugate is the anatomical diameter from the sacral promontory to the superior margin of the pubic symphysis (average 11 cm). The diagonal conjugate is the diameter measured clinically, from the sacral promontory to the inferior margin of the pubic symphysis (average 12.5 cm).

The obstetric conjugate is the shortest AP diameter of the inlet, measured from the sacral promontory to the most prominent point on the posterior surface of the pubic symphysis. Because of the posterior bulge of the pubic bone, this diameter is slightly shorter than the true conjugate, typically measuring around 10.5 cm. As it is the narrowest fixed AP diameter, it is the most functionally significant and the smallest of the conjugates. 161. Instrumental delivery is indicated in all of the following cases except: (A) Maternal exhaustion (B) Fetal distress (C) Cephalopelvic disproportion (CPD) (D) Prolonged second stage of labor AAns (C) Cephalopelvic disproportion (CPD) Instrumental vaginal delivery, using either vacuum extraction or forceps, is an intervention designed to expedite childbirth during the second stage of labor. Valid indications for its use include a prolonged second stage, suspected non-reassuring fetal status or fetal distress, and maternal exhaustion where the mother is unable to push effectively. However, a crucial prerequisite for attempting an instrumental delivery is that there should be no absolute obstruction to the baby's descent. Cephalopelvic disproportion (CPD) is a condition where there is a mismatch between the size of the fetal head and the maternal pelvis, making a safe vaginal delivery impossible. Attempting an instrumental delivery in the presence of true CPD is absolutely contraindicated, as it would be unsuccessful and would pose a high risk of severe trauma to both the mother and the fetus. CPD is a firm indication for a Cesarean section. 162. Early-onset eclampsia is defined as occurring before: (A) <30 weeks (B) <34 weeks (C) 28 weeks (D) <37 weeks AAns (B) <34 weeks Preeclampsia and eclampsia are hypertensive disorders of pregnancy that are classified based on their gestational age of onset, as this has significant prognostic implications. The general distinction is made between early-onset and late-onset disease. Early-onset preeclampsia or eclampsia is defined as the development of the condition before 34 completed weeks of gestation. This subtype is typically associated with more severe underlying placental pathology, such as abnormal spiral artery remodeling, and carries a much higher risk of adverse maternal and perinatal outcomes. These outcomes include a higher incidence of severe maternal hypertension, fetal growth restriction, placental abruption, and preterm birth. In contrast, late-onset preeclampsia, which occurs at or after 34 weeks, is generally considered a less severe form of the disease with a more favorable prognosis for both the mother and the infant. 163. Which of the following is not a physiological change that occurs during pregnancy? (A) Increase in systolic and diastolic blood pressure (SBP and DBP) at 4-6 weeks (B) Increase in blood volume and hemodilution (C) Peripheral insulin resistance causing hyperinsulinemia (D) Mild fasting hypoglycemia and postprandial hyperglycemia AAns (A) Increase in systolic and diastolic blood pressure (SBP and DBP) at 4-6 weeks Pregnancy induces a multitude of physiological adaptations to support the developing fetus. The total blood volume increases significantly, with a greater increase in plasma volume than red cell mass, leading to physiological hemodilution and anemia (B). Hormones such as human placental lactogen create a state of peripheral insulin resistance, which is compensated for by increased maternal insulin secretion (hyperinsulinemia) to maintain normal glucose

levels (C). This results in a metabolic state characterized by mild fasting hypoglycemia and exaggerated postprandial hyperglycemia, which facilitates glucose transfer to the fetus (D). In the cardiovascular system, however, widespread vasodilation mediated by progesterone and prostaglandins causes a decrease in systemic vascular resistance. This leads to a fall in both systolic and diastolic blood pressure, which typically begins in the first trimester and reaches its lowest point in the second trimester. Therefore, an increase in blood pressure early in pregnancy is abnormal. 164. Which of the following is not a marker in the quadruple test? (A) Unconjugated estriol (B) Alpha-fetoprotein (AFP) (C) Beta HCG (D) Dimeric inhibin B AAns (D) Dimeric inhibin B The quadruple marker screen, or "quad test," is a maternal blood test performed during the second trimester of pregnancy, typically between 15 and 22 weeks' gestation. It is a screening tool used to assess the risk of certain fetal chromosomal abnormalities and neural tube defects. The test analyzes the levels of four specific substances in the mother's serum: 1) alpha-fetoprotein (AFP), 2) human chorionic gonadotropin (hCG), 3) unconjugated estriol (uE3), and 4) inhibin A. The pattern of these markers, when interpreted in the context of maternal age, helps to calculate a specific risk for Down syndrome (trisomy 21), Edwards syndrome (trisomy 18), and open neural tube defects. Dimeric inhibin B is a different form of the hormone, primarily involved in regulating folliculogenesis and spermatogenesis, and it is not a component of the standard quadruple screening panel. 165. Mitochondria in sperm cells are located in which part? (A) Head (B) Midpiece (C) Tail (D) Acrosome AAns (B) Midpiece A mature spermatozoon is a highly specialized cell composed of three main parts: a head, a midpiece, and a tail. The head contains the haploid nucleus with the paternal genetic material and is capped by the acrosome, a vesicle containing enzymes necessary for fertilization. The tail, or flagellum, is responsible for the sperm's motility. The crucial link between the head and the tail is the midpiece. This section of the sperm is tightly packed with numerous mitochondria, which are arranged in a helical spiral around the axoneme. These mitochondria are the "powerhouses" of the sperm cell. They carry out oxidative phosphorylation to generate large amounts of ATP, the energy currency required to fuel the vigorous flagellar movements of the tail, enabling the sperm to swim towards the oocyte. 166. A 24-year-old pregnant woman at 14 weeks gestation, currently taking warfarin, presents with abdominal pain. Ultrasound reveals an 8 × 6.8 cm unilocular cyst with a reticular pattern. What is the most appropriate next step? (A) CA125 levels (B) Measure HCG levels (C) Follow-up after 6-8 weeks (D) No follow-up required AAns (C) Follow-up after 6-8 weeks The ultrasound finding of a unilocular cyst with a reticular, "fishnet" or "cobweb" internal pattern is highly characteristic of a hemorrhagic cyst. This appearance is caused by the retraction of a blood clot and the formation of fibrin strands within the cyst. In a young, pregnant woman, the most common cause of such a finding is a hemorrhagic corpus luteum cyst. These cysts are functional and benign. Given the benign sonographic features and the patient's age, the risk of malignancy is very low. The abdominal pain is likely due to the hemorrhage into the cyst. Therefore, the most appropriate

management is conservative. This involves observation with a follow-up ultrasound in 6-8 weeks to ensure the cyst is resolving, which is the expected natural course for a functional hemorrhagic cyst. Measuring tumor markers like CA125 is not indicated for a simple-appearing cyst in a young woman. 167. In a ruptured ectopic pregnancy, which of the following interventions should not be performed? (A) Immediate surgical intervention (B) Administration of methotrexate (C) Blood transfusion if needed (D) Fluid resuscitation AAns (B) Administration of methotrexate A ruptured ectopic pregnancy is a life-threatening surgical emergency characterized by hemoperitoneum, hemodynamic instability, and severe abdominal pain. The management priority is to stabilize the patient and stop the intra-abdominal bleeding. This requires aggressive fluid resuscitation with intravenous crystalloids and blood transfusion as needed to treat hemorrhagic shock. The definitive treatment is immediate surgical intervention, typically a laparoscopic salpingectomy or salpingostomy, to remove the ectopic pregnancy and achieve hemostasis. In contrast, the administration of methotrexate is a medical treatment option that is only suitable for carefully selected patients with an unruptured, hemodynamically stable ectopic pregnancy. Methotrexate is a folate antagonist that targets rapidly dividing trophoblastic cells. It is absolutely contraindicated in the setting of a ruptured ectopic pregnancy, as it cannot control the active hemorrhage and would lead to a fatal delay in providing definitive surgical care. 168. For a vigorous baby, when is cord clamping recommended? (A) Immediate clamping (B) Delayed clamping (C) Clamping after resuscitation (D) Clamping only after the baby cries AAns (B) Delayed clamping Current evidence-based guidelines from major health organizations, including the World Health Organization and the American College of Obstetricians and Gynecologists, strongly recommend delayed umbilical cord clamping for all vigorous term and preterm infants. This practice involves waiting at least 30 to 60 seconds after birth before clamping the umbilical cord. This delay allows for a placental transfusion of an additional 80-100 mL of blood to the infant. The benefits of this extra blood volume are significant and include improved transitional circulation, better establishment of red blood cell volume, and decreased need for blood transfusion. For term infants, it increases hemoglobin levels at birth and improves iron stores for the first several months of life, which helps to prevent iron deficiency. Immediate clamping is no longer the standard of care and is generally reserved for situations where the neonate requires immediate resuscitation. 169. A female patient with no history of menstruation presents with acute urinary retention and page 165 INICET Examination Paper (D) Bilirubin levels are usually more than 10 mg/dL at 3-4 weeks AAns (B) Unconjugated hyperbilirubinemia Breast milk jaundice is a common, benign condition characterized by prolonged jaundice in an otherwise healthy, thriving breastfed infant. The key pathophysiological feature is unconjugated hyperbilirubinemia. It is believed to be caused by factors in the maternal breast milk (such as β -glucuronidase) that increase the enterohepatic circulation of bilirubin. It is a diagnosis of exclusion with an onset after the first week of life, peaking around 2 weeks. It is crucial to

encourage the continuation of breast feeding (A is false); temporary interruption is rarely indicated. The condition is benign and self-limiting, and phototherapy is rarely required (C is false) as the bilirubin levels typically do not reach dangerous thresholds. While bilirubin levels can remain elevated for weeks, stating a specific value (D) is less definitive than describing the type of hyperbilirubinemia. 150. By what age can a child typically copy a cross, recite rhymes, and use the bathroom independently? (A) 2 years (B) 3 years (C) 4 years (D) 5 years AAns (C) 4 years This question assesses developmental milestones typical for a preschool-aged child. 1. Copying a cross (+) : This is a key fine motor milestone achieved at approximately 4 years of age. A 3-year-old can copy a circle, and a 5-year-old can copy a triangle. 2. Reciting rhymes/ singing songs : This language skill develops between 3 and 4 years and is well-established by age 4. 3. Independent toileting : Most children achieve daytime bladder and bowel control and can use the bathroom independently between the ages of 3 and 4 years. Since the ability to copy a cross is a distinct 4-year milestone, and the other skills are also present by this age, the most accurate answer is 4 years. At 3 years, a child would not yet be able to copy a cross, and at 5 years, they would have more advanced skills.

Question 125. During a splenectomy, detaching the spleen from the stomach may lead to bleeding from which artery?

A. Short gastric artery

B. Left gastroepiploic artery

C. Right gastroepiploic artery

D. Splenic artery

Correct answer: A

Short gastric artery The spleen and the greater curvature of the stomach are connected by the gastrosplenic ligament. This ligament contains several important blood vessels that must be carefully identified and ligated during a splenectomy. The splenic artery gives rise to the left gastroepiploic artery (B) before terminating at the spleen. Traveling within the gastrosplenic ligament are the short gastric arteries. These are a series of small, fragile vessels that arise from the distal splenic artery or its terminal branches and pass within the ligament to supply the fundus of the stomach. During splenectomy, mobilization of the spleen requires division of this ligament. Failure to carefully ligate these short gastric vessels is a common source of intraoperative or postoperative bleeding. The main splenic artery (D) is ligated at the hilum, not within this ligament.

Question 126. Following a contaminated abdominal surgery, the surgeon left the wound open for daily irrigation and closed the skin on the fifth day. What type of wound healing does this represent?

A. Primary intention

B. Secondary intention

C. Tertiary intention

D. None

Correct answer: C

Tertiary intention Wound healing is classified into three main types. Primary intention (A) occurs when the edges of a clean wound are approximated with sutures or staples, resulting in minimal scarring. Secondary intention (B) occurs when a wound is left open to heal from the bottom up by granulation, contraction, and epithelialization, resulting in a larger scar. Tertiary intention, also known as delayed primary closure, is a combination of the two. It involves intentionally leaving a wound open for a period of time (typically 3-5 days) to allow for observation, drainage, and cleaning, especially if it is heavily contaminated. Once the risk of infection has decreased and the wound appears clean with healthy granulation tissue, the edges are then formally closed with sutures or staples. This two-stage process is exactly what is described in the scenario.

Question 127. Which of the following statements regarding Enhanced Recovery After Surgery (ERAS) protocols is incorrect?

A. Increased duration of hospital stay by 10 to 30%

B. Prolonged fasting is not mandatory

C. Early mobilization

D. Multimodal and opioid-sparing analgesia

Correct answer: A

Increased duration of hospital stay by 10 to 30% Enhanced Recovery After Surgery (ERAS) protocols are evidence-based, multimodal perioperative care pathways designed to reduce the surgical stress response, maintain physiological function, and accelerate recovery. Key components of ERAS include avoiding prolonged preoperative fasting (B) by allowing clear fluids until 2 hours before surgery, promoting early mobilization (C) on the day of surgery, and using multimodal, opioid-sparing analgesia (D) (e.g., regional blocks, NSAIDs, acetaminophen) to reduce opioid-related side effects. The primary goals of these combined interventions are to reduce postoperative complications, improve patient outcomes, and significantly decrease the length of hospital stay. Therefore, the statement that ERAS protocols lead to an increased duration of hospital stay is false; the opposite is the intended and demonstrated effect.

Question 128. A breast cancer patient has a 6 × 7 cm tumor that invades the pectoralis major muscle, with ipsilateral matted axillary lymph nodes and skin dimpling. This presentation corresponds to which category?

A. T3 N2

B. T4b N1

C. T4a

D. T2

Correct answer: A

T3 N2 According to the TNM staging system for breast cancer: 1. T Stage (Tumor) : The tumor is >5 cm in its largest dimension (6x7 cm), which classifies it as T3. Invasion of the pectoralis major muscle would classify it as T4a, but T stage is based on size or invasion, whichever is higher. T3 is >5cm. T4a is chest wall invasion. The question states muscle invasion, which is chest wall. So it's T4a. However, "matted" nodes are N2. Let's re-evaluate. A tumor >5cm is T3. A tumor of any size with invasion of the chest wall (pectoralis muscle) is T4a. So the T stage is T4a. 2. N Stage (Nodes) : "Matted" axillary lymph nodes refer to nodes that are fixed to one another or to other structures. This finding classifies the nodal status as N2. Combining these, the stage would be T4a N2. None of the options perfectly match this. There may be an error in the question or options. Let's reconsider. If we prioritize size, it's T3. If we prioritize invasion, it's T4a. Let's assume the question meant a large tumor WITHOUT muscle invasion. Then it's T3. With matted nodes (N2), the stage is T3N2. This matches option A. Let's assume this is the intended answer.

Question 129. All of the following statements about Extrahepatic Biliary Atresia are true EXCEPT:

A. Kasai procedure should be done within 90 days

B. HIDA scan is used for diagnosis

C. Can be differentiated from other differential diagnoses by biopsy

D. Biliary atresia is the most common cause of neonatal cholestasis.

Correct answer: A

Kasai procedure should be done within 90 days Extrahepatic biliary atresia is a progressive inflammatory disease leading to fibrosis and obliteration of the extrahepatic bile ducts. It is the most common cause of pathological neonatal cholestasis (D) and the most common indication for pediatric liver transplantation. A hepatobiliary iminodiacetic acid (HIDA) scan (B) is used to assess biliary excretion; failure of the tracer to reach the intestine is highly suggestive of the diagnosis. A liver biopsy (C) showing bile duct proliferation and portal tract fibrosis is often used for confirmation. The definitive surgical treatment is the Kasai procedure (hepatoportoenterostomy). The success of this procedure in restoring bile flow and preventing cirrhosis is highly time-dependent. It should be performed as early as possible, ideally before 60 days of life. The success rate drops significantly after 90 days. Therefore, the statement that it should be done within 90 days (A) is not ideal; it should be done much earlier. It is the "least true" statement. PEDIATRICS

Question 130. What is the main factor that triggers the closure of the ductus arteriosus?

A. Epinephrine levels

B. Increased resistance in pulmonary vessels

C. High oxygen tension

D. Low levels of CO 2 in the blood

Correct answer: C

High oxygen tension The ductus arteriosus is a fetal blood vessel that connects the pulmonary artery to the aorta, allowing blood to bypass the non-functional fetal lungs. In utero, the patency of the ductus is actively maintained by low oxygen tension and high levels of circulating prostaglandins (PGE2). After birth, with the infant's first breaths, the lungs expand, and the arterial oxygen tension (PaO 2) rises dramatically. This high oxygen tension is the single most important and primary stimulus for the functional closure of the ductus arteriosus. The increased oxygen causes the smooth muscle in the wall of the ductus to constrict. Additionally, the drop in pulmonary vascular resistance and the removal of the placenta (the source of PGE2) contribute to the closure process, which typically occurs within the first 24-72 hours of life.

Question 131. Which of the following is not part of the NADA (Non-Anesthetic Death Audit) criteria?

A. Congestive heart failure

B. Diastolic murmur

C. Elevated troponin

D. Abnormal X-ray

Correct answer: D

Abnormal X-ray NADA (Non-Anesthetic Death Audit) criteria are used to identify deaths that are attributable to serious pre-existing medical conditions rather than anesthesia. These criteria focus on significant clinical and cardiac risk indicators that increase preoperative mortality independent of anesthetic factors. Conditions such as congestive heart failure, the presence of a diastolic murmur (which may indicate significant valvular heart disease), and elevated troponin levels (suggesting myocardial injury) are important markers of severe underlying cardiac pathology. These findings reflect compromised cardiovascular status and are therefore included in NADA considerations. An abnormal X-ray, however, is a nonspecific finding. It may indicate various conditions, ranging from minor abnormalities to serious disease, but by itself it does not specifically qualify as a defining NADA criterion unless correlated with major systemic pathology. Therefore, it is not independently included as part of the NADA criteria. Hence, the correct answer is (D) Abnormal X-ray.

Question 132. Treatment for non-responsive Severe Acute Malnutrition (SAM) includes all except:

A. No edema reduction by day 4

B. Appetite not increased by day 4

C. Weight-for-height reaches -2 z-score

D. Weight gain less than 5 gm per day by day 20

Correct answer: C

Weight-for-height reaches -2 z-score The management of Severe Acute Malnutrition (SAM) involves defined phases and criteria to assess response. "Failure to respond" criteria are used to identify children who are not improving and may need a change in management or investigation for underlying complications like persistent infection. Indicators of a poor response include the failure of nutritional edema to start reducing by day 4 (A), failure of appetite to return by day 4 (B) after starting therapeutic feeding, and failure to gain weight adequately, such as gaining less than 5 g/kg/day by day 10 (not 20) (D is likely a typo but reflects the principle). In contrast, a weight-for-height reaching a Z-score of -2 is not a sign of non-response; rather, it is one of the discharge criteria, indicating that the child has recovered from the acute phase of malnutrition and is improving.

Question 133. All of the following statements about resuscitating a critically ill child are incorrect, except which one?

A. Chest compression depth should be one- third of the anterior-posterior (A-P) diameter of the chest

B. Compression-to-ventilation ratio should be 30 :2 with 2 rescuers

C. Injection Adenosine 0.01 ml/kg IV or 10 (1 :10,000)

D. Preferred route is intra osseous

Correct answer: A

Chest compression depth should be one-third of the anterior-posterior (A-P) diameter of the chest Let's analyze the PALS guidelines: A. The recommended depth for chest compressions in infants and children is at least one-third of the AP diameter of the chest (approximately 1.5 inches in infants, 2 inches in children). This statement is correct. B. For a single rescuer, the ratio is 30 :2. However, for two rescuers, the recommended compression-to-ventilation ratio in children is 15 :2 to provide more frequent ventilations. This statement is incorrect. C. The dose of adrenaline (epinephrine) for pediatric cardiac arrest is 0.01 mg/kg (or 0.1 mL/kg of the 1 :10,000 concentration). Adenosine is used for SVT at a dose of 0.1 mg/kg. This statement is incorrect and confusing. D. The preferred route for drug administration is intravenous (IV). The intraosseous (IO) route is an excellent and rapidly accessible alternative when IV access cannot be established quickly, but IV is still preferred if available. This statement is incorrect.

Question 134. Which of the following is true about breast milk jaundice?

A. Breast feeding should not be continued

B. Unconjugated hyperbilirubinemia

C. Phototherapy is required to treat most cases NODIA page 163 INICET Examination Paper

D. Start IV fluids, insert ICD, secure airway, oxygenation

Correct answer: A

Secure airway, oxygenation, insert ICD, IV fluids This patient is critically injured, and management must follow the Advanced Trauma Life Support (ATLS) protocol, prioritizing immediate life threats (ABCDE). The GCS of 8 indicates a severe head injury and an inability to protect the airway, making securing the airway (e.g., via intubation) the first and most critical step. The combination of hypotension (BP 80/60) and absent breath sounds on one side is highly suggestive of a tension pneumothorax, a life-threatening condition causing obstructive shock. This requires immediate decompression, followed by the insertion of an intercostal drain (ICD). The patient is in shock, necessitating aggressive fluid resuscitation with intravenous (IV) fluids. High-flow oxygenation is also essential. The correct sequence is to manage these life threats simultaneously and rapidly: Airway, Breathing (oxygenation, ICD), and Circulation (IV fluids). Sending for imaging (B, C) before stabilizing the patient is incorrect.

Question 135. By what age can a child typically copy a cross, recite rhymes, and use the bathroom independently?

A. 2 years

B. 3 years

C. 4 years

D. 5 years

Correct answer: C

4 years This question assesses developmental milestones typical for a preschool-aged child. 1. Copying a cross (+) : This is a key fine motor milestone achieved at approximately 4 years of age. A 3-year-old can copy a circle, and a 5-year-old can copy a triangle. 2. Reciting rhymes/ singing songs : This language skill develops between 3 and 4 years and is well-established by age 4. 3. Independent toileting : Most children achieve daytime bladder and bowel control and can use the bathroom independently between the ages of 3 and 4 years. Since the ability to copy a cross is a distinct 4-year milestone, and the other skills are also present by this age, the most accurate answer is 4 years. At 3 years, a child would not yet be able to copy a cross, and at 5 years, they would have more advanced skills.

Question 136. A 2-year-old child with a recent history of diarrhea now presents with anemia, thrombocytopenia, and hematuria. Which organism is the most likely cause?

A. E. coli 0157 :H7

B. Salmonella

C. Shigella

D. Yersinia

Correct answer: A

E. coli 0157:H7 The clinical triad of microangiopathic hemolytic anemia, thrombocytopenia, and acute renal injury (manifesting as hematuria) following a recent diarrheal illness is the classic presentation of Hemolytic Uremic Syndrome (HUS). This serious condition is most commonly

triggered by an infection with a Shiga toxin-producing bacterium. Among the potential causative organisms, the verotoxin-producing strain of Escherichia coli, specifically the O157:H7 serotype, is the most frequent culprit worldwide. The potent Shiga toxin released by the bacteria is absorbed into the bloodstream, where it causes widespread damage to vascular endothelial cells, particularly within the glomeruli of the kidneys. This endothelial injury leads to the formation of microthrombi, which consume platelets, shear red blood cells, and cause kidney damage. While other pathogens like Shigella can also cause HUS, E. coli O157:H7 is the most prominent cause of post-diarrheal HUS in children.

Question 137. A 2-year-old child presents with epistaxis, recurrent rectal bleeding, and umbilical bleeding. Platelet count and PT/APTT are normal, but the urea clot solubility test is positive. Which clotting factor is deficient?

A. Factor 10

B. Factor 11

C. Factor 12

D. Factor 13

Correct answer: D

Factor 13 This patient's clinical and laboratory findings are pathognomonic for a deficiency of Factor XIII. The presentation with a history of delayed bleeding, particularly from the umbilical stump in infancy, is a hallmark of this rare disorder. The key to the diagnosis is the discrepancy between the severe bleeding phenotype and the entirely normal results on standard coagulation screening tests (platelet count, PT, and APTT). This occurs because Factor XIII acts late in the coagulation cascade, after the initial fibrin clot has formed. Its function is to cross-link and stabilize the fibrin polymer, making the clot strong and insoluble. In its absence, a weak, unstable clot forms that is prone to premature breakdown and re-bleeding. The definitive screening test is the urea clot solubility test, which was positive in this patient, confirming that the clot formed was unstable and readily dissolved.

Question 138. Which of the following is not a feature of cystic fibrosis?

A. Bleeding diathesis

B. Meconium ileus

C. Nasal polyp

D. Biliary atresia

Correct answer: D

Biliary atresia Cystic fibrosis (CF) is a multi-system genetic disorder that affects the function of exocrine glands, leading to a wide range of clinical features. Due to pancreatic insufficiency, patients often have malabsorption of fat-soluble vitamins, including vitamin K, which can lead to a coagulopathy and a bleeding diathesis (A). In newborns, the abnormally thick and tenacious intestinal secretions can cause a complete bowel obstruction known as meconium

ileus (B). In the respiratory tract, chronic inflammation and infection of the sinuses frequently lead to the development of nasal polyps (C). In contrast, biliary atresia (D) is a distinct congenital condition characterized by the inflammatory obliteration of the extrahepatic bile ducts. While CF can cause its own spectrum of liver diseases, such as cholestasis and focal biliary cirrhosis, it is not a recognized cause of biliary atresia.

Question 139. Black urine in infants caused by

A. Homocysteinemia

B. Alkaptonuria

C. Phenylketonuria

D. None

Correct answer: B

Alkaptonuria The rare condition that causes an infant's urine to turn black upon standing is alkaptonuria. This is an autosomal recessive inborn error of metabolism resulting from a deficiency of the enzyme homogentisate 1,2-dioxygenase. This enzyme is essential for the breakdown of the amino acids tyrosine and phenylalanine. Without it, a substance called homogentisic acid (HGA) accumulates in the body's tissues and is excreted in large amounts in the urine. When the urine is exposed to air, the HGA oxidizes and polymerizes to form a dark, melanin-like pigment. This process is what causes the characteristic color change, which may be first noticed by parents as dark stains on the infant's diapers. The other metabolic disorders listed, such as phenylketonuria and homocysteinemia, do not cause this specific finding. ORTHOPEDICS

Question 140. A 35-year-old patient reports back pain, stiffness, and repeated episodes of red, painful eyes. Examination shows anterior uveitis and sacroiliitis. Which HLA type is most commonly linked to this condition?

A. HLA DQB1

B. HLA DR3

C. HLA B27

D. HLA DR4

Correct answer: C

HLA B27 The patient's clinical presentation, consisting of inflammatory back pain, sacroiliitis (inflammation of the sacroiliac joints), and acute anterior uveitis (eye pain and redness), is the classic triad for Ankylosing Spondylitis (AS). AS is the archetypal seronegative spondyloarthropathy, a group of inflammatory rheumatic diseases. There is an exceptionally strong genetic association between these disorders, particularly AS, and the human leukocyte antigen HLA-B27. Over 90% of individuals with AS carry this specific genetic marker, representing one of the most powerful known associations between a single gene and a complex disease. While not diagnostic on its own, testing for HLA-B27 is a valuable component

of the diagnostic workup. In contrast, HLA-DR4 is associated with rheumatoid arthritis, and HLA-DR3 is linked to other autoimmune conditions like type 1 diabetes and Sjögren's syndrome.

Question 141. Difficulty standing on one leg is caused by weakness of which muscle on the opposite (supporting) side?

A. Quadratus lumborum

B. Gluteus maximus

C. Iliacus

D. Gluteus medius

Correct answer: D

Gluteus medius This question describes the biomechanics underlying the Trendelenburg sign. During the normal gait cycle, when a person lifts one leg off the ground to swing it forward, the pelvis on that unsupported side is prevented from dropping by the contraction of the hip abductor muscles on the contralateral, weight-bearing (supporting) side. The primary muscle responsible for this action is the gluteus medius, assisted by the gluteus minimus. Therefore, if there is weakness or paralysis of the gluteus medius on the supporting side, it will be unable to stabilize the pelvis, causing the unsupported side of the hip to drop. This phenomenon is known as a positive Trendelenburg sign. The gluteus maximus is mainly a hip extensor, while the iliacus is a hip flexor. The quadratus lumborum is a muscle of the posterior abdominal wall.

Question 142. Which function or structure is impaired in posterior interosseous nerve (PIN) palsy?

A. Wrist drop

B. Extension of the elbow

C. Extension of fingers

D. Supination of forearm

Correct answer: C

Extension of fingers The posterior interosseous nerve (PIN) is the deep motor branch of the radial nerve, which innervates the extensor muscles of the forearm. An important anatomical distinction is that the radial nerve supplies the primary wrist extensors (extensor carpi radialis longus and brevis) before it divides into the PIN. As a result, in an isolated PIN palsy, wrist extension is often preserved, and a complete wrist drop is not a typical feature. However, the PIN provides motor innervation to the muscles responsible for finger and thumb extension, including the extensor digitorum communis and extensor pollicis longus. Therefore, the characteristic clinical sign of PIN palsy is a "finger drop," which is the inability to actively extend the fingers at the metacarpophalangeal joints. Extension of the elbow is a function of the triceps, which is innervated by the radial nerve proper in the upper arm.

Question 143. FRAX stands for:

A. Fracture Risk Assessment Tool

B. Fracture Rehabilitation Assessment

C. Fracture Reducibility Assessment Tool

D. Fracture Reduction and Alignment Tool

Correct answer: A

Fracture Risk Assessment Tool FRAX is an acronym that stands for the Fracture Risk Assessment Tool. It is a computer-based algorithm and clinical tool developed by the World Health Organization to predict the 10-year probability of major osteoporotic fractures in men and women. The tool integrates a combination of easily obtainable clinical risk factors, such as age, sex, body mass index, a prior fragility fracture, parental history of hip fracture, current smoking, high alcohol intake, and glucocorticoid use. It can be used either with or without the inclusion of a femoral neck bone mineral density (BMD) measurement. The calculated risk percentage helps clinicians to identify patients who may benefit from further investigation or pharmacological intervention to reduce their future fracture risk, thereby guiding treatment decisions for osteoporosis. The other options describe different, unrelated concepts in fracture management. OBS & GYNE

Question 144. Which diameter of the female pelvis is the smallest?

A. True conjugate

B. Obstetric conjugate

C. Diagonal conjugate

D. Transverse diameter

Correct answer: B

Obstetric conjugate The anteroposterior (AP) diameters of the pelvic inlet are of critical importance in obstetrics as they represent the narrowest passage through which the fetal head must descend. The true conjugate is the anatomical diameter from the sacral promontory to the superior margin of the pubic symphysis (average 11 cm). The diagonal conjugate is the diameter measured clinically, from the sacral promontory to the inferior margin of the pubic symphysis (average 12.5 cm). The obstetric conjugate is the shortest AP diameter of the inlet, measured from the sacral promontory to the most prominent point on the posterior surface of the pubic symphysis. Because of the posterior bulge of the pubic bone, this diameter is slightly shorter than the true conjugate, typically measuring around 10.5 cm. As it is the narrowest fixed AP diameter, it is the most functionally significant and the smallest of the conjugates.

Question 145. Instrumental delivery is indicated in all of the following cases except:

A. Maternal exhaustion

B. Fetal distress

C. Cephalopelvic disproportion (CPD)

D. Prolonged second stage of labor

Correct answer: C

Cephalopelvic disproportion (CPD) Instrumental vaginal delivery, using either vacuum extraction or forceps, is an intervention designed to expedite childbirth during the second stage of labor. Valid indications for its use include a prolonged second stage, suspected non-reassuring fetal status or fetal distress, and maternal exhaustion where the mother is unable to push effectively. However, a crucial prerequisite for attempting an instrumental delivery is that there should be no absolute obstruction to the baby's descent. Cephalopelvic disproportion (CPD) is a condition where there is a mismatch between the size of the fetal head and the maternal pelvis, making a safe vaginal delivery impossible. Attempting an instrumental delivery in the presence of true CPD is absolutely contraindicated, as it would be unsuccessful and would pose a high risk of severe trauma to both the mother and the fetus. CPD is a firm indication for a Cesarean section.

Question 146. Early-onset eclampsia is defined as occurring before:

A. <30 weeks

B. <34 weeks

C. 28 weeks

D. <37 weeks

Correct answer: B

<34 weeks Preeclampsia and eclampsia are hypertensive disorders of pregnancy that are classified based on their gestational age of onset, as this has significant prognostic implications. The general distinction is made between early-onset and late-onset disease. Early-onset preeclampsia or eclampsia is defined as the development of the condition before 34 completed weeks of gestation. This subtype is typically associated with more severe underlying placental pathology, such as abnormal spiral artery remodeling, and carries a much higher risk of adverse maternal and perinatal outcomes. These outcomes include a higher incidence of severe maternal hypertension, fetal growth restriction, placental abruption, and preterm birth. In contrast, late-onset preeclampsia, which occurs at or after 34 weeks, is generally considered a less severe form of the disease with a more favorable prognosis for both the mother and the infant.

Question 147. Which of the following is not a physiological change that occurs during pregnancy?

A. Increase in systolic and diastolic blood pressure (SBP and DBP) at 4-6 weeks

B. Increase in blood volume and hemodilution

C. Peripheral insulin resistance causing hyperinsulinemia

D. Mild fasting hypoglycemia and postprandial hyperglycemia

Correct answer: A

Increase in systolic and diastolic blood pressure (SBP and DBP) at 4-6 weeks Pregnancy induces

a multitude of physiological adaptations to support the developing fetus. The total blood volume increases significantly, with a greater increase in plasma volume than red cell mass, leading to physiological hemodilution and anemia (B). Hormones such as human placental lactogen create a state of peripheral insulin resistance, which is compensated for by increased maternal insulin secretion (hyperinsulinemia) to maintain normal glucose levels (C). This results in a metabolic state characterized by mild fasting hypoglycemia and exaggerated postprandial hyperglycemia, which facilitates glucose transfer to the fetus (D). In the cardiovascular system, however, widespread vasodilation mediated by progesterone and prostaglandins causes a decrease in systemic vascular resistance. This leads to a fall in both systolic and diastolic blood pressure, which typically begins in the first trimester and reaches its lowest point in the second trimester. Therefore, an increase in blood pressure early in pregnancy is abnormal.

Question 148. Which of the following is not a marker in the quadruple test?

A. Unconjugated estriol

B. Alpha-fetoprotein (AFP)

C. Beta HCG

D. Dimeric inhibin B

Correct answer: D

Dimeric inhibin B The quadruple marker screen, or "quad test," is a maternal blood test performed during the second trimester of pregnancy, typically between 15 and 22 weeks' gestation. It is a screening tool used to assess the risk of certain fetal chromosomal abnormalities and neural tube defects. The test analyzes the levels of four specific substances in the mother's serum: 1) alpha-fetoprotein (AFP), 2) human chorionic gonadotropin (hCG), 3) unconjugated estriol (uE3), and 4) inhibin A. The pattern of these markers, when interpreted in the context of maternal age, helps to calculate a specific risk for Down syndrome (trisomy 21), Edwards syndrome (trisomy 18), and open neural tube defects. Dimeric inhibin B is a different form of the hormone, primarily involved in regulating folliculogenesis and spermatogenesis, and it is not a component of the standard quadruple screening panel.

Question 149. Mitochondria in sperm cells are located in which part?

A. Head

B. Midpiece

C. Tail

D. Acrosome

Correct answer: B

Midpiece A mature spermatozoon is a highly specialized cell composed of three main parts: a head, a midpiece, and a tail. The head contains the haploid nucleus with the paternal genetic material and is capped by the acrosome, a vesicle containing enzymes necessary for fertilization. The tail, or flagellum, is responsible for the sperm's motility. The crucial link

between the head and the tail is the midpiece. This section of the sperm is tightly packed with numerous mitochondria, which are arranged in a helical spiral around the axoneme. These mitochondria are the "powerhouses" of the sperm cell. They carry out oxidative phosphorylation to generate large amounts of ATP, the energy currency required to fuel the vigorous flagellar movements of the tail, enabling the sperm to swim towards the oocyte.

Question 150. A 24-year-old pregnant woman at 14 weeks gestation, currently taking warfarin, presents with abdominal pain. Ultrasound reveals an 8 × 6.8 cm unilocular cyst with a reticular pattern. What is the most appropriate next step?

A. CA125 levels

B. Measure HCG levels

C. Follow-up after 6-8 weeks

D. No follow-up required

Correct answer: C

Follow-up after 6-8 weeks The ultrasound finding of a unilocular cyst with a reticular, "fishnet" or "cobweb" internal pattern is highly characteristic of a hemorrhagic cyst. This appearance is caused by the retraction of a blood clot and the formation of fibrin strands within the cyst. In a young, pregnant woman, the most common cause of such a finding is a hemorrhagic corpus luteum cyst. These cysts are functional and benign. Given the benign sonographic features and the patient's age, the risk of malignancy is very low. The abdominal pain is likely due to the hemorrhage into the cyst. Therefore, the most appropriate management is conservative. This involves observation with a follow-up ultrasound in 6-8 weeks to ensure the cyst is resolving, which is the expected natural course for a functional hemorrhagic cyst. Measuring tumor markers like CA125 is not indicated for a simple-appearing cyst in a young woman.

Question 151. In a ruptured ectopic pregnancy, which of the following interventions should not be performed?

A. Immediate surgical intervention

B. Administration of methotrexate

C. Blood transfusion if needed

D. Fluid resuscitation

Correct answer: B

Administration of methotrexate A ruptured ectopic pregnancy is a life-threatening surgical emergency characterized by hemoperitoneum, hemodynamic instability, and severe abdominal pain. The management priority is to stabilize the patient and stop the intra-abdominal bleeding. This requires aggressive fluid resuscitation with intravenous crystalloids and blood transfusion as needed to treat hemorrhagic shock. The definitive treatment is immediate surgical intervention, typically a laparoscopic salpingectomy or salpingostomy, to remove the ectopic pregnancy and achieve hemostasis. In contrast, the administration of methotrexate is a medical

treatment option that is only suitable for carefully selected patients with an unruptured, hemodynamically stable ectopic pregnancy. Methotrexate is a folate antagonist that targets rapidly dividing trophoblastic cells. It is absolutely contraindicated in the setting of a ruptured ectopic pregnancy, as it cannot control the active hemorrhage and would lead to a fatal delay in providing definitive surgical care.

Question 152. For a vigorous baby, when is cord clamping recommended?

A. Immediate clamping

B. Delayed clamping

C. Clamping after resuscitation

D. Clamping only after the baby cries

Correct answer: B

Delayed clamping Current evidence-based guidelines from major health organizations, including the World Health Organization and the American College of Obstetricians and Gynecologists, strongly recommend delayed umbilical cord clamping for all vigorous term and preterm infants. This practice involves waiting at least 30 to 60 seconds after birth before clamping the umbilical cord. This delay allows for a placental transfusion of an additional 80-100 mL of blood to the infant. The benefits of this extra blood volume are significant and include improved transitional circulation, better establishment of red blood cell volume, and decreased need for blood transfusion. For term infants, it increases hemoglobin levels at birth and improves iron stores for the first several months of life, which helps to prevent iron deficiency. Immediate clamping is no longer the standard of care and is generally reserved for situations where the neonate requires immediate resuscitation.

Question 153. A female patient with no history of menstruation presents with acute urinary retention and NODIA page 165 INICET Examination Paper (D) Bilirubin levels are usually more than 10 mg/dL at 3-4 weeks

A. Imperforate hymen

B. Transverse vaginal septum

C. OHVIRA syndrome

D. Mullerian agenesis

Correct answer: B

Unconjugated hyperbilirubinemia Breast milk jaundice is a common, benign condition characterized by prolonged jaundice in an otherwise healthy, thriving breastfed infant. The key pathophysiological feature is unconjugated hyperbilirubinemia. It is believed to be caused by factors in the maternal breast milk (such as β -glucuronidase) that increase the enterohepatic circulation of bilirubin. It is a diagnosis of exclusion with an onset after the first week of life, peaking around 2 weeks. It is crucial to encourage the continuation of breast feeding (A is false); temporary interruption is rarely indicated. The condition is benign and self-limiting, and

phototherapy is rarely required (C is false) as the bilirubin levels typically do not reach dangerous thresholds. While bilirubin levels can remain elevated for weeks, stating a specific value (D) is less definitive than describing the type of hyperbilirubinemia.

Question 154. Which one of the following is not a germ cell tumor?

A. Non-obstetric choriocarcinoma

B. Pre-pubertal granulosa cell tumor

C. Yolk sac tumor

D. Dysgerminoma

Correct answer: B

Pre-pubertal granulosa cell tumor Ovarian tumors are classified based on their cell of origin. Germ cell tumors arise from the primordial germ cells of the ovary. This category includes dysgerminoma, yolk sac tumor (also known as endodermal sinus tumor), and non-gestational choriocarcinoma. Teratomas are also germ cell tumors. In contrast, a granulosa cell tumor is not a germ cell tumor; it is classified as a sex cord-stromal tumor. These tumors arise from the supporting tissues of the ovary, which include the granulosa cells, theca cells, and stromal fibroblasts. Granulosa cell tumors are often hormonally active, producing estrogen, and can present with signs of precocious puberty in pre-pubertal girls. Despite its presentation in a young patient, its cellular origin is stromal, not germinal.

Question 155. In the normal physiology of oogenesis, in which phase is the primary oocyte arrested?

A. Pachytene

B. Diplotene

C. Zygotene

D. Leptotene

Correct answer: B

Diplotene Oogenesis, the process of female gamete formation, begins during fetal development. Primordial germ cells differentiate into oogonia, which then enter meiosis I to become primary oocytes. All of a female's primary oocytes are formed before birth. These primary oocytes initiate the first meiotic division but then arrest in prophase I. This state of meiotic arrest is very prolonged, lasting from fetal life until the oocyte is selected for ovulation after puberty, which can be decades later. Specifically, the arrest occurs in the diplotene stage of prophase I. Meiosis I is only completed just before ovulation in response to the luteinizing hormone (LH) surge, resulting in a secondary oocyte and the first polar body. The secondary oocyte then begins meiosis II but arrests again in metaphase II, only completing this division if fertilization occurs.

Question 156. A woman presents with foul-smelling vaginal discharge, and the Whiff

test is positive. Which organism is most likely responsible?

A. Gardnerella vaginalis

B. Trichomonas vaginalis

C. Candida

D. Physiological cause

Correct answer: A

Gardnerella vaginalis The clinical presentation of a malodorous vaginal discharge, combined with a positive Whiff test, is highly characteristic of bacterial vaginosis (BV). The Whiff test, or amine test, is performed by adding a drop of 10% potassium hydroxide (KOH) to a sample of the vaginal discharge. In BV, this causes the release of volatile amines, producing a distinctive fishy odor. BV is not a classic infection but rather a dysbiosis, characterized by a shift in the vaginal flora from a predominance of healthy Lactobacillus species to a polymicrobial overgrowth of anaerobic bacteria. The most prominent of these anaerobes is Gardnerella vaginalis, which is considered the primary causative organism. While Trichomonas vaginalis can also cause a malodorous discharge, the positive Whiff test is most specific for BV. Candida causes a non-odorous, cottage cheese-like discharge.

Question 157. A couple presents with infertility. The male partner has a sperm count of 60 million with 54% progressive motility, and the female partner has a normal uterus with patent fallopian tubes. What proportion of cases like this are classified as unexplained infertility?

A. 15%

B. 5%

C. 25%

D. 30%

Correct answer: C

25% Unexplained infertility is diagnosed when standard evaluation of both partners reveals no identifiable abnormality. In this case, the male partner has a normal sperm count (60 million/mL) and adequate progressive motility (54%), which are within normal WHO reference limits. The female partner has a normal uterine structure and patent fallopian tubes, indicating no detectable anatomical cause of infertility. When ovulation is regular, semen parameters are normal, and tubal patency is confirmed, yet conception does not occur after one year of regular unprotected intercourse, the condition is labeled as unexplained infertility. Epidemiologically, unexplained infertility accounts for approximately 20–30% of infertile couples, and in most standard exam references it is quoted as about 25% of cases. The possible causes may include subtle ovulatory defects, fertilization failure, sperm–oocyte interaction problems, implantation defects, or mild endometriosis that is not detected by routine evaluation. Therefore, about 25% of infertility cases are classified as unexplained, making option (C) correct.

Question 158. A woman reports foul-smelling vaginal discharge, and the Whiff test result is positive. Which organism is most likely responsible?

A. Gardnerella vaginalis

B. Trichomonas vaginalis

C. Candida

D. Physiological cause

Correct answer: A

Gardnerella vaginalis A malodorous, often "fishy," vaginal discharge and a positive Whiff test are classic signs of bacterial vaginosis (BV). The Whiff test involves adding 10% potassium hydroxide (KOH) to a sample of the discharge; a positive result is the immediate release of a fishy amine odor. BV is a common condition resulting from a dysbiosis of the vaginal microbiome, where the normal, protective Lactobacillus species are replaced by an overgrowth of various anaerobic bacteria. While BV is polymicrobial, the bacterium most strongly associated with it and considered the primary causative agent is Gardnerella vaginalis. It is a key component of the biofilm present in women with BV. Trichomonas vaginalis (B) can also cause a foul-smelling discharge, but the positive Whiff test is more specific for BV. Candida (C) typically causes a thick, non-odorous discharge.

Question 159. A patient presents with amenorrhea and laboratory findings of FSH 2 mIU/mL, LH 0.2 mIU/mL, and normal prolactin levels. What is the most likely diagnosis?

A. Normogonadotropic normogonadism

B. Hypogonadotropic hypogonadism

C. Hypergonadotropic hypogonadism

D. Primary ovarian insufficiency

Correct answer: B

Hypogonadotropic hypogonadism This patient's hormonal profile needs to be interpreted systematically. She has amenorrhea, indicating a lack of ovarian function (hypogonadism). The key to determining the cause is the level of the gonadotropins, FSH and LH, which are secreted by the pituitary gland to stimulate the ovaries. In this case, both the FSH (2 mIU/mL) and especially the LH (0.2 mIU/mL) are low or inappropriately normal in the face of ovarian failure. This indicates that the primary problem lies not with the ovaries, but with the pituitary or hypothalamus, which are failing to produce adequate gonadotropin signals. This condition is termed hypogonadotropic hypogonadism. In contrast, primary ovarian insufficiency (D) or hypergonadotropic hypogonadism (C) would be characterized by very high FSH and LH levels as the pituitary tries to stimulate failing ovaries. Normal prolactin levels rule out hyperprolactinemia as the cause. DERMATOLOGY

Question 160. Which of the following does not differentiate Psoriasis from other

arthropathies?

A. Nail pitting

B. Enthesitis

C. Dactylitis

D. Diarrhea

Correct answer: D

Diarrhea Psoriatic arthritis (PsA) is a seronegative spondyloarthropathy that has several characteristic features distinguishing it from other types of arthritis, like rheumatoid arthritis. These unique features include specific patterns of skin and nail involvement. Nail pitting, onycholysis, and oil spots are classic signs of psoriasis and are strongly associated with PsA. Musculoskeletal features that are highly characteristic of the spondyloarthropathy group, including PsA, are enthesitis, which is inflammation at the site of tendon and ligament insertion into bone, and dactylitis, also known as "sausage digit," which is diffuse swelling of an entire finger or toe. In contrast, diarrhea is not a feature of psoriasis or PsA. Inflammatory diarrhea is a prominent feature of another group of spondyloarthropathies, namely the enteropathic arthritis associated with inflammatory bowel disease (Crohn's disease and ulcerative colitis).

Question 161. Which organism is most likely to cause an infection acquired from walking barefoot? Click Here to Buy book on Amazon MEDINK (D) Escherichia coli

A. Madurella mycetomatis

B. Curvularia

C. Nocardia

D. Sporothrix schenckii

Correct answer: A

Echinococcus This is a classic presentation of cystic echinococcosis, or hydatid disease, caused by the larval stage of the tapeworm Echinococcus granulosus. Humans become intermediate hosts by ingesting eggs passed in the feces of definitive hosts like dogs. The embryos hatch, penetrate the intestinal wall, and travel to the liver, where they develop into a large, slow-growing hydatid cyst. The finding of a liver cyst on ultrasound is suggestive. The definitive diagnostic clue is the nature of the aspirated fluid. The "sand-like granules" are hydatid sand, which consists of thousands of microscopic protoscolices (larval tapeworm heads), a pathognomonic finding. The clear, protein-rich fluid is also characteristic. Taenia solium (C) causes cysticercosis, which typically involves the brain and muscle, not large hydatid cysts in the liver.

Question 162. Please match the following types of scales with their corresponding lesions: 1. Collarette scales a. Pityriasis versico- lour 2. Silvery scales b. Pityriasis rosea 3. Mica-like scales c. Psoriasis 4. Branny scales d. Pityriasis lichenoi- des

A. 1-b, 2-c, 3-d,4-a

B. 1-a, 2-b, 3-d,4-c

C. 1-d, 2-c, 3-a,4-b

D. 1-c, 2-b, 3-d,4-a

Correct answer: A

1-b, 2-c, 3-d, 4-a The morphology of the scale is an important diagnostic clue in dermatology. 1 Collarette scale refers to a thin ring of scale that is attached at the periphery and free in the center. This is a classic feature of the oval lesions seen in pityriasis rosea (1-b). 2 Silvery scales are thick, white, and lamellar scales that are easily detached, revealing pinpoint bleeding points underneath (Auspitz sign). This is the hallmark of chronic plaque psoriasis (2-c). 3 Mica-like scales are adherent scales that can be peeled off in layers, resembling the mineral mica. This distinctive feature is characteristic of pityriasis lichenoides chronica (3-d). 4 Branny scales are fine, dust-like scales, similar in appearance to bran. This type of scaling is typically seen in pityriasis versicolor, a superficial fungal infection (4-a).

Question 163. A woman reports experiencing hair loss for the past month and had COVID-19 eight weeks ago. What is the most likely diagnosis?

A. Telogen Effluvium

B. Trichomania

C. Anagen Effluvium

D. Androgenic alopecia female pattern

Correct answer: A

Telogen Effluvium Telogen effluvium is a common form of non-scarring diffuse hair loss that occurs as a reaction to a significant physiological or emotional stressor. The stressor causes a large number of hair follicles in the growing (anagen) phase to prematurely shift into the resting (telogen) phase. Approximately 2 to 4 months after the triggering event, these telogen hairs are shed, resulting in a noticeable increase in hair fall. A significant systemic illness with high fever, such as a COVID-19 infection, is a well-recognized and very common trigger for telogen effluvium. The timing in this case, with hair loss beginning 8 weeks (2 months) after the COVID infection, fits the classic timeline perfectly. Anagen effluvium (C) is an abrupt shedding of growing hairs, typically seen within days of exposure to chemotherapy. Trichotillomania (trichomania) and androgenic alopecia have different presentations. ANAESTHESIA

Question 164. Which of the following general anesthetic drugs causes adrenal suppression?

A. Propofol

B. Thiopentone

C. Etomidate

D. Ketamine

Correct answer: C

Etomidate Etomidate is an intravenous general anesthetic agent known for its favorable hemodynamic stability, making it a useful induction agent in critically ill or trauma patients. However, a significant and well-documented side effect of etomidate is its ability to cause adrenocortical suppression. It achieves this by reversibly inhibiting the enzyme 11 β -hydroxylase, which is a critical step in the synthesis of cortisol from cholesterol in the adrenal cortex. Even a single induction dose of etomidate can suppress cortisol production for up to 24 hours. This effect makes it unsuitable for use as a continuous infusion and has led to controversy regarding its use in patients with sepsis, who may require a robust stress response. The other agents listed—propofol, thiopentone, and ketamine—do not share this specific mechanism of adrenal suppression.

Question 165. The short-acting property of Thiopentone is due to which of the following?

A. Rapid redistribution of drug to adipose tissue and muscles

B. Rapid elimination by renal route

C. High lipid solubility

D. Rapid redistribution to the brain

Correct answer: A

Rapid redistribution of drug to adipose tissue and muscles Thiopentone is an ultrashort-acting barbiturate used for the induction of general anesthesia. Its rapid onset of action is due to its high lipid solubility, which allows it to quickly cross the blood-brain barrier and achieve a high concentration in the brain. However, the termination of its clinical effect is not due to rapid metabolism or renal elimination. Instead, its short duration of action is a result of rapid redistribution. After the initial bolus, the drug quickly moves from the vessel-rich central compartment (including the brain) down its concentration gradient into less well-perfused but larger peripheral compartments, primarily skeletal muscle and later, adipose tissue. This redistribution causes the plasma and brain concentrations of the drug to fall below the level required for hypnosis, leading to the patient awakening, even though the drug has not yet been eliminated from the body.

Question 166. What is the recommended management for a man with fractures of five thoracic ribs who has persistent chest pain that is not relieved by analgesics?

A. Thoracic epidural analgesia

B. Lumbar epidural analgesia

C. Supraclavicular block

D. Cervical epidural

Correct answer: A

Thoracic epidural analgesia Multiple rib fractures cause severe pain, which leads to splinting, shallow breathing, and an inability to cough effectively. This can result in retained secretions,

atelectasis, and pneumonia, significantly increasing morbidity and mortality. Providing effective analgesia is therefore the cornerstone of management. When pain is severe and not controlled by systemic analgesics, regional anesthesia is the modality of choice. For fractures involving multiple thoracic ribs, thoracic epidural analgesia is considered the gold standard. This involves placing a catheter in the thoracic epidural space and infusing a local anesthetic and/or opioid. This technique provides excellent, segmental pain relief over the affected dermatomes, allowing the patient to breathe deeply and cough effectively without the systemic side effects of high-dose opioids. A lumbar or cervical epidural would not provide adequate coverage for thoracic rib fractures. A supraclavicular block is for the upper limb.

Question 167. The Jackson Rees circuit is used in which of the following?

A. Pediatric anesthesia

B. General anesthesia

C. Obstetric anesthesia

D. Epidural anesthesia

Correct answer: A

Pediatric anesthesia The Jackson-Rees circuit is a modification of the Mapleson F breathing system. It is a lightweight, valveless, low-resistance breathing circuit that is particularly well-suited for use in neonates, infants, and small children. It consists of a fresh gas flow inlet, a length of corrugated tubing, and an open-ended reservoir bag with a bleed-off valve at the tail. This design allows for both spontaneous and controlled ventilation with minimal dead space and resistance, which is critical in small patients with limited respiratory reserves. The open tail of the bag also provides a good tactile feel for the patient's compliance and breathing pattern. While it can be used for general anesthesia in any patient, its specific design features and advantages make it the preferred and most commonly used breathing circuit for pediatric anesthesia, especially in smaller children.

Question 168. Choose the correct statement for Ambu Aura 40:

A. First-generation supraglottic airway device

B. Orbicularis Oris

C. Zygomaticus Major

D. Risorius 6.

Correct answer: C

Zenker's diverticulum The patient's symptoms of long-standing dysphagia (difficulty swallowing), particularly in the cervical region, and halitosis (bad breath) are highly suggestive of a Zenker's diverticulum. This is a pulsion diverticulum, which is an outpouching of the pharyngeal mucosa through a weak area in the posterior hypopharyngeal wall known as Killian's triangle. The radiograph, which is a barium swallow study, confirms this diagnosis by showing a posterior outpouching in the upper esophagus/hypopharynx that is retaining the

contrast material. The bad breath is caused by the stagnation and decomposition of food particles that become trapped within this pouch. Achalasia (A) would show a dilated esophagus with a "bird's beak" narrowing at the lower end. Esophageal carcinoma (B) typically presents as an irregular stricture or mass. Diffuse esophageal spasm (D) has a "corkscrew" appearance.

Question 169. Which is true about pediatric resuscitation?

A. Adrenaline is given at 0.01 mg/kg with a concentration of 1 :1000

B. Depth of chest compression should be one-third of the anterior-posterior (A-P) diameter of the chest

C. Adenosine is preferably given intraosseously

D. Compression to ventilation ratio should be 30 :2, with 2 rescuers

Correct answer: B

Depth of chest compression should be one-third of the anterior-posterior (A-P) diameter of the chest According to Pediatric Advanced Life Support (PALS) guidelines, several key principles apply to resuscitation. The recommended depth for high-quality chest compressions in infants and children is at least one-third of the anteroposterior diameter of the chest; this statement is correct. Let's analyze the other options. (A) The IV/IO dose of adrenaline (epinephrine) is 0.01 mg/kg, but this is given using the 1:10,000 concentration, not the 1:1000 concentration (which is for endotracheal administration). (D) For two rescuers, the compression-to-ventilation ratio in children is 15:2 to provide more frequent breaths. The 30:2 ratio is for a single rescuer. (C) The preferred route for any emergency drug, including adenosine, is intravenous. The intraosseous route is an alternative when IV access is not available, but it is not the preferred route.

Question 170. Which of the following statements about the management of post-CPR Return of Spontaneous Circulation (ROSC) is incorrect?

A. Targeted temperature management at 32- 36°C if the patient is awake

B. MAP>65 mm Hg

C. SpO2 92-98%

D. Emergent cardiac intervention if STEMI is present

Correct answer: A

Targeted temperature management at 32-36°C if the patient is awake The post-cardiac arrest care phase is critical for improving survival and neurological outcomes after ROSC. Key goals include optimizing hemodynamics and ventilation. This involves maintaining a mean arterial pressure (MAP) of >65 mmHg and an oxygen saturation (SpO 2) between 92-98%, avoiding both hypoxia and hyperoxia. If the arrest was of cardiac origin and the post-ROSC ECG shows ST-segment elevation myocardial infarction (STEMI), emergent cardiac intervention with coronary angiography is indicated. Targeted temperature management (TTM), maintaining a constant temperature between 32°C and 36°C for at least 24 hours, is a crucial neuroprotective strategy. However, TTM is indicated specifically for patients who remain comatose or do not

follow commands after ROSC. It is not performed on a patient who is awake and following commands. RADIOLOGY

Question 171. What is the investigation of choice (IOC) for ureteric stones or colic?

A. CECT

B. NCCT

C. USG

D. Ureteroscopy

Correct answer: B

NCCT The investigation of choice and current gold standard for evaluating a patient with acute flank pain suggestive of renal or ureteric colic is a Non-Contrast Computed Tomography (NCCT) of the kidneys, ureters, and bladder (KUB). NCCT has very high sensitivity (95-100%) and specificity for detecting ureteric stones, regardless of their size, location, or chemical composition (including radiolucent uric acid stones that are missed on plain X-rays). It can also identify signs of obstruction, such as hydronephrosis and peri-nephric stranding. Furthermore, it is excellent for diagnosing alternative causes of flank pain (e.g., appendicitis, diverticulitis). Ultrasound (USG) is a good initial modality, especially in pregnant women and children, as it avoids radiation, but it is less sensitive for detecting ureteric stones. CECT is not needed for stone detection. Ureteroscopy is a therapeutic procedure, not a primary diagnostic investigation.

Question 172. A 65-year-old diabetic man presents with breathlessness and pleural effusion. CT imaging reveals a “tree-in-bud” pattern, and pleural fluid analysis shows lymphocytic predominance with low ADA. What is most likely to be seen in an aspirate from the hilar lymph node?

A. Necrotizing epithelioid granuloma

B. Reactive lymphoid hyperplasia

C. Fungal hyphae surrounded by lymphocytes

D. Anthracotic pigment

Correct answer: A

Necrotizing epithelioid granuloma The combination of clinical symptoms, a "tree-in-bud" pattern on CT (suggesting bronchiolar inflammation or impaction), and hilar lymphadenopathy in a diabetic patient strongly suggests a diagnosis of pulmonary tuberculosis (TB). Although the pleural fluid analysis shows low adenosine deaminase (ADA) levels, which can be misleading, the gold standard for diagnosis is the histopathological or microbiological confirmation of Mycobacterium tuberculosis. An aspirate or biopsy from an involved hilar lymph node in a patient with active TB would characteristically show necrotizing (caseating) epithelioid granulomas. These are organized collections of epithelioid macrophages, lymphocytes, and multinucleated giant cells with a central area of cheese-like necrotic debris. This finding is the

histopathological hallmark of tuberculosis. Reactive hyperplasia (B) is non-specific. Fungal hyphae (C) or anthracotic pigment (D) would indicate other pathologies.

Question 173. What is the investigation of choice for a parathyroid adenoma?

A. Tc99-Sestamibi scan

B. Sestamibi SPECT

C. USG (Ultrasound)

D. CT (Computed Tomography)

Correct answer: B

Sestamibi SPECT Parathyroid adenoma is the most common cause of primary hyperparathyroidism, characterized by elevated serum calcium and parathyroid hormone (PTH) levels. Once biochemical diagnosis is confirmed, imaging is performed for localization prior to surgery. A Technetium-99m sestamibi scan is commonly used because sestamibi is preferentially taken up and retained by hyperfunctioning parathyroid tissue due to its high mitochondrial content. However, Sestamibi SPECT (Single Photon Emission Computed Tomography) provides three-dimensional imaging and better anatomical localization compared to planar scintigraphy alone. It increases sensitivity and accuracy, especially in cases of ectopic glands or reoperative neck surgery. Ultrasound (USG) is often used as an adjunct modality and is operator-dependent. CT scan may help in selected cases, particularly for ectopic mediastinal adenomas, but it is not the first-line investigation. Therefore, the investigation of choice for localization of a parathyroid adenoma is Sestamibi SPECT, making option (B) correct.

Question 174. Match the following drugs with the conditions they are used to treat: a. Delirium tremens 1. Naloxone b. Alcohol dependence 2. Oxazepam c. Smoking cessation 3. Varenicline d. Opioid poisoning/ overdose 4. Acamprosate

A. a-1, b-3, c-4, d-2

B. a-2, b-4, c-3, d-1

C. a-4, b-2, c-3, d-1

D. a-2, b-3, c-4, d-1

Correct answer: B

a-2, b-4, c-3, d-1 This question requires matching substances of abuse and their related conditions to the appropriate pharmacological treatments. 1. Delirium tremens (a) is a severe manifestation of alcohol withdrawal. The treatment of choice is a benzodiazepine, such as oxazepam or lorazepam, to manage agitation and prevent seizures (a-2). 2. Alcohol dependence (b), specifically for maintaining abstinence, can be treated with medications like naltrexone, disulfiram, or acamprosate, which is thought to restore GABA/glutamate balance (b-4). 3. Smoking cessation (c) is aided by several medications, including nicotine replacement therapy, bupropion, and varenicline, which is a partial agonist at nicotinic acetylcholine receptors (c-3). 4. Opioid poisoning/overdose (d) is a medical emergency treated with an opioid

receptor antagonist to reverse the effects of respiratory depression. The specific antidote is naloxone (d-1).

Question 175. Which of the following is NOT included as a component in Beck’s Cognitive Theory of Depression?

A. Cognitive distortions

B. Automated thoughts

C. Introjection

D. Dysfunctional belief

Correct answer: C

Introjection Aaron Beck's cognitive model of depression is a cornerstone of cognitive-behavioral therapy (CBT). It posits that depression is maintained by a set of negative thought patterns. The core components of this model include: 1) Dysfunctional beliefs or core schemas, which are rigid, negative assumptions about oneself and the world. 2) These beliefs give rise to cognitive distortions, which are systematic errors in thinking like overgeneralization or catastrophizing. 3) These distortions manifest as negative automatic thoughts, which are spontaneous, intrusive thoughts that contribute to a negative mood. In contrast, introjection is a concept derived from psychoanalytic theory, not cognitive theory. It is a defense mechanism where an individual unconsciously incorporates the attitudes, beliefs, or values of another person into their own ego structure.

Question 176. What is the most suitable treatment for a patient who repeatedly feels their hands are contaminated and engages in compulsive handwashing that causes significant distress and affects their functioning?

A. DBT

B. Exposure and Response Prevention

C. Systematic Desensitization

D. CBT

Correct answer: B

Exposure and Response Prevention The patient's symptoms—recurrent, distressing thoughts about contamination (obsessions) leading to repetitive hand-washing rituals (compulsions)—are the classic presentation of Obsessive-Compulsive Disorder (OCD). The gold-standard and most effective form of psychotherapy for OCD is a specific type of Cognitive-Behavioral Therapy (CBT) known as Exposure and Response Prevention (ERP). ERP involves two core components. The "exposure" part requires the patient to deliberately and systematically confront the thoughts, images, objects, and situations that trigger their obsessions (e.g., touching a "contaminated" object). The "response prevention" part requires them to make a conscious choice to refrain from engaging in the compulsive ritual (e.g., not washing their hands). Through this process, the patient learns that their anxiety naturally subsides without the need

for the ritual, leading to habituation and a reduction in symptoms. While CBT is the broad category, ERP is the specific, evidence-based technique for OCD.

Question 177. According to psychoanalytic theory, individuals with alcoholism are fixated at which stage of psychosexual development?

A. Genital

B. Anal

C. Phallic Click Here to Buy book on Amazon MEDINK INICET Examination Paper Aneuploidy refers to an abnormal number of chromosomes, such as trisomy (an extra chromosome) or monosomy (a missing chromosome). The gold standard method for diagnosing aneuploidy is cytogenetics, specifically karyotyping (2), which involves visualizing and counting all the chromosomes from a cell culture. Fluorescence In Situ Hybridization (FISH) (1) is a rapid molecular cytogenetic technique that uses fluorescent probes to identify and count specific chromosomes or chromosome regions in interphase cells, making it an excellent tool for rapid screening for common aneuploidies like trisomies 21, 18, and 13. In contrast, Sanger sequencing (3) and PCR (4) are techniques used to analyze the nucleotide sequence of DNA. They are ideal for detecting single gene mutations or small insertions/deletions, but not for identifying changes in the number of entire chromosomes. Which enzymes are utilized in recombinant DNA technology? 1 Isomerase 2 Phosphatase 3 Terminal transferase 4 CRISPR-Cas9

D. 1,3,4 25.

Correct answer: D

Oral In classical Freudian psychoanalytic theory, adult personality traits and psychopathologies are linked to unresolved conflicts or "fixations" at specific childhood stages of psychosexual development. The oral stage, which occurs from birth to about 18 months, is centered on obtaining pleasure and gratification through the mouth (e.g., sucking, feeding). According to this theory, individuals who become fixated at this stage, either through excessive gratification or deprivation, may develop an "oral character" in adulthood. This is characterized by traits of dependency, passivity, and a predisposition to seek gratification through oral activities. Substance abuse, particularly alcoholism, as well as smoking and overeating, are viewed as manifestations of this oral fixation, representing a regression to this early mode of seeking comfort and reducing tension. The anal (B), phallic (C), and genital (A) stages are associated with different sets of conflicts and personality outcomes.

Question 178. Slow wave in hippocampal area is

A. Delta

B. Theta

C. Beta

D. Alpha

Correct answer: B

Theta The hippocampus is a brain structure integral to learning, memory, and spatial navigation. Its electrical activity, as measured by an electroencephalogram (EEG), is characterized by distinct rhythmic oscillations. The most prominent slow-wave rhythm recorded from the hippocampus is the theta wave, which has a frequency range of approximately 4-12 Hz. This hippocampal theta rhythm is not associated with sleepiness but is strongly linked to active brain states, including exploration of the environment, sensorimotor integration, and crucially, memory encoding and retrieval during learning tasks. It is also a prominent feature of REM sleep. In contrast, delta waves are slower (<4 Hz) and are the hallmark of deep, non-REM sleep. Alpha waves (8-13 Hz) are typically seen over the occipital cortex during relaxed wakefulness, while beta waves (>13 Hz) are associated with active concentration. ********** page 176 Answer Thus, during transfusion of packed RBCs (especially immediately after transfusion), the oxygen dissociation curve shifts to the left compared to normal. In the given diagram: Curve A = Normal Curve B = Left-shifted curve Curve D = Right-shifted curve Therefore, the correct answer is : (A) Curve B All of the following are seen in decompression sickness except: (A) Hemodilution (B) Hearing loss (C) Coagulopathy (D) Vision loss 20. (A) Hemodilution Decompression sickness, or "the bends," occurs when a person is exposed to a rapid decrease in ambient pressure, such as during a rapid ascent from a deep-sea dive. The drop in pressure causes dissolved inert gases, primarily nitrogen, to come out of solution and form bubbles in the blood and tissues. These bubbles can cause a wide range of symptoms by obstructing blood flow and triggering inflammation. Neurological symptoms are common, including vision loss (D) and hearing loss or vertigo (B) if the inner ear is affected. The bubbles can activate the coagulation cascade, leading to a consumptive coagulopathy (C). The inflammatory response and endothelial damage also cause a fluid shift from the intravascular to the extravascular space, leading to hemoconcentration (an increase in hematocrit), not hemodilution. The adrenal medulla releases catecholamines in response to all of the following stimuli, except which one? (A) Standing up (B) Hyperglycemia (C) Smoking (D) Exercise 21. (B) Hyperglycemia The adrenal medulla is a key component of the sympathetic nervous system and is responsible for the "fight-or-flight" response. It secretes catecholamines (epinephrine and norepinephrine) in response to various forms of physiological or psychological stress. Exercise (D) is a potent stimulus. The act of standing up from a lying position (A) activates the baroreceptor reflex and sympathetic outflow to maintain blood pressure. Smoking (C) introduces nicotine, which directly stimulates sympathetic ganglia and the adrenal medulla, causing catecholamine release. In contrast, the primary response to hyperglycemia is the release of insulin from the pancreas to lower blood glucose. The adrenal medulla is stimulated by hypoglycemia, not hyperglycemia, as epinephrine promotes glycogenolysis and gluconeogenesis to raise blood glucose levels. ATP is not required for which of the following transports: 1 Paracellular transport 2 Simple diffusion 3 Facilitated diffusion 4 Na + /K + ATPase

5 Symport/Antiport (A) 1,2 (B) 1,2,3 (C) 2,3,4 (D) 3,4 22. (B) 1,2,3 Cellular transport processes are categorized based on their energy requirements. Active transport requires energy, while passive transport does not. (4) Na + /K + ATPase is a form of primary active transport that directly hydrolyzes ATP. (5) Symport/Antiport are types of secondary active transport that use the energy stored in an electrochemical gradient, which was established using ATP. (2) Sample diffusion is the passive movement of molecules across a membrane down their concentration gradient. (3) Facilitated diffusion uses protein channels or carriers to move molecules down their concentration gradient and is also a passive process. (1) Paracellular transport is the passive movement of substances between cells through tight junctions, driven by gradients. Therefore, paracellular transport, simple diffusion, and facilitated diffusion do not directly require ATP. Which blood product is NOT obtained through centrifugation? (A) Serum albumin (B) Cryoprecipitate (C) Platelets (D) Red Blood Cells (RBCs) 23. (A) Cryoprecipitate Standard blood banking involves separating whole blood into its components primarily through centrifugation. A "hard spin" separates the cellular components, allowing for the collection of packed red blood cells (D). A subsequent "light spin" of the resulting plasma allows for the separation of platelet-rich plasma, from which platelets (C) are concentrated. Serum albumin (A) is a plasma protein that is purified from large pools of plasma through a process called Cohn fractionation, which involves ethanol precipitation and centrifugation. In contrast, cryoprecipitate is a concentrate of specific clotting factors prepared from Fresh Frozen Plasma (FFP). It is isolated not by centrifugation, but by thawing FFP slowly at 1-6°C. The cold-insoluble proteins (including Factor VIII, fibrinogen, and von Willebrand factor) precipitate out and are then collected. Which of the following is used in diagnosing aneuploidy? 1 FISH 2 Cytogenetics 3 Sanger sequencing 4 PCR (A) 1,2 (B) 1,2,3 (C) 2,3 (D) 1,2,3,4 24. (A) 1,2 page 169 INICET Examination Paper (B) Second-generation supraglottic airway device (C) Third-generation supraglottic airway device (D) Fourth-generation supraglottic airway device AAns (A) First-generation supraglottic airway device The Ambu Aura 40 is a reusable laryngeal mask airway (LMA) designed for airway management during anesthesia and emergency situations. It is classified as a first-generation supraglottic airway device (SGA) because it primarily provides a seal around the laryngeal inlet to allow ventilation but does not have a gastric drainage channel. First-generation SGAs, such as the classic LMA and Ambu Aura 40, are designed mainly for airway maintenance and positive pressure ventilation in elective procedures. They lack additional safety features like a separate gastric port for gastric tube insertion, which are characteristic of second-generation devices. Second-generation devices (e.g., LMA ProSeal, i-gel) include a gastric drain tube to reduce the risk of aspiration. Third- and fourth-generation classifications are not standard for routine clinical airway device categorization. Since Ambu Aura 40 does not include a gastric drainage channel and functions similarly to classic LMAs, it is classified as a first-generation supraglottic airway device, making option (A) correct.