INI-CET November 2023 Question Paper

158 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. Match each of the following muscles with the action it performs: a. Pectoralis major 1. Extension at shoul- der b. Supraspinatus 2. Flexion at shoulder c. Infraspinatus 3. Lateral rotation of the shoulder d. Latissimus dorsi 4. Abduction at shoul- der

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

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

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

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

Correct answer: D

a-2,b-4, c-3,d-1 The pectoralis major is a powerful muscle of the upper chest, primarily responsible for flexion, adduction, and medial rotation of the humerus at the shoulder joint. The supraspinatus is one of the four rotator cuff muscles and is crucial for initiating abduction of the arm at the shoulder. The infraspinatus, another rotator cuff muscle, is a primary lateral (external) rotator of the shoulder. The latissimus dorsi is a large, flat muscle on the back that is a powerful extensor, adductor, and medial rotator of the arm at the shoulder. Based on these functions, the correct pairings are: Pectoralis major - Flexion at shoulder; Supraspinatus - Abduction at shoulder; Infraspinatus - Lateral rotation of the shoulder; Latissimus dorsi - Extension at shoulder.

Question 2. Which of the following muscles receives its nerve supply from the lateral plantar nerve?

A. Flexor digitorum brevis, Abductor hallucis, Flexor hallucis brevis

B. Flexor digitorum brevis, Abductor hallucis, Extensor digitorum brevis

C. Flexor digiti minimi brevis, Abductor hallucis, Abductor digiti minimi

D. Flexor digiti minimi brevis, Abductor digiti minimi, Adductor hallucis

Correct answer: D

Flexor digiti minimi brevis, Abductor digiti minimi, Adductor hallucis The lateral plantar nerve, a terminal branch of the tibial nerve, is responsible for the motor innervation of most of the intrinsic muscles in the sole of the foot. The muscles supplied by the lateral plantar nerve include the quadratus plantae, abductor digiti minimi, flexor digiti minimi brevis, adductor

hallucis, the second to fourth lumbricals, and all the interossei muscles. From the options provided, the flexor digiti minimi brevis, abductor digiti minimi, and adductor hallucis are all innervated by the lateral plantar nerve. The flexor digitorum brevis, abductor hallucis, and flexor hallucis brevis are primarily innervated by the medial plantar nerve. The extensor digitorum brevis is located on the dorsum of the foot and is innervated by the deep fibular (peroneal) nerve.

Question 3. Which of the following drains directly into the inferior vena cava (IVC)?

A. Left gonadal vein

B. Left adrenal vein

C. Left renal vein

D. Right ascending lumbar

Correct answer: C

Left renal vein The venous drainage pattern on the left and right sides of the body is asymmetrical. The left renal vein is a large vein that travels from the left kidney to drain directly into the inferior vena cava (IVC). It is notable for receiving blood from several other veins on the left side, including the left gonadal (testicular or ovarian) vein and the left adrenal (suprarenal) vein. Therefore, the left gonadal vein and left adrenal vein do not drain directly into the IVC but into the left renal vein first. In contrast, the right gonadal and right adrenal veins typically drain directly into the IVC. The right ascending lumbar vein usually drains into the azygos vein system.

Question 4. Which statement is incorrect regarding the Adrenal gland?

A. Yellow colored structures

B. The left adrenal gland is present below the spleen

C. The right adrenal gland is pyramidal in shape.

D. It is located retroperitoneally

Correct answer: B

The left adrenal gland is present below the spleen The adrenal (suprarenal) glands are retroperitoneal endocrine glands located on the superior poles of the kidneys. The adrenal cortex has a characteristic yellow color due to its high lipid content. The right adrenal gland is typically pyramidal or triangular in shape, while the left is more semilunar or crescent-shaped. The statement that the left adrenal gland is present below the spleen is incorrect. The left adrenal gland is located anteromedial to the upper pole of the left kidney, and it is situated posterior to the stomach and pancreas, with the spleen being located more laterally and superiorly in the left upper quadrant of the abdomen. Therefore, the spleen is not directly superior to the left adrenal gland.

Question 5. In which region do the fibers of the internal oblique and transversus

abdominis form part of the inguinal canal wall?

A. Anterior wall

B. Posterior wall

C. Roof

D. Floor

Correct answer: C

Roof The inguinal canal is an oblique passage through the lower part of the anterior abdominal wall. Its walls are formed by different layers of the abdominal musculature. The roof (superior wall) of the inguinal canal is formed by the arching lower fibers of the internal oblique and transversus abdominis muscles as they pass superiorly and medially to insert into the pubic crest and pectineal line, forming the conjoint tendon. The anterior wall is mainly formed by the aponeurosis of the external oblique muscle. The posterior wall is formed by the transversalis fascia and the conjoint tendon. The floor is formed by the inguinal ligament, reinforced medially by the lacunar ligament. Therefore, the internal oblique and transversus abdominis muscles form the roof of the canal.

Question 6. Which portion of the inguinal canal is constituted by fibers from the internal oblique and transversus abdominis muscles?

A. Anterior Wall

B. Roof

C. Floor

D. Both A & C

Correct answer: B

Roof The inguinal canal is an oblique passage in the lower anterior abdominal wall with four boundaries: a roof, a floor, and anterior and posterior walls. The roof (superior wall) of the inguinal canal is formed by the arching inferior fibers of the internal oblique and transversus abdominis muscles. These muscle fibers arch over the spermatic cord (in males) or the round ligament (in females) and then descend to form the conjoint tendon, which reinforces the posterior wall medially. The anterior wall is primarily formed by the aponeurosis of the external oblique muscle. The floor is formed by the inguinal ligament. Therefore, the arching fibers of the internal oblique and transversus abdominis muscles are correctly identified as forming the roof of the inguinal canal.

Question 7. The internal oblique and transversus abdominis muscles contribute their fibers to form which part of the inguinal canal wall?

A. Anterior

B. Posterior

C. Roof

D. Floor

Correct answer: C

Roof The inguinal canal is an oblique passage in the lower anterior abdominal wall with four boundaries: a roof, a floor, and anterior and posterior walls. The roof (superior wall) of the inguinal canal is formed by the arching inferior fibers of the internal oblique and transversus abdominis muscles. These muscle fibers arch over the spermatic cord (in males) or the round ligament (in females) and then descend to form the conjoint tendon, which reinforces the posterior wall medially. The anterior wall is primarily formed by the aponeurosis of the external oblique muscle. The posterior wall is formed by the transversalis fascia and the conjoint tendon. The floor is formed by the inguinal ligament. Therefore, the arching fibers of the internal oblique and transversus abdominis muscles are correctly identified as forming the roof of the inguinal canal. PHYSIOLOGY

Question 8. What contributes to the zero phase of the action potential in the SA node?

A. Calcium (Ca) only

B. Sodium (Na)

C. Potassium (K)

D. Calcium (Ca) and Sodium (Na)

Correct answer: A

Calcium (Ca) only The action potential of the sinoatrial (SA) node, the heart's natural pacemaker, differs significantly from that of ventricular myocytes. The upstroke, or phase 0, of the SA node action potential is primarily mediated by the influx of calcium ions (Ca^{2+}) through L-type calcium channels. This is a slower process compared to the rapid sodium influx that characterizes phase 0 in ventricular and atrial muscle cells, which is why SA nodal action potentials have a less steep upstroke. While sodium influx through the "funny" current (If) is crucial for the pacemaker potential (phase 4) that brings the cell to threshold, the depolarization phase itself (phase 0) is calcium-dependent. Potassium efflux is responsible for repolarization (phase 3).

Question 9. With respect to glucose entry into cells, which organ or tissue does not rely on insulin for glucose uptake?

A. RBC

B. Pancreas

C. Adipose tissue

D. Hepatocytes

Correct answer: C

Adipose tissue Most tissues in the body require insulin for glucose uptake, but some have insulin-independent mechanisms. This question asks to identify the tissue that is insulin-dependent. Adipose tissue and skeletal muscle primarily use the GLUT4 transporter,

which is insulin-sensitive. In the presence of insulin, GLUT4 translocates from intracellular vesicles to the cell membrane to facilitate glucose entry. In contrast, red blood cells (RBCs) use GLUT1, the brain uses GLUT1 and GLUT3, the pancreas (beta-cells) uses GLUT2, and hepatocytes (liver cells) use GLUT2. All of these transporters (GLUT1, GLUT2, GLUT3) are insulin-independent, meaning they can take up glucose from the blood without the need for insulin signaling. Therefore, adipose tissue is the exception as its glucose uptake is critically dependent on insulin.

Question 10. What is the main mechanism through which parathyroid hormone (PTH) increases blood calcium levels?

A. Increased renal reabsorption of calcium

B. Stimulation of osteoclast activity

C. Stimulates Vitamin D synthesis

D. All are true

Correct answer: D

All are true Parathyroid hormone (PTH) is the principal regulator of calcium homeostasis in the body, and it employs multiple mechanisms to increase serum calcium levels. Firstly, PTH acts directly on bone to stimulate osteoclast activity, which leads to the resorption of bone matrix and the release of calcium and phosphate into the bloodstream. Secondly, PTH acts on the kidneys to increase the reabsorption of calcium in the distal convoluted tubules, thereby reducing urinary calcium excretion. Thirdly, PTH stimulates the renal enzyme 1-alpha-hydroxylase, which is responsible for converting inactive 25-hydroxyvitamin D into its active form, 1,25-dihydroxyvitamin D (calcitriol). Calcitriol then acts on the intestines to significantly increase the absorption of dietary calcium. Since all three of these mechanisms are primary actions of PTH that contribute to elevating blood calcium, all the statements are true.

Question 11. Which component of the nerve fiber provides the motor innervation to the muscle spindle?

A. Alpha

B. Beta

C. Gamma

D. Delta

Correct answer: C

Gamma Muscle spindles are proprioceptive sensory organs within skeletal muscles that detect changes in muscle length and the rate of change in length. While they are primarily sensory, their intrafusal muscle fibers (specialized fibers within the spindle capsule) receive motor innervation to regulate their sensitivity. This motor supply is provided by gamma motor neurons. The axons of gamma motor neurons terminate on the polar ends of the intrafusal fibers, causing them to contract. This contraction stretches the central, non-contractile sensory

region of the spindle, thereby increasing its sensitivity to stretch of the main muscle. In contrast, alpha motor neurons (A) innervate the extrafusal muscle fibers, which are the main force-generating fibers of the muscle. This co-activation of alpha and gamma motor neurons allows the spindle to remain sensitive to stretch across a wide range of muscle lengths.

Question 12. Which of the following statements most accurately explains the mechanism of coughing? 1 Forceful expiration against an open glottis 2 Expiration against an open glottis 3 Deep inspiration against a closed glottis 4 Removing harmful substances.

A. 1,4

B. 1,2,3

C. 2,4

D. 2,3

Correct answer: A

1,4 A cough is a protective reflex that helps clear the airways of irritants, mucus, and foreign particles. The process begins with a deep inspiration, followed by the closure of the glottis. Next, a powerful contraction of the expiratory muscles (abdominal and internal intercostal) builds up high intrathoracic pressure. The final step is the abrupt opening of the glottis, resulting in a forceful expiration that carries material out of the respiratory tract. This action serves the physiological purpose of removing harmful substances from the airways. Statement 2 is incorrect because the expiration is forceful, not passive, and it occurs after the glottis opens, not against an already open glottis. Statement 3 is incorrect as the inspiration phase occurs with an open glottis to allow air entry. BIOCHEMISTRY

Question 13. Glycogen phosphorylase is activated by which of the following?

A. Glucose-6-Phosphate

B. ATP Click Here to Buy book on Amazon page 292 Answer stringent monitoring protocol associated with this drug. Which uncommon adverse effect in patients with schizophrenia taking clozapine requires routine blood monitoring?

C. Agranulocytosis

D. Myocarditis 199.

Correct answer: A

Von Willebrand disease The key information in this scenario is the autosomal dominant inheritance pattern of the bleeding disorder, affecting both males (father) and females (patient and her sister). Von Willebrand disease (vWD) is the most common inherited bleeding disorder, and its most frequent types (Type 1 and Type 2) are inherited in an autosomal dominant fashion. This mode of inheritance is consistent with the family history provided. In contrast, Hemophilia A (Factor VIII deficiency) and Hemophilia B (Christmas disease, Factor IX deficiency) are X-linked recessive disorders, meaning they almost exclusively affect males and are carried

by females. Therefore, it would be highly unusual for a female to be affected, and male-to-male transmission would not occur. Factor X deficiency is typically an autosomal recessive disorder, which would also not fit the described inheritance pattern. 31. Match the given mutation with respective cancers: A. KRAS 1. Myeloproliferative neoplasm B. Kit 2. Adenocarcinoma lung C. JAK 2 3. Pancreatic cancer D. ALK 4. GIST (A) A-3, B-4, C-1, D-2 (B) A-2, B-3, C-4, D-1 (C) A-1, B-3, C-2, D-4 (D) A-2, B-4, C-3, D-1 AAns (A) A-3, B-4, C-1, D-2 This question tests the association between specific genetic mutations and different types of cancer. KRAS mutations are frequently found in several adenocarcinomas, most notably in pancreatic cancer, where they are present in over 90% of cases, and also in colorectal and lung cancers. KIT (also known as c-Kit or CD117) mutations are the defining molecular feature of most Gastrointestinal Stromal Tumors (GIST). The JAK2 V617F mutation is a hallmark of myeloproliferative neoplasms, particularly polycythemia vera, essential thrombocythemia, and primary myelofibrosis. ALK (Anaplastic Lymphoma Kinase) gene rearrangements are found in a subset of patients with non-small cell adenocarcinoma of the lung and are a target for specific inhibitor therapies. Therefore, the correct matches are A-3, B-4, C-1, and D-2. 32. Which stain produces the characteristic brown coloration observed in HER2/neu-positive breast carcinoma cells? (A) FITC (B) Phycoerythrin (C) Cyanate dye (D) Diaminobenzidine (DAB) AAns (D) Diaminobenzidine (DAB) The image shows the result of an immunohistochemistry (IHC) stain, a technique used to detect the presence of specific proteins in tissue sections. For HER2/neu testing in breast cancer, a primary antibody against the HER2 protein is applied to the tissue. This is followed by a secondary antibody linked to an enzyme, most commonly horseradish peroxidase (HRP). To visualize the location of the HRP-linked antibody, a chromogen substrate is added. The most widely used chromogen in this system is 3,3'-Diaminobenzidine (DAB). The HRP enzyme catalyzes the oxidation of DAB, which results in the formation of a permanent, insoluble, dark brown precipitate at the site of the target protein (the HER2 receptor on the cell membrane). FITC and phycoerythrin are fluorescent dyes used in immunofluorescence, not IHC with a light microscope. 33. A patient was evaluated for hepatic cirrhosis and underwent testing for hepatitis B. The results are as follows: • HBsAg: Not reactive • Anti-HBs IgM: Not reactive • Total Anti-HBc: Reactive • HBeAg: Not reactive • Anti-HBe Ab: Not reactive What is the most likely conclusion? (A) Acute HBV window period (B) Chronic Hepatitis B carrier (C) Post-vaccination status (D) Remote infection with complete recovery AAns (D) Remote infection with complete recovery Interpreting hepatitis B serology requires understanding each marker. HBsAg is the surface antigen, indicating current infection. Anti-HBs is the antibody to the surface antigen, indicating immunity from vaccination or recovery. Anti-HBc is the core antibody; IgM indicates acute infection, while total (mostly IgG) indicates past or current infection. In this case, HBsAg is negative, ruling out active chronic infection. Total Anti-HBc is reactive, indicating the patient has been exposed to the virus at some point. However, the patient is Anti-HBs negative. This pattern (HBsAg negative, Anti-HBc positive, Anti-HBs

negative) is most consistent with a remote infection where the level of protective Anti-HBs antibodies has waned over time to undetectable levels. It is less likely to be the window period, as IgM Anti-HBc would be positive. It is not a chronic carrier state because HBsAg is negative. It is not a post-vaccination status, as vaccination only produces Anti-HBs, not Anti-HBc. 34. Which of the following statements about sickle cell anemia is correct? (A) Low mechanical fragility, high osmotic fragility (B) High mechanical fragility, high osmotic fragility (C) Low mechanical fragility, low osmotic fragility (D) High mechanical fragility, Low osmotic fragility AAns (D) High mechanical fragility, Low osmotic fragility Sickle cell anemia is characterized by the presence of hemoglobin S, which polymerizes under low oxygen conditions, causing red blood cells (RBCs) to deform into a rigid, sickle shape. This rigidity makes the cells highly susceptible to damage as they pass through narrow capillaries, leading to a high mechanical fragility and subsequent hemolysis. Osmotic fragility, on the other hand, tests the RBC's ability to withstand hypotonic solutions. Sickled cells are dehydrated and have a decreased surface-area-to-volume ratio. This makes them relatively more resistant to swelling and lysis in hypotonic solutions compared to normal biconcave discs. Therefore, they exhibit low osmotic fragility. This combination of high mechanical fragility (leading to in vivo hemolysis) and low osmotic fragility (an in vitro finding) is a characteristic feature of sickle cell anemia. 35. Identify the structure marked by the arrow in the given image. (A) Respiratory bronchus (B) Terminal bronchioles (C) Alveolar sac (D) Intrapulmonary bronchus AAns (B) Terminal bronchioles The image shows a microscopic view of the lung parenchyma. The arrow is pointing to a small airway that is lined by cuboidal epithelium and lacks cartilage and glands in its wall. This structure is seen leading into the more distal airspaces. This morphology is characteristic of a terminal bronchiole. Terminal bronchioles are the most distal segment of the conducting zone of the respiratory system. They branch into respiratory bronchioles, which are distinguished by the presence of occasional alveoli budding from their walls and mark the beginning of the respiratory zone. An intrapulmonary bronchus would be larger and have cartilage plates and glands in its wall. An alveolar sac is a cluster of alveoli at the end of the respiratory pathway and lacks the distinct bronchiolar epithelium. 36. A 75-year-old woman with type 2 diabetes and hypertension presented with heart failure and subsequently died. A post-mortem cardiac biopsy was obtained, and the histology slide is shown. Based on the features seen, which type of cardiomyopathy is most likely?

Question 14. Hybridoma technology uses which of the following?

A. HMP shunt

B. TCA cycle

C. Purine Salvage pathway

D. Glycolysis

Correct answer: C

Purine Salvage pathway Hybridoma technology is a method for producing large numbers of identical antibodies (monoclonal antibodies). It involves fusing antibody-producing B cells with immortal myeloma (cancerous plasma) cells. A crucial step in this process is the selection of fused hybridoma cells from the unfused myeloma cells. This is accomplished using the HAT medium (Hypoxanthine-Aminopterin-Thymidine). Aminopterin blocks the de novo purine synthesis pathway. This forces the cells to rely on the purine salvage pathway to synthesize nucleotides and survive. The myeloma cells used are specifically chosen because they are deficient in an enzyme of the salvage pathway, hypoxanthine-guanine phosphoribosyltransferase (HGPRT). Therefore, unfused myeloma cells cannot survive in the HAT medium. However, when fused with a B cell, the resulting hybridoma inherits a functional salvage pathway from the B cell and can thus survive and proliferate, allowing for the selection of the desired antibody-producing hybrid cells.

Question 15. Which of the following is not involved in the repair of DNA double-strand breaks?

A. ATP

B. RAD 51

C. ATM

D. Ku 70

Correct answer: A

ATP DNA double-strand breaks (DSBs) are highly cytotoxic lesions that are primarily repaired by two major pathways: non-homologous end joining (NHEJ) and homologous recombination (HR). The proteins listed are key players in these pathways. ATM (Ataxia-Telangiectasia Mutated) is a sensor kinase that detects DSBs and initiates the signaling cascade for repair. Ku70 (along with Ku80) is a critical component of the NHEJ pathway; it binds directly to the broken DNA ends and recruits other repair factors. RAD51 is a central protein in the HR pathway, where it forms a filament on the single-stranded DNA and mediates the search for and invasion of a homologous template sequence. While ATP is required as an energy source for the enzymatic activities of many DNA repair proteins (e.g., kinases, ligases, helicases), it is not a structural or signaling component of the repair machinery itself in the same way as ATM, Ku70, and RAD51. Therefore, it does not directly "contribute" to the repair in a mechanistic sense but rather fuels the process.

Question 16. The active site of an enzyme is mostly complementary to:

A. Allosteric activator

B. Substrate

C. Product

D. Transition state

Correct answer: B

Substrate Although enzymes bind substrates, the active site is most complementary to the transition state, not the substrate itself. According to modern enzyme theory (transition state theory), enzymes catalyze reactions by stabilizing the transition state — the high-energy, unstable intermediate formed during conversion of substrate to product. The active site is shaped and chemically arranged to bind this transition state more tightly than either the substrate or the product. If the active site were perfectly complementary to the substrate, the enzyme would bind the substrate too tightly and would not efficiently convert it into product. Instead, by preferentially stabilizing the transition state, the enzyme lowers the activation energy and speeds up the reaction. Allosteric activators bind at a different regulatory site, not the active site. The product binds less strongly because it must be released after the reaction. Therefore, the active site is most complementary to the transition state, making option (D) correct.

Question 17. Regarding the entry of glucose, which body organ or tissue demonstrates insulin-independent glucose uptake, except for:

A. RBC

B. Pancreas

C. Adipose tissue

D. Brain

Correct answer: C

Adipose tissue Most tissues in the body require insulin for glucose uptake, but some have insulin-independent mechanisms. This question asks to identify the tissue that is insulin-dependent. Adipose tissue and skeletal muscle primarily use the GLUT4 transporter, which is insulin-sensitive. In the presence of insulin, GLUT4 translocates from intracellular vesicles to the cell membrane to facilitate glucose entry. In contrast, red blood cells (RBCs) use GLUT1, the brain uses GLUT1 and GLUT3, and the pancreas (beta-cells) uses GLUT2. All of these transporters (GLUT1, GLUT2, GLUT3) are insulin-independent, meaning they can take up glucose from the blood without the need for insulin signaling. Therefore, adipose tissue is the exception as its glucose uptake is critically dependent on insulin.

Question 18. 2,3-BPG binds to which part of hemoglobin?

A. Central part of hemoglobin

B. Outer part of hemoglobin

C. Heme part of hemoglobin

D. Globin part of hemoglobin

Correct answer: A

Central part of hemoglobin 2,3-Bisphosphoglycerate (2,3-BPG) binds in the central cavity of deoxyhemoglobin, between the two β -chains of the hemoglobin tetramer. This central pocket is present in the T (tense) state of hemoglobin. 2,3-BPG is negatively charged and interacts with

positively charged amino acid residues (such as lysine and histidine) located in the central region of the globin chains. By binding in this cavity, 2,3-BPG stabilizes the T-state of hemoglobin, thereby reducing its affinity for oxygen and promoting oxygen release to tissues. It does not bind to the heme portion directly. Instead, it binds to the globin chains within the central cavity, not on the outer surface. Thus, the binding site of 2,3-BPG is the central part of hemoglobin, making option (A) correct. PATHOLOGY

Question 19. A 47-year-old man produces only 400 mL of urine in 24 hours. Histology shows rapidly progressive glomerulonephritis (RPGN) with pauci-immune features and crescent formation. What is the most probable underlying cause?

A. Anti-GBM (Anti-Glomerular Basement Membrane)

B. ANCA (Anti-Neutrophil Cytoplasmic Antibody)

C. Anti-PLA2R (Anti-Phospholipase A2 Receptor)

D. ANA (Anti-Nuclear Antibody)

Correct answer: B

ANCA (Anti-Neutrophil Cytoplasmic Antibody) Rapidly progressive glomerulonephritis (RPGN) is characterized histologically by extensive crescent formation in the glomeruli. RPGN is classified based on immunofluorescence findings into three types. Type I is caused by anti-GBM antibodies (e.g., Goodpasture syndrome). Type II is immune complex-mediated (e.g., lupus nephritis). Type III is termed "pauci-immune," meaning there is a lack of significant immunoglobulin or complement deposition. Pauci-immune RPGN is strongly associated with the presence of Anti-Neutrophil Cytoplasmic Antibodies (ANCA). This category includes diseases like granulomatosis with polyangiitis (formerly Wegener's) and microscopic polyangiitis. Anti-GBM disease would show linear IgG deposits. Anti-PLA2R antibodies are associated with primary membranous nephropathy, not RPGN. ANA is seen in lupus nephritis, which is an immune-complex (Type II) RPGN, not pauci-immune.

Question 20. Following class switching, a specific antibody class is generated, yet IgM and IgD continue to be co-expressed. Which mechanism accounts for this?

A. Allelic exclusion

B. Alternate RNA splicing

C. Somatic hypermutation

D. Affinity maturation

Correct answer: B

Alternate RNA splicing Naive mature B cells, before encountering an antigen, co-express both IgM and IgD on their surface. This is not a result of class switching, which is a later, irreversible DNA recombination event that changes the constant region of the heavy chain. Instead, the co-expression of IgM and IgD is achieved through alternate RNA splicing. A single long primary RNA transcript is synthesized, which contains the variable region (VDJ) along with the constant

regions for both the mu (μ for IgM) and delta (δ for IgD) heavy chains. This primary transcript is then processed in two different ways. Depending on which polyadenylation sites are used and how the RNA is spliced, either the Cμ or the C δ segment is joined to the VDJ segment, resulting in mature mRNAs that code for either IgM or IgD heavy chains, respectively. Allelic exclusion, somatic hypermutation, and affinity maturation are other important processes in B cell development but are not responsible for this specific co-expression.

Question 21. A patient shows reduced serum transferrin saturation. What is the most probable underlying condition?

A. Iron Deficiency Anemia

B. Hemochromatosis

C. Sideroblastic anemia

D. Pernicious anemia

Correct answer: A

Iron Deficiency Anemia Transferrin saturation is a key laboratory parameter used to assess iron status. It is calculated as (Serum Iron / Total Iron-Binding Capacity) × 100%. In Iron Deficiency Anemia (IDA), the body's iron stores are depleted. This leads to a low serum iron level. Simultaneously, the liver increases the production of transferrin (the protein that transports iron), leading to a high Total Iron-Binding Capacity (TIBC). The combination of low serum iron and high TIBC results in a significantly low transferrin saturation percentage, often below 15%. In contrast, conditions of iron overload like hemochromatosis would show a high transferrin saturation. Sideroblastic anemia can have normal or high saturation because iron is available but cannot be properly incorporated into heme. Pernicious anemia is a type of vitamin B12 deficiency anemia and does not directly affect iron saturation levels in this manner.

Question 22. A 26-year-old woman presents with a bleeding disorder inherited in an autosomal dominant pattern, with both her father and sister affected. What is the most likely diagnosis?

A. Von Willebrand disease

B. Hemophilia A

C. Christmas disease

D. Factor X deficiency

Correct answer: A

Von Willebrand disease The key information in this scenario is the autosomal dominant inheritance pattern of the bleeding disorder, affecting both males (father) and females (patient and her sister). Von Willebrand disease (vWD) is the most common inherited bleeding disorder, and its most frequent types (Type 1 and Type 2) are inherited in an autosomal dominant fashion. This mode of inheritance is consistent with the family history provided. In contrast, Hemophilia A (Factor VIII deficiency) and Hemophilia B (Christmas disease, Factor IX deficiency)

are X-linked recessive disorders, meaning they almost exclusively affect males and are carried by females. Therefore, it would be highly unusual for a female to be affected, and male-to-male transmission would not occur. Factor X deficiency is typically an autosomal recessive disorder, which would also not fit the described inheritance pattern.

Question 23. Match the given mutation with respective cancers: A. KRAS 1. Myeloproliferative neoplasm B. Kit 2. Adenocarcinoma lung C. JAK 2 3. Pancreatic cancer D. ALK 4. GIST

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

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

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

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

Correct answer: A

A-3, B-4, C-1, D-2 This question tests the association between specific genetic mutations and different types of cancer. KRAS mutations are frequently found in several adenocarcinomas, most notably in pancreatic cancer, where they are present in over 90% of cases, and also in colorectal and lung cancers. KIT (also known as c-Kit or CD117) mutations are the defining molecular feature of most Gastrointestinal Stromal Tumors (GIST). The JAK2 V617F mutation is a hallmark of myeloproliferative neoplasms, particularly polycythemia vera, essential thrombocythemia, and primary myelofibrosis. ALK (Anaplastic Lymphoma Kinase) gene rearrangements are found in a subset of patients with non-small cell adenocarcinoma of the lung and are a target for specific inhibitor therapies. Therefore, the correct matches are A-3, B-4, C-1, and D-2.

Question 24. A patient was evaluated for hepatic cirrhosis and underwent testing for hepatitis B. The results are as follows: • HBsAg: Not reactive • Anti-HBs IgM: Not reactive • Total Anti-HBc: Reactive • HBeAg: Not reactive • Anti-HBe Ab: Not reactive What is the most likely conclusion?

A. Acute HBV window period

B. Chronic Hepatitis B carrier

C. Post-vaccination status

D. Remote infection with complete recovery

Correct answer: D

Remote infection with complete recovery Interpreting hepatitis B serology requires understanding each marker. HBsAg is the surface antigen, indicating current infection. Anti-HBs is the antibody to the surface antigen, indicating immunity from vaccination or recovery. Anti-HBc is the core antibody; IgM indicates acute infection, while total (mostly IgG) indicates past or current infection. In this case, HBsAg is negative, ruling out active chronic infection. Total Anti-HBc is reactive, indicating the patient has been exposed to the virus at some point.

However, the patient is Anti-HBs negative. This pattern (HBsAg negative, Anti-HBc positive, Anti-HBs negative) is most consistent with a remote infection where the level of protective Anti-HBs antibodies has waned over time to undetectable levels. It is less likely to be the window period, as IgM Anti-HBc would be positive. It is not a chronic carrier state because HBsAg is negative. It is not a post-vaccination status, as vaccination only produces Anti-HBs, not Anti-HBc.

Question 25. Which of the following statements about sickle cell anemia is correct?

A. Low mechanical fragility, high osmotic fragility

B. High mechanical fragility, high osmotic fragility

C. Low mechanical fragility, low osmotic fragility

D. High mechanical fragility, Low osmotic fragility

Correct answer: D

High mechanical fragility, Low osmotic fragility Sickle cell anemia is characterized by the presence of hemoglobin S, which polymerizes under low oxygen conditions, causing red blood cells (RBCs) to deform into a rigid, sickle shape. This rigidity makes the cells highly susceptible to damage as they pass through narrow capillaries, leading to a high mechanical fragility and subsequent hemolysis. Osmotic fragility, on the other hand, tests the RBC's ability to withstand hypotonic solutions. Sickled cells are dehydrated and have a decreased surface-area-to-volume ratio. This makes them relatively more resistant to swelling and lysis in hypotonic solutions compared to normal biconcave discs. Therefore, they exhibit low osmotic fragility. This combination of high mechanical fragility (leading to in vivo hemolysis) and low osmotic fragility (an in vitro finding) is a characteristic feature of sickle cell anemia.

Question 26. Following an orchidectomy, the specimen reveals the presence of Reinke’s crystals. What is the most probable diagnosis?

A. Seminoma

B. Leydig Cell Tumor

C. Metastasis

D. Yolk Sac Tumor

Correct answer: B

Leydig Cell Tumor Reinke's crystals are distinctive, eosinophilic, rod-shaped or rhomboid cytoplasmic inclusions. Their presence is a pathognomonic histological feature of a Leydig cell tumor. Leydig cells are the testosterone-producing cells of the testes, and tumors arising from them are a type of sex cord-stromal tumor. These tumors can be hormonally active, leading to symptoms of androgen excess like precocious puberty in children or gynecomastia in adults. While not present in all Leydig cell tumors, when Reinke's crystals are identified, they are diagnostic. They are not found in germ cell tumors like seminoma or yolk sac tumor, nor are they a feature of metastatic tumors to the testis.

Question 27. Decreased % transferrin saturation is seen in?

A. Hemochromatosis

B. Iron deficiency anemia

C. Megaloblastic anemia

D. Hemosiderosis

Correct answer: B

Iron deficiency anemia Transferrin saturation is a key laboratory parameter used to assess iron status. It is calculated as (Serum Iron / Total Iron-Binding Capacity) × 100%. In Iron Deficiency Anemia (IDA), the body's iron stores are depleted. This leads to a low serum iron level. Simultaneously, the liver increases the production of transferrin (the protein that transports iron), leading to a high Total Iron-Binding Capacity (TIBC). The combination of low serum iron and high TIBC results in a significantly low transferrin saturation percentage, often below 15%. In contrast, conditions of iron overload like hemochromatosis and hemosiderosis would show a high transferrin saturation. Megaloblastic anemia is a type of vitamin B12 or folate deficiency anemia and does not directly affect iron saturation levels in this manner. PHARMACOLOGY

Question 28. Which recently approved anti-diabetic medication is indicated for patients who have heart failure with reduced ejection fraction and decreased urine output?

A. Linagliptin

B. Empagliflozin

C. Pioglitazone

D. Degludec

Correct answer: B

Empagliflozin Empagliflozin is a sodium-glucose co-transporter 2 (SGLT2) inhibitor. Initially developed for treating type 2 diabetes, large cardiovascular outcome trials (like the EMPA-REG OUTCOME trial) have demonstrated significant benefits for patients with heart failure, including those with reduced ejection fraction (HFrEF). SGLT2 inhibitors have been shown to reduce the risk of cardiovascular death and hospitalization for heart failure, independent of their glucose-lowering effects. Their mechanism includes promoting osmotic diuresis (hence beneficial for fluid overload in heart failure) and other favorable hemodynamic and metabolic effects. Linagliptin is a DPP-4 inhibitor, Pioglitazone is a thiazolidinedione (which can worsen heart failure), and Degludec is a long-acting insulin analog; none of these have the specific approved indication and proven benefit for HFrEF that SGLT2 inhibitors like empagliflozin have.

Question 29. Which antigen is present in the HPV vaccine?

A. E1+E2

B. E6+E7

C. L1

D. L2

Correct answer: C

L1 The currently available prophylactic HPV vaccines (Gardasil, Cervarix) are based on virus-like particles (VLPs) that are produced by recombinant DNA technology. These VLPs are composed of the L1 major capsid protein of the human papillomavirus. The L1 proteins have the ability to self-assemble into particles that mimic the structure of the native HPV virion but are non-infectious because they contain no viral DNA. This structure is highly immunogenic, inducing a strong and durable neutralizing antibody response that prevents the virus from infecting host cells. The E6 and E7 proteins are the viral oncogenes responsible for carcinogenesis but are not used in the prophylactic vaccine. The L2 protein is a minor capsid protein and is a target for next-generation vaccines but is not the primary antigen in current vaccines.

Question 30. Which drug exerts its effect by inhibiting ATP- binding cassette (ABC) transporters?

A. Nifedipine

B. Diltiazem

C. Tacrolimus

D. Verapamil

Correct answer: D

Verapamil ATP-binding cassette (ABC) transporters are a family of transmembrane proteins that transport various substrates across cell membranes. One of the most well-known is P-glycoprotein (P-gp), encoded by the ABCB1 gene, which functions as an efflux pump that can extrude drugs from cells, contributing to multidrug resistance in cancer. Certain drugs can inhibit the function of these transporters. Verapamil, a calcium channel blocker, is a well-known inhibitor of P-glycoprotein. By blocking the efflux pump, verapamil can increase the intracellular concentration of other drugs that are P-gp substrates, which has been studied as a strategy to overcome chemotherapy resistance. While nifedipine and diltiazem are also calcium channel blockers, verapamil is the most classic and potent inhibitor of P-gp among the options. Tacrolimus is an immunosuppressant and is a substrate, not an inhibitor, of P-gp.

Question 31. A patient presents with exertional and nocturnal breathlessness, fatigue, cardiomegaly, pedal edema, a gallop rhythm on examination, and bilateral lung rales. Based on these findings, which medication is best suited to slow the progression of the disease?

A. Furosemide

B. Digoxin

C. Captopril

D. Carvedilol

Correct answer: C

Captopril The patient's symptoms are classic for congestive heart failure with reduced ejection fraction. While furosemide (a diuretic) is essential for relieving symptoms of fluid overload (edema, dyspnea), it does not halt the progression of the disease. Similarly, digoxin can improve symptoms and reduce hospitalizations but does not have a proven mortality benefit. The cornerstones of therapy that have been proven to halt disease progression and reduce mortality in HFrEF are drugs that modulate the neurohormonal system, primarily the renin-angiotensin-aldosterone system (RAAS) and the sympathetic nervous system. Captopril, an ACE inhibitor, blocks the RAAS, leading to reduced vasoconstriction, decreased aldosterone levels, and prevention of adverse cardiac remodeling. Beta-blockers like carvedilol also improve survival but are typically initiated after the patient is stable on an ACE inhibitor.

Question 32. Which of the following is the disadvantage of oxcarbazepine over carbamazepine?

A. Hepatotoxicity

B. Stevens-Johnson syndrome

C. Thrombocytopenia

D. Dilutional hyponatremia

Correct answer: D

Dilutional hyponatremia Oxcarbazepine is a structural analog of carbamazepine, another antiepileptic drug. While oxcarbazepine is generally better tolerated, with a lower incidence of severe side effects like hepatotoxicity and skin reactions (Stevens-Johnson syndrome), it has one notable disadvantage. Oxcarbazepine is associated with a significantly higher incidence of dilutional hyponatremia (low blood sodium levels) compared to carbamazepine. This is thought to be due to an increased sensitivity of the renal tubules to antidiuretic hormone (ADH), leading to water retention and dilution of serum sodium. This side effect is particularly important to monitor in elderly patients or those on other medications that can affect sodium balance, such as diuretics. Thrombocytopenia is a potential side effect of both drugs, but not a specific disadvantage of oxcarbazepine.

Question 33. All of the following drugs are used in thyroid storm except?

A. Propranolol

B. Lugol's Iodine

C. Propylthiouracil

D. Aspirin

Correct answer: D

Aspirin Thyroid storm is a life-threatening hypermetabolic state caused by excessive release of thyroid hormones. Management involves a multi-pronged approach. Beta-blockers like propranolol are used to control the adrenergic symptoms (tachycardia, tremor). Thionamides

like propylthiouracil (PTU) or methimazole are used to block the synthesis of new thyroid hormones. Iodine solutions, such as Lugol's iodine or potassium iodide, are given at least one hour after the thionamide to block the release of pre-formed hormone from the thyroid gland (Wolff-Chaikoff effect). Corticosteroids are also used to reduce peripheral conversion of T4 to T3 and treat potential adrenal insufficiency. Aspirin, however, is contraindicated. Aspirin can displace thyroid hormone from its binding proteins, which can paradoxically increase the levels of free, active thyroid hormone in the circulation and worsen the storm. Acetaminophen is the preferred antipyretic.

Question 34. A patient presents with purpura and is found to have isolated thrombocytopenia. Which tyrosine kinase inhibitor is used to treat isolated thrombocytopenia?

A. Oprelvekin

B. Fostamatinib

C. Eltrombopag

D. Romiplostim

Correct answer: B

Fostamatinib The question asks for a tyrosine kinase inhibitor used for isolated thrombocytopenia, such as Immune Thrombocytopenia (ITP). Fostamatinib is an oral spleen tyrosine kinase (Syk) inhibitor. In ITP, antibody-coated platelets are destroyed by macrophages in the spleen. This process is mediated by Fc γ receptors on the macrophages, and Syk is a critical signaling molecule downstream of these receptors. By inhibiting Syk, fostamatinib blocks this pathway of platelet destruction, leading to an increase in platelet count. In contrast, eltrombopag and romiplostim are thrombopoietin (TPO) receptor agonists; they work by stimulating platelet production in the bone marrow, not by inhibiting a tyrosine kinase. Oprelvekin is a recombinant form of IL-11 that also stimulates platelet production but is not a TKI.

Question 35. Which of the following antimicrobial drug– mechanism pairs is incorrectly matched?

A. Linezolid: Binds to 30S ribosome and inhibits protein synthesis

B. Rifampicin: Inhibits DNA dependent RNA polymerase

C. Aztreonam: Inhibit cell wall synthesis

D. Daptomycin: Cause depolarization of membranes

Correct answer: A

Linezolid: Binds to 30S ribosome and inhibits protein synthesis Linezolid is an oxazolidinone antibiotic that inhibits bacterial protein synthesis. However, its mechanism is unique. It binds to the 23S ribosomal RNA of the 50S subunit, preventing the formation of a functional 70S initiation complex. The statement that it binds to the 30S ribosome is incorrect;

aminoglycosides and tetracyclines bind to the 30S subunit. The other options are correctly matched. Rifampicin is a rifamycin that inhibits bacterial DNA-dependent RNA polymerase, blocking transcription. Aztreonam is a monobactam, a class of beta-lactam antibiotics, that inhibits cell wall synthesis by binding to penicillin-binding proteins. Daptomycin is a cyclic lipopeptide that inserts into the bacterial cell membrane, causing rapid depolarization and subsequent cell death.

Question 36. Which drug shows intrinsic resistance?

A. Fluconazole - Candida glabrata and Candida krusei

B. Itraconazole - Sporothrix

C. Voriconazole - Aspergillus fumigatus

D. Amphotericin B - Candida glabrata

Correct answer: A

Fluconazole - Candida glabrata and Candida krusei Intrinsic resistance refers to a naturally occurring resistance of a microorganism to a particular antimicrobial agent. Among the options, Candida krusei is intrinsically resistant to fluconazole, a commonly used azole antifungal. Candida glabrata often exhibits dose-dependent resistance or acquired resistance, but it is well-known for being less susceptible to fluconazole than Candida albicans. This makes the pairing in option A the best example of intrinsic or near-intrinsic resistance. In contrast, itraconazole is a drug of choice for sporotrichosis. Voriconazole is the primary treatment for invasive aspergillosis caused by Aspergillus fumigatus. While resistance can develop, it is not considered intrinsic. Amphotericin B has a broad spectrum of activity, and while some isolates of C. glabrata may be less susceptible, it is not a classic example of intrinsic resistance.

Question 37. A patient who has been taking ampicillin now develops diarrhea. Which medication is the treatment of choice for this condition?

A. Oral metronidazole

B. Oral fidaxomicin

C. Oral ciprofloxacin

D. Bezlotoxumab

Correct answer: A

Oral metronidazole Antibiotic-associated diarrhea is a common side effect, often caused by the overgrowth of Clostridioides difficile (formerly Clostridium difficile). For an initial, non-severe episode of C. difficile infection (CDI), the traditional drug of choice has been oral metronidazole or oral vancomycin. While recent guidelines often favor oral vancomycin or fidaxomicin for all severities due to better efficacy, oral metronidazole remains a viable and often-used first-line agent for mild-to-moderate initial episodes, especially in resource-limited settings. Fidaxomicin is a narrow-spectrum antibiotic typically reserved for severe CDI or recurrent episodes due to its high cost. Ciprofloxacin is a fluoroquinolone and is actually a common cause of CDI, so it

would not be used for treatment. Bezlotoxumab is a monoclonal antibody used to prevent recurrence of CDI, not for treating an active infection.

Question 38. A young patient receiving therapy for multidrug- resistant tuberculosis develops weight gain, cold intolerance, and lethargy. Lab results show high TSH with low T3 and T4 levels. Which drug in the MDR-TB regimen is most likely causing these symptoms?

A. Cycloserine

B. Ethionamide

C. Streptomycin

D. Pyrazinamide

Correct answer: B

Ethionamide The patient's clinical symptoms (weight gain, cold intolerance, lethargy) and laboratory findings (high TSH, low T3/T4) are classic for primary hypothyroidism. Several second-line anti-tuberculosis drugs can cause this side effect. Ethionamide and prothionamide are well-known to cause hypothyroidism by inhibiting thyroid hormone synthesis, similar to the action of thionamide drugs used to treat hyperthyroidism. This adverse effect occurs in a significant number of patients on long-term therapy. Para-aminosalicylic acid (PAS) is another anti-TB drug that can cause hypothyroidism. Cycloserine is associated with neuropsychiatric side effects. Streptomycin is an aminoglycoside known for ototoxicity and nephrotoxicity. Pyrazinamide can cause hyperuricemia and hepatotoxicity. Therefore, ethionamide is the most likely culprit for the patient's hypothyroidism.

Question 39. Which of the following protease inhibitors can cause altered mental status, headache, and intracranial bleed?

A. Tenofovir

B. Saquinavir

C. Tipranavir

D. Darunavir

Correct answer: C

Tipranavir Tipranavir is a non-peptidic protease inhibitor used in antiretroviral therapy for HIV. It carries a specific black box warning from the FDA regarding the risk of both fatal and non-fatal intracranial hemorrhage. Patients taking tipranavir have shown an increased risk of this serious adverse event, and the mechanism is not fully understood but may relate to effects on platelet function or vascular integrity. This risk is a distinguishing feature compared to other protease inhibitors. While other protease inhibitors like saquinavir and darunavir have their own side effect profiles, they are not specifically associated with this high risk of intracranial bleeding. Tenofovir is a nucleotide reverse transcriptase inhibitor, not a protease inhibitor, and is primarily associated with renal toxicity and bone mineral density loss.

Question 40. Which chelation therapy is used to prevent doxorubicin-induced cardiotoxicity?

A. Aprepitant

B. Deferoxamine

C. Amifostine

D. Dexrazoxane

Correct answer: D

Dexrazoxane Doxorubicin, a potent anthracycline chemotherapeutic agent, is known for its dose-dependent cardiotoxicity. This toxicity is mediated primarily through the generation of reactive oxygen species via iron-catalyzed reactions. Dexrazoxane is a cardioprotective agent specifically approved to prevent this complication. It is a cyclic derivative of EDTA and acts as an intracellular iron-chelating agent. By binding to free iron within cardiac cells, dexrazoxane prevents the formation of the iron-doxorubicin complex, which is responsible for the production of harmful free radicals that damage myocyte mitochondria and membranes. Deferoxamine (B) is another iron chelator but is used for systemic iron overload, not specifically for doxorubicin toxicity prevention. Aprepitant (A) is an antiemetic used to prevent chemotherapy-induced nausea. Amifostine (C) is a cytoprotective agent used to reduce renal toxicity from cisplatin and xerostomia from radiation therapy. FORENSIC MEDICINE

Question 41. Which of the following substances was the East India Company smuggling to China in the 18th century?

A. Opium

B. Cannabis

C. Lysergic acid diethylamide (LSD)

D. Cocaine

Correct answer: A

Opium In the 18th and 19th centuries, the British East India Company engaged in a large-scale trade of opium, which was cultivated in British-controlled India, and smuggled it into China. This trade was established to reverse a significant trade imbalance, as Britain had a high demand for Chinese goods like tea, silk, and porcelain, but China had little demand for British goods. The widespread opium addiction that resulted in China led to social and economic disruption. The Chinese government's attempts to suppress the illegal opium trade, including the seizure and destruction of large quantities of opium, culminated in the First and Second Opium Wars with Great Britain. These conflicts resulted in treaties that were highly unfavorable to China, forcing it to open ports and cede Hong Kong. Cannabis, LSD, and cocaine were not part of this specific historical trade conflict.

Question 42. Identify the option that does not correspond to grievous hurt according to Section 320 of the Indian Penal Code (IPC)?

A. Emasculation

B. Fracture of femur

C. Permanent privation of hearing

D. 7 days hospital admission

Correct answer: D

7 days hospital admission Section 320 of the Indian Penal Code (IPC) defines "grievous hurt" through eight specific categories of injury. These include emasculation (A), permanent privation of the sight of either eye, permanent privation of the hearing of either ear (C), privation of any member or joint, permanent impairment of the powers of any member or joint, permanent disfiguration of the head or face, fracture or dislocation of a bone or tooth (B), and any hurt that endangers life or which causes the sufferer to be, during the space of twenty days, in severe bodily pain, or unable to follow their ordinary pursuits. The option of 7 days hospital admission does not meet the eighth criterion, which specifies a period of twenty days of severe pain or inability to perform ordinary activities. Therefore, while it may indicate a significant injury, it does not, by itself, legally constitute grievous hurt under the IPC.

Question 43. What causes the blackening around a gunshot entry wound?

A. Smoke particles

B. Unburned gunpowder

C. Muzzle of firearm

D. Fire effect

Correct answer: A

Smoke particles The characteristics of a gunshot entry wound vary depending on the range of fire. When a firearm is discharged at close range (but not in direct contact), several elements are expelled from the muzzle along with the bullet. The blackening (also called soiling or smudging) seen around the entry wound is caused by the deposition of fine smoke particles (soot) from the combustion of the gunpowder. This soot can typically be wiped away. In contrast, unburned or partially burned gunpowder particles (B) cause "tattooing" or "stippling," which are small punctate abrasions that cannot be wiped away as they are embedded in the skin. The fire effect (D), or searing from the flame, is only seen in contact or very close-range shots. A muzzle imprint (C) is a patterned abrasion seen only in hard-contact wounds, where the muzzle is pressed firmly against the skin.

Question 44. A 13-year-old girl arrives at the OPD with her mother, complaining of abdominal pain, and her urine pregnancy test comes back positive. As the medical officer, what should be your first step?

A. Start physical examination

B. Inform the police

C. Take consent from the patient's mother

D. Preserve the patient's clothes

Correct answer: B

Inform the police In India, the age of consent for sexual activity is 18 years. Sexual intercourse with a minor below this age, even if consensual, is considered statutory rape under the Protection of Children from Sexual Offences (POCSO) Act, 2012. A positive pregnancy test in a 13-year-old girl is definitive evidence that sexual activity has occurred. The POCSO Act mandates that any person, including a medical officer, who has an apprehension that a child is a victim of a sexual offense must report it to the Special Juvenile Police Unit or the local police. This reporting is a legal and mandatory obligation. Therefore, the first and most critical step is to inform the police. While taking consent (C) and performing a physical examination (A) are parts of medical management, the legal duty to report under POCSO takes precedence and must be initiated immediately.

Question 45. Cadaveric spasm is seen in all except? NODIA MEDINK 71. Which of the following viruses needs reverse transcription for PCR?

A. RSV

B. EBV

C. CMV

D. Adenovirus

Correct answer: A

RSV Polymerase Chain Reaction (PCR) is a technique used to amplify a segment of DNA. Standard PCR can only work with a DNA template. When the starting genetic material is RNA, an initial step of reverse transcription is required to convert the RNA into complementary DNA (cDNA). This cDNA then serves as the template for the PCR amplification. The combined technique is called Reverse Transcriptase PCR (RT-PCR). The question asks which virus requires this process. We need to identify the RNA virus among the options. Respiratory Syncytial Virus (RSV) is a single-stranded RNA virus. Therefore, to detect it using PCR, its RNA genome must first be reverse-transcribed into cDNA. The other viruses listed—Epstein-Barr Virus (EBV), Cytomegalovirus (CMV), and Adenovirus—are all DNA viruses. Their DNA genomes can be directly amplified by standard PCR without the need for a reverse transcription step. 72. A patient has had a fever for 3 days, and CBC shows a platelet count below 90,000. Dengue is suspected. Which of the following tests cannot be performed on day 3 of illness? (A) PCR (B) NS1 (C) IgM ELISA (D) Xenodiagnosis using culture in Aedes mosquito AAns (C) IgM ELISA During a primary dengue infection, the virus and viral components are detectable first, followed by the host's immune response. On day 3 of the illness, the patient is typically in the acute viremic phase. During this time, the dengue virus itself can be detected, so methods like PCR (which detects viral RNA) would be positive. The dengue NS1 antigen is a viral non-structural protein that is secreted into the blood during active infection and is detectable from day 1 up to

day 9. Xenodiagnosis, though not a routine clinical test, would also be possible as the mosquito could become infected by feeding on the viremic patient. In contrast, the host's antibody response takes time to develop. IgM antibodies, which are detected by ELISA, usually do not appear until day 4-5 of the illness and then rise to detectable levels. Therefore, on day 3, an IgM ELISA is the least likely test to be positive. 73. The HIV genome needs which of the following to enter the membrane? (A) GP120 (B) CCR5 (C) GP41 (D) CXCR4 AAns (A) GP120 The entry of HIV into a host cell is a multi-step process mediated by its envelope glycoproteins. The process is initiated by the binding of the viral surface glycoprotein, gp120, to the primary CD4 receptor on the surface of the target cell (like a T-helper cell). This initial binding induces a conformational change in gp120, which then allows it to bind to a second receptor, a chemokine co-receptor, which is either CCR5 or CXCR4. This co-receptor binding triggers another conformational change, exposing the fusion peptide of the transmembrane glycoprotein, gp41. The gp41 then inserts into the host cell membrane and mediates the fusion of the viral and cellular membranes, allowing the viral capsid to enter the cytoplasm. Therefore, while all listed components are involved, the initial binding step that is essential for entry is the interaction of gp120 with the CD4 receptor. 74. A patient who recovered from COVID-19 and received steroid therapy now presents, after 3 weeks, with nasal discharge. The image shows a fungal organism. What is the most probable diagnosis? (A) Mucor (B) Aspergillus (C) Candida (D) Trichosporon AAns (A) Mucor The clinical scenario of a patient recovering from COVID-19, particularly one treated with corticosteroids, developing invasive sino-orbital or sino-cerebral fungal infection is highly characteristic of mucormycosis. The image likely shows broad, ribbon-like, irregularly branched, and paucisepta te (or non-septate) hyphae, which are the classic microscopic features of fungi belonging to the order Mucorales (e.g., Rhizopus, Mucor). COVID-19 infection, diabetes, and corticosteroid use are major risk factors that create an ideal environment for this opportunistic fungus to invade. In contrast, Aspergillus typically shows thinner, septate hyphae with acute-angle branching. Candida usually presents as yeast cells and pseudohyphae. Trichosporon also forms hyphae and arthroconidia but is a less common cause of such aggressive rhinocerebral infections. 75. Which bacterial toxin exerts its effect by inhibiting the activity of elongation factor-2 (EF-2)? (A) Diphtheria (B) Clostridium (C) Bacillus (D) Vibrio AAns (A) Diphtheria Diphtheria toxin, produced by Corynebacterium diphtheriae, and Exotoxin A, produced by Pseudomonas aeruginosa, both act by the same mechanism: they inhibit protein synthesis in eukaryotic cells. The A-subunit of these toxins catalyzes the ADP-ribosylation of eukaryotic Elongation Factor 2 (eEF-2). EF-2 is essential for the translocation step of protein synthesis on the ribosome, where it facilitates the movement of the ribosome along the mRNA strand. By attaching an ADP-ribose group to a specific diphthamide residue on EF-2, the toxin inactivates it. This irreversible inactivation halts polypeptide chain elongation, leading to the cessation of all protein synthesis and subsequent cell death. The toxins produced by Clostridium, Bacillus, and Vibrio species have different mechanisms, such as acting as

proteases, adenylate cyclase activators, or pore-forming toxins. 76. Which of the following is/ are an advantage(s) of a saline mount compared to an iodine mount? 1 Motility of trophozoites 2 Internal structure of cysts 3 Differentiate bile-stained vs non-bile stained (A) 1 (B) 1 and 3 (C) 2 and 3 (D) 1,2 and 3 AAns (B) 1 and 3 A saline mount is commonly used in stool microscopy for the detection of intestinal parasites. Compared to an iodine mount, it has certain advantages. 1 Motility of trophozoites – This is a major advantage of saline mount. It allows observation of the characteristic motility of protozoan trophozoites (e.g., Entamoeba histolytica, Giardia), which is essential for diagnosis. Iodine mount kills the organisms, so motility cannot be appreciated. 2 Internal structure of cysts – This is better visualized with iodine mount, not saline. Iodine enhances nuclear detail and glycogen mass in cysts. 3 Differentiation of bile-stained vs non-bile-stained eggs – Saline mount helps identify natural color differences (e.g., bile-stained ova like Ascaris vs non-bile-stained ova like hookworm). Iodine may obscure natural coloration. Thus, advantages of saline mount over iodine mount are motility of trophozoites and differentiation of bile-stained vs non-bile-stained eggs, making option (B) correct. 77. Identify the organism and staining (A) Nocardia and acid-fast stain (B) Streptococcus and gram stain (C) Cryptococcus and India ink (D) Coccidioidomycosis and PAS stain AAns (A) Nocardia and acid-fast stain The image displays filamentous, branching rods. This morphology is characteristic of Actinomycetes, which includes both Nocardia and Actinomyces. A key distinguishing feature is their staining property. Nocardia species contain mycolic acids in their cell walls, similar to Mycobacteria, which makes them partially acid-fast. They will stain positive (appearing red/pink) with a modified acid-fast stain (e.g., modified Kinyoun or Ziehl-Neelsen). Streptococcus appears as Gram-positive cocci in chains. Cryptococcus is a yeast that is typically visualized with an India ink stain, which highlights its prominent polysaccharide capsule as a clear halo against a dark background. Coccidioidomycosis is caused by a dimorphic fungus, appearing as large spherules containing endospores in tissue, which stain well with PAS or GMS stains. The image's appearance is most consistent with Nocardia stained to show its acid-fast properties. 78. What is the most probable diagnosis in an HIV patient who develops a white patch on the tongue or buccal mucosa that does not scrape off? (A) EBV (B) Candida (C) HSV (D) HHV8 AAns (A) EBV The clinical description of a white, corrugated or "hairy" patch, typically on the lateral borders of the tongue, that cannot be scraped off is the classic presentation of Oral Hairy Leukoplakia (OHL). This condition is an opportunistic infection strongly associated with immunosuppression, particularly in HIV-infected individuals. The causative agent of OHL is the Epstein-Barr virus (EBV). In contrast, oral candidiasis (thrush), caused by Candida (B), typically presents as creamy white plaques that can be scraped off, often leaving an erythematous base. Herpes Simplex Virus (HSV) (C) causes painful vesicles and ulcers. Human Herpesvirus 8 (HHV-8) (D) is associated with Kaposi's sarcoma, which appears as purplish vascular nodules. Therefore, the inability to scrape off the lesion is a key feature pointing to OHL caused by EBV. 79. Which organism shows movement transcellularly by actin filaments?

(A) Listeria

Question 46. A patient presents with altered sensorium, hypotension, and constricted pinpoint pupils. Which of the following is most likely responsible for the poisoning?

A. Opioids

B. Datura

C. Cocaine

D. Amphetamine

Correct answer: A

Opioids The clinical triad of central nervous system depression (altered sensorium), respiratory depression (which can lead to hypotension), and pupillary constriction (miosis or "pinpoint pupils") is the classic toxidrome for opioid poisoning. Opioids like morphine, heroin, and fentanyl stimulate the Edinger-Westphal nucleus, leading to parasympathetic activation and profound pupillary constriction. In contrast, poisoning with anticholinergic substances like Datura (B) causes mydriasis (dilated pupils), tachycardia, and dry skin. Sympathomimetic agents like cocaine (C) and amphetamine (D) also cause mydriasis, along with hypertension, tachycardia, and psychomotor agitation. Therefore, the presence of constricted pinpoint pupils is a key diagnostic feature that strongly points towards opioid toxicity as the cause of the patient's presentation.

Question 47. Which of the following injuries is not commonly associated with a patient presenting after a road traffic accident (RTA)?

A. Contusion

B. Abrasions

C. Laceration

D. Chop wound

Correct answer: D

Chop wound Road traffic accidents (RTAs) can cause a wide variety of blunt and sharp force injuries. Abrasions (grazes or scrapes), contusions (bruises), and lacerations (tears or splits in the skin) are extremely common due to the impact with the vehicle, the road surface, or other objects. These are all typical blunt force injuries. A chop wound, however, is a distinct type of injury caused by a heavy weapon with a sharp cutting edge, such as an axe, hatchet, or machete. It combines features of both sharp force (incised wound) and blunt force (crushing of underlying bone and tissue). This type of injury is characteristic of a deliberate assault and would be highly unusual to sustain in a typical road traffic accident. Therefore, a chop wound is the injury least likely to be associated with an RTA.

Question 48. All of the following are used in the identification of a dead body except:

A. Teeth

B. Blood

C. Nail

D. Muscle

Correct answer: D

Muscle Forensic identification of a deceased individual relies on unique and durable characteristics. Teeth (A) are extremely valuable for identification through dental records (forensic odontology) due to their durability and unique fillings, restorations, and morphology. Blood (B) is fundamental for DNA profiling, which provides a definitive genetic identity. Nails (C) can also be a source of DNA, and their physical characteristics (e.g., length, polish) can sometimes provide circumstantial clues. In contrast, muscle tissue (D) is not a primary tool for identification. While it can be a source of DNA, it decomposes relatively quickly compared to teeth and bones. It lacks the unique, individualizing characteristics found in dental records or fingerprints. Other tissues like bone or hair are far more useful and durable for DNA analysis in decomposed remains. Therefore, muscle is the least useful of the options listed for routine identification purposes.

Question 49. Match the poisons with their site of action: A. Datura 1. CVS B. Nicotine 2. CNS C. Nitric acid 3. SKIN D. Nux vomica (strychnine) 4. SPINAL CORD

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

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

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

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

Correct answer: A

A-2,B-1,C-3,D-4 This question matches various poisons to their primary site or system of action. Datura contains atropine and scopolamine, which are anticholinergic agents that cross the blood-brain barrier and cause significant Central Nervous System (CNS) effects like delirium, hallucinations, and coma. Nicotine acts on autonomic ganglia and the adrenal medulla, leading to complex and often biphasic effects on the Cardiovascular System (CVS), including tachycardia and hypertension. Nitric acid is a strong corrosive agent that causes severe chemical burns and tissue destruction upon contact with the skin and mucous membranes. Nux vomica contains the poison strychnine, which is a potent antagonist of the inhibitory neurotransmitter glycine, primarily at the level of the spinal cord. This leads to uncontrolled reflex hyperexcitability, resulting in violent, convulsive muscle spasms (opisthotonus). Therefore, the correct matches are A-2, B-1, C-3, and D-4.

Question 50. Which of the following substances is not used as a chelating agent for treating heavy metal poisoning?

A. Deferiprone

B. EDTA

C. Penicillamine

D. Oximes

Correct answer: D

Oximes Chelating agents are molecules that can form multiple bonds with a single metal ion, sequestering it and facilitating its excretion from the body. They are the mainstay of treatment for heavy metal poisoning. Deferiprone is an oral iron chelator used in iron overload conditions like thalassemia. EDTA (Ethylenediaminetetraacetic acid) is a broad-spectrum chelator used for lead poisoning. Penicillamine is used for copper poisoning (Wilson's disease) as well as lead and mercury poisoning. In contrast, oximes, such as pralidoxime (2-PAM), are not chelating agents. They are cholinesterase reactivators used specifically for treating organophosphate pesticide poisoning. They work by cleaving the bond between the organophosphate and the acetylcholinesterase enzyme, thereby restoring the enzyme's function. They do not act by binding to metals.

Question 51. An autopsy on a man with a history of drowning revealed no water in the lungs, and the case was classified as dry drowning. What is the most probable cause of death?

A. Asphyxia

B. Vagal inhibition

C. Laryngospasm

D. Ventricular fibrillation

Correct answer: C

Laryngospasm Drowning is typically categorized as "wet" or "dry." In wet drowning, which is the majority of cases, water enters the lungs. In dry drowning, which accounts for about 10-15% of cases, very little or no water is aspirated into the lungs. The cause of death in these cases is asphyxia resulting from an intense, reflex laryngospasm. When a small amount of water first enters the larynx, it triggers a powerful and sustained spasm of the vocal cords, which effectively seals the airway. This prevents further water from entering the lungs but also prevents air from entering, leading to asphyxiation. While vagal inhibition can cause sudden cardiac arrest upon sudden contact with cold water, and ventricular fibrillation can occur, the specific finding of no water in the lungs with a history of immersion points directly to laryngospasm as the immediate mechanism of fatal airway obstruction. MICROBIOLOGY

Question 52. In a BSL-3 (Biosafety Level 3) laboratory, which of the following pathogens would be appropriately handled?

A. XDR-TB (Extensively Drug-Resistant Tuberculosis)

B. Salmonella

C. Aztreonam: Inhibit cell wall synthesis

D. Daptomycin: Cause depolarization of membranes

Correct answer: A

Linezolid: Binds to 30S ribosome and inhibits protein synthesis Linezolid is an oxazolidinone antibiotic that inhibits bacterial protein synthesis. However, its mechanism is unique. It binds to the 23S ribosomal RNA of the 50S subunit, preventing the formation of a functional 70S initiation complex. The statement that it binds to the 30S ribosome is incorrect; aminoglycosides and tetracyclines bind to the 30S subunit. The other options are correctly matched. Rifampicin is a rifamycin that inhibits bacterial DNA-dependent RNA polymerase, blocking transcription. Aztreonam is a monobactam, a class of beta-lactam antibiotics, that inhibits cell wall synthesis by binding to penicillin-binding proteins. Daptomycin is a cyclic lipopeptide that inserts into the bacterial cell membrane, causing rapid depolarization and subsequent cell death. 47. Which drug shows intrinsic resistance? (A) Fluconazole - Candida glabrata and Candida krusei (B) Itraconazole - Sporothrix (C) Voriconazole - Aspergillus fumigatus (D) Amphotericin B - Candida glabrata AAns (A) Fluconazole - Candida glabrata and Candida krusei Intrinsic resistance refers to a naturally occurring resistance of a microorganism to a particular antimicrobial agent. Among the options, Candida krusei is intrinsically resistant to fluconazole, a commonly used azole antifungal. Candida glabrata often exhibits dose-dependent resistance or acquired resistance, but it is well-known for being less susceptible to fluconazole than Candida albicans. This makes the pairing in option A the best example of intrinsic or near-intrinsic resistance. In contrast, itraconazole is a drug of choice for sporotrichosis. Voriconazole is the primary treatment for invasive aspergillosis caused by Aspergillus fumigatus. While resistance can develop, it is not considered intrinsic. Amphotericin B has a broad spectrum of activity, and while some isolates of C. glabrata may be less susceptible, it is not a classic example of intrinsic resistance. 48. A patient who has been taking ampicillin now develops diarrhea. Which medication is the treatment of choice for this condition? (A) Oral metronidazole (B) Oral fidaxomicin (C) Oral ciprofloxacin (D) Bezlotoxumab AAns (A) Oral metronidazole Antibiotic-associated diarrhea is a common side effect, often caused by the overgrowth of Clostridioides difficile (formerly Clostridium difficile). For an initial, non-severe episode of C. difficile infection (CDI), the traditional drug of choice has been oral metronidazole or oral vancomycin. While recent guidelines often favor oral vancomycin or fidaxomicin for all severities due to better efficacy, oral metronidazole remains a viable and often-used first-line agent for mild-to-moderate initial episodes, especially in resource-limited settings. Fidaxomicin is a narrow-spectrum antibiotic typically reserved for severe CDI or recurrent episodes due to its high cost. Ciprofloxacin is a fluoroquinolone and is actually a common cause of CDI, so it would not be used for treatment. Bezlotoxumab is a monoclonal antibody used to prevent recurrence of CDI, not for treating an active infection. 49. A young patient receiving therapy for multidrug- resistant tuberculosis develops weight gain, cold intolerance, and lethargy. Lab results show high TSH with low T3 and T4 levels. Which drug in

the MDR-TB regimen is most likely causing these symptoms? (A) Cycloserine (B) Ethionamide (C) Streptomycin (D) Pyrazinamide AAns (B) Ethionamide The patient's clinical symptoms (weight gain, cold intolerance, lethargy) and laboratory findings (high TSH, low T3/T4) are classic for primary hypothyroidism. Several second-line anti-tuberculosis drugs can cause this side effect. Ethionamide and prothionamide are well-known to cause hypothyroidism by inhibiting thyroid hormone synthesis, similar to the action of thionamide drugs used to treat hyperthyroidism. This adverse effect occurs in a significant number of patients on long-term therapy. Para-aminosalicylic acid (PAS) is another anti-TB drug that can cause hypothyroidism. Cycloserine is associated with neuropsychiatric side effects. Streptomycin is an aminoglycoside known for ototoxicity and nephrotoxicity. Pyrazinamide can cause hyperuricemia and hepatotoxicity. Therefore, ethionamide is the most likely culprit for the patient's hypothyroidism. 50. Which of the following protease inhibitors can cause altered mental status, headache, and intracranial bleed? (A) Tenofovir (B) Saquinavir (C) Tipranavir (D) Darunavir AAns (C) Tipranavir Tipranavir is a non-peptidic protease inhibitor used in antiretroviral therapy for HIV. It carries a specific black box warning from the FDA regarding the risk of both fatal and non-fatal intracranial hemorrhage. Patients taking tipranavir have shown an increased risk of this serious adverse event, and the mechanism is not fully understood but may relate to effects on platelet function or vascular integrity. This risk is a distinguishing feature compared to other protease inhibitors. While other protease inhibitors like saquinavir and darunavir have their own side effect profiles, they are not specifically associated with this high risk of intracranial bleeding. Tenofovir is a nucleotide reverse transcriptase inhibitor, not a protease inhibitor, and is primarily associated with renal toxicity and bone mineral density loss. 51. Which chelation therapy is used to prevent doxorubicin-induced cardiotoxicity? (A) Aprepitant (B) Deferoxamine (C) Amifostine (D) Dexrazoxane AAns (D) Dexrazoxane Doxorubicin, a potent anthracycline chemotherapeutic agent, is known for its dose-dependent cardiotoxicity. This toxicity is mediated primarily through the generation of reactive oxygen species via iron-catalyzed reactions. Dexrazoxane is a cardioprotective agent specifically approved to prevent this complication. It is a cyclic derivative of EDTA and acts as an intracellular iron-chelating agent. By binding to free iron within cardiac cells, dexrazoxane prevents the formation of the iron-doxorubicin complex, which is responsible for the production of harmful free radicals that damage myocyte mitochondria and membranes. Deferoxamine (B) is another iron chelator but is used for systemic iron overload, not specifically for doxorubicin toxicity prevention. Aprepitant (A) is an antiemetic used to prevent chemotherapy-induced nausea. Amifostine (C) is a cytoprotective agent used to reduce renal toxicity from cisplatin and xerostomia from radiation therapy. FORENSIC MEDICINE 52. Which of the following substances was the East India Company smuggling to China in the 18th century? (A) Opium (B) Cannabis (C) Lysergic acid diethylamide (LSD) (D) Cocaine AAns (A) Opium In the 18th and 19th centuries, the British East India Company engaged in a large-scale trade of opium, which was cultivated in

British-controlled India, and smuggled it into China. This trade was established to reverse a significant trade imbalance, as Britain had a high demand for Chinese goods like tea, silk, and porcelain, but China had little demand for British goods. The widespread opium addiction that resulted in China led to social and economic disruption. The Chinese government's attempts to suppress the illegal opium trade, including the seizure and destruction of large quantities of opium, culminated in the First and Second Opium Wars with Great Britain. These conflicts resulted in treaties that were highly unfavorable to China, forcing it to open ports and cede Hong Kong. Cannabis, LSD, and cocaine were not part of this specific historical trade conflict. 53. Identify the option that does not correspond to grievous hurt according to Section 320 of the Indian Penal Code (IPC)? (A) Emasculation (B) Fracture of femur (C) Permanent privation of hearing (D) 7 days hospital admission AAns (D) 7 days hospital admission Section 320 of the Indian Penal Code (IPC) defines "grievous hurt" through eight specific categories of injury. These include emasculation (A), permanent privation of the sight of either eye, permanent privation of the hearing of either ear (C), privation of any member or joint, permanent impairment of the powers of any member or joint, permanent disfiguration of the head or face, fracture or dislocation of a bone or tooth (B), and any hurt that endangers life or which causes the sufferer to be, during the space of twenty days, in severe bodily pain, or unable to follow their ordinary pursuits. The option of 7 days hospital admission does not meet the eighth criterion, which specifies a period of twenty days of severe pain or inability to perform ordinary activities. Therefore, while it may indicate a significant injury, it does not, by itself, legally constitute grievous hurt under the IPC. 54. What causes the blackening around a gunshot entry wound? (A) Smoke particles (B) Unburned gunpowder (C) Muzzle of firearm (D) Fire effect AAns (A) Smoke particles The characteristics of a gunshot entry wound vary depending on the range of fire. When a firearm is discharged at close range (but not in direct contact), several elements are expelled from the muzzle along with the bullet. The blackening (also called soiling or smudging) seen around the entry wound is caused by the deposition of fine smoke particles (soot) from the combustion of the gunpowder. This soot can typically be wiped away. In contrast, unburned or partially burned gunpowder particles (B) cause "tattooing" or "stippling," which are small punctate abrasions that cannot be wiped away as they are embedded in the skin. The fire effect (D), or searing from the flame, is only seen in contact or very close-range shots. A muzzle imprint (C) is a patterned abrasion seen only in hard-contact wounds, where the muzzle is pressed firmly against the skin. 55. A 13-year-old girl arrives at the OPD with her mother, complaining of abdominal pain, and her urine pregnancy test comes back positive. As the medical officer, what should be your first step? (A) Start physical examination (B) Inform the police (C) Take consent from the patient's mother (D) Preserve the patient's clothes AAns (B) Inform the police In India, the age of consent for sexual activity is 18 years. Sexual intercourse with a minor below this age, even if consensual, is considered statutory rape under the Protection of Children from Sexual Offences (POCSO) Act, 2012. A positive pregnancy test in a

13-year-old girl is definitive evidence that sexual activity has occurred. The POCSO Act mandates that any person, including a medical officer, who has an apprehension that a child is a victim of a sexual offense must report it to the Special Juvenile Police Unit or the local police. This reporting is a legal and mandatory obligation. Therefore, the first and most critical step is to inform the police. While taking consent (C) and performing a physical examination (A) are parts of medical management, the legal duty to report under POCSO takes precedence and must be initiated immediately. 56. Cadaveric spasm is seen in all except? MEDINK 71. Which of the following viruses needs reverse transcription for PCR? (A) RSV (B) EBV (C) CMV (D) Adenovirus AAns (A) RSV Polymerase Chain Reaction (PCR) is a technique used to amplify a segment of DNA. Standard PCR can only work with a DNA template. When the starting genetic material is RNA, an initial step of reverse transcription is required to convert the RNA into complementary DNA (cDNA). This cDNA then serves as the template for the PCR amplification. The combined technique is called Reverse Transcriptase PCR (RT-PCR). The question asks which virus requires this process. We need to identify the RNA virus among the options. Respiratory Syncytial Virus (RSV) is a single-stranded RNA virus. Therefore, to detect it using PCR, its RNA genome must first be reverse-transcribed into cDNA. The other viruses listed—Epstein-Barr Virus (EBV), Cytomegalovirus (CMV), and Adenovirus—are all DNA viruses. Their DNA genomes can be directly amplified by standard PCR without the need for a reverse transcription step. 72. A patient has had a fever for 3 days, and CBC shows a platelet count below 90,000. Dengue is suspected. Which of the following tests cannot be performed on day 3 of illness? (A) PCR (B) NS1 (C) IgM ELISA (D) Xenodiagnosis using culture in Aedes mosquito AAns (C) IgM ELISA During a primary dengue infection, the virus and viral components are detectable first, followed by the host's immune response. On day 3 of the illness, the patient is typically in the acute viremic phase. During this time, the dengue virus itself can be detected, so methods like PCR (which detects viral RNA) would be positive. The dengue NS1 antigen is a viral non-structural protein that is secreted into the blood during active infection and is detectable from day 1 up to day 9. Xenodiagnosis, though not a routine clinical test, would also be possible as the mosquito could become infected by feeding on the viremic patient. In contrast, the host's antibody response takes time to develop. IgM antibodies, which are detected by ELISA, usually do not appear until day 4-5 of the illness and then rise to detectable levels. Therefore, on day 3, an IgM ELISA is the least likely test to be positive. 73. The HIV genome needs which of the following to enter the membrane? (A) GP120 (B) CCR5 (C) GP41 (D) CXCR4 AAns (A) GP120 The entry of HIV into a host cell is a multi-step process mediated by its envelope glycoproteins. The process is initiated by the binding of the viral surface glycoprotein, gp120, to the primary CD4 receptor on the surface of the target cell (like a T-helper cell). This initial binding induces a conformational change in gp120, which then allows it to bind to a second receptor, a chemokine co-receptor, which is either CCR5 or CXCR4. This co-receptor binding triggers another conformational change, exposing the fusion peptide of the transmembrane glycoprotein, gp41.

The gp41 then inserts into the host cell membrane and mediates the fusion of the viral and cellular membranes, allowing the viral capsid to enter the cytoplasm. Therefore, while all listed components are involved, the initial binding step that is essential for entry is the interaction of gp120 with the CD4 receptor. 74. A patient who recovered from COVID-19 and received steroid therapy now presents, after 3 weeks, with nasal discharge. The image shows a fungal organism. What is the most probable diagnosis?

Question 53. In which of the following does the genetic material show adenine not equal to thymine?

A. Mitochondrial DNA of humans

B. E. coli

C. HIV

D. Herpes

Correct answer: C

HIV Chargaff's rules state that in double-stranded DNA (dsDNA), the amount of adenine (A) is equal to the amount of thymine (T), and the amount of guanine (G) is equal to the amount of cytosine (C). This rule applies to any organism with a dsDNA genome. Human mitochondrial DNA (A), E. coli bacteria (B), and Herpesviruses (D) all have dsDNA genomes, so in them, A=T and G=C. The Human Immunodeficiency Virus (HIV) (C) is a retrovirus, and its genome consists of two copies of single-stranded RNA (ssRNA). Because its genetic material is single-stranded, there is no complementary strand to enforce the base-pairing rules. Therefore, the amounts of adenine and uracil (the RNA equivalent of thymine) are not necessarily equal, and the same is true for guanine and cytosine. This makes HIV the correct answer.

Question 54. After 3 days of dengue infection, diagnosis can be made by all except which of the following?

A. ELISA for antigen

B. Viral load

C. ELISA for antibody

D. RT PCR

Correct answer: C

ELISA for antibody During a primary dengue infection, the virus and viral components are detectable first, followed by the host's immune response. On day 3 of the illness, the patient is typically in the acute viremic phase. During this time, the dengue virus itself can be detected, so methods like viral load measurement or RT-PCR (which detects viral RNA) would be positive. The dengue NS1 antigen is a viral non-structural protein that is secreted into the blood during active infection and is detectable by ELISA from day 1 up to day 9. In contrast, the host's antibody response takes time to develop. IgM antibodies, which are detected by ELISA, usually do not appear until day 4-5 of the illness and then rise to detectable levels. Therefore, on day 3,

an antibody ELISA is the least likely test to be positive and is not the recommended diagnostic method for this early stage.

Question 55. Vibrio cholerae disrupts which extracellular cell adhesion?

A. Integrin

B. Cadherin

C. Occludens

D. None of the above

Correct answer: C

Occludens Vibrio cholerae causes profuse watery diarrhea primarily through the action of cholera toxin, which leads to massive secretion of chloride ions and water into the intestinal lumen. However, recent research has also highlighted the role of other virulence factors in disrupting the intestinal barrier integrity. The cholera toxin's effect is compounded by proteases and other factors that disrupt the tight junctions between intestinal epithelial cells. Tight junctions, also known as zonula occludens, are multiprotein complexes that seal the paracellular pathway. The main transmembrane proteins forming these junctions are occludins and claudins. Disruption of these junctions by V. cholerae increases the permeability of the intestinal barrier, contributing to the massive fluid loss. Cadherins are components of adherens junctions, while integrins mediate cell-matrix adhesion.

Question 56. Which of the following viruses needs reverse transcription for PCR?

A. RSV

B. EBV

C. CMV

D. Adenovirus

Correct answer: A

RSV Polymerase Chain Reaction (PCR) is a technique used to amplify a segment of DNA. Standard PCR can only work with a DNA template. When the starting genetic material is RNA, an initial step of reverse transcription is required to convert the RNA into complementary DNA (cDNA). This cDNA then serves as the template for the PCR amplification. The combined technique is called Reverse Transcriptase PCR (RT-PCR). The question asks which virus requires this process. We need to identify the RNA virus among the options. Respiratory Syncytial Virus (RSV) is a single-stranded RNA virus. Therefore, to detect it using PCR, its RNA genome must first be reverse-transcribed into cDNA. The other viruses listed—Epstein-Barr Virus (EBV), Cytomegalovirus (CMV), and Adenovirus—are all DNA viruses. Their DNA genomes can be directly amplified by standard PCR without the need for a reverse transcription step.

Question 57. A patient has had a fever for 3 days, and CBC shows a platelet count below 90,000. Dengue is suspected. Which of the following tests cannot be

performed on day 3 of illness?

A. PCR

B. NS1

C. IgM ELISA

D. Xenodiagnosis using culture in Aedes mosquito

Correct answer: C

IgM ELISA During a primary dengue infection, the virus and viral components are detectable first, followed by the host's immune response. On day 3 of the illness, the patient is typically in the acute viremic phase. During this time, the dengue virus itself can be detected, so methods like PCR (which detects viral RNA) would be positive. The dengue NS1 antigen is a viral non-structural protein that is secreted into the blood during active infection and is detectable from day 1 up to day 9. Xenodiagnosis, though not a routine clinical test, would also be possible as the mosquito could become infected by feeding on the viremic patient. In contrast, the host's antibody response takes time to develop. IgM antibodies, which are detected by ELISA, usually do not appear until day 4-5 of the illness and then rise to detectable levels. Therefore, on day 3, an IgM ELISA is the least likely test to be positive.

Question 58. The HIV genome needs which of the following to enter the membrane?

A. GP120

B. CCR5

C. GP41

D. CXCR4

Correct answer: A

GP120 The entry of HIV into a host cell is a multi-step process mediated by its envelope glycoproteins. The process is initiated by the binding of the viral surface glycoprotein, gp120, to the primary CD4 receptor on the surface of the target cell (like a T-helper cell). This initial binding induces a conformational change in gp120, which then allows it to bind to a second receptor, a chemokine co-receptor, which is either CCR5 or CXCR4. This co-receptor binding triggers another conformational change, exposing the fusion peptide of the transmembrane glycoprotein, gp41. The gp41 then inserts into the host cell membrane and mediates the fusion of the viral and cellular membranes, allowing the viral capsid to enter the cytoplasm. Therefore, while all listed components are involved, the initial binding step that is essential for entry is the interaction of gp120 with the CD4 receptor.

Question 59. Which bacterial toxin exerts its effect by inhibiting the activity of elongation factor-2 (EF-2)?

A. Diphtheria

B. Clostridium

C. Bacillus

D. Vibrio

Correct answer: A

Diphtheria Diphtheria toxin, produced by Corynebacterium diphtheriae, and Exotoxin A, produced by Pseudomonas aeruginosa, both act by the same mechanism: they inhibit protein synthesis in eukaryotic cells. The A-subunit of these toxins catalyzes the ADP-ribosylation of eukaryotic Elongation Factor 2 (eEF-2). EF-2 is essential for the translocation step of protein synthesis on the ribosome, where it facilitates the movement of the ribosome along the mRNA strand. By attaching an ADP-ribose group to a specific diphthamide residue on EF-2, the toxin inactivates it. This irreversible inactivation halts polypeptide chain elongation, leading to the cessation of all protein synthesis and subsequent cell death. The toxins produced by Clostridium, Bacillus, and Vibrio species have different mechanisms, such as acting as proteases, adenylate cyclase activators, or pore-forming toxins.

Question 60. Which of the following is/are an advantage(s) of a saline mount compared to an iodine mount? 1 Motility of trophozoites 2 Internal structure of cysts 3 Differentiate bile-stained vs non-bile stained

A. 1

B. 1 and 3

C. 2 and 3

D. 1,2 and 3

Correct answer: B

1 and 3 A saline mount is commonly used in stool microscopy for the detection of intestinal parasites. Compared to an iodine mount, it has certain advantages. 1 Motility of trophozoites – This is a major advantage of saline mount. It allows observation of the characteristic motility of protozoan trophozoites (e.g., Entamoeba histolytica, Giardia), which is essential for diagnosis. Iodine mount kills the organisms, so motility cannot be appreciated. 2 Internal structure of cysts – This is better visualized with iodine mount, not saline. Iodine enhances nuclear detail and glycogen mass in cysts. 3 Differentiation of bile-stained vs non-bile-stained eggs – Saline mount helps identify natural color differences (e.g., bile-stained ova like Ascaris vs non-bile-stained ova like hookworm). Iodine may obscure natural coloration. Thus, advantages of saline mount over iodine mount are motility of trophozoites and differentiation of bile-stained vs non-bile-stained eggs, making option (B) correct.

Question 61. What is the most probable diagnosis in an HIV patient who develops a white patch on the tongue or buccal mucosa that does not scrape off?

A. EBV

B. Candida

C. HSV

D. HHV8

Correct answer: A

EBV The clinical description of a white, corrugated or "hairy" patch, typically on the lateral borders of the tongue, that cannot be scraped off is the classic presentation of Oral Hairy Leukoplakia (OHL). This condition is an opportunistic infection strongly associated with immunosuppression, particularly in HIV-infected individuals. The causative agent of OHL is the Epstein-Barr virus (EBV). In contrast, oral candidiasis (thrush), caused by Candida (B), typically presents as creamy white plaques that can be scraped off, often leaving an erythematous base. Herpes Simplex Virus (HSV) (C) causes painful vesicles and ulcers. Human Herpesvirus 8 (HHV-8) (D) is associated with Kaposi's sarcoma, which appears as purplish vascular nodules. Therefore, the inability to scrape off the lesion is a key feature pointing to OHL caused by EBV.

Question 62. A longitudinal, observational, and analytical study is also known as?

A. Case Control Study

B. Cohort Study

C. Ecological Study

D. Randomized Control Trial

Correct answer: B

Cohort Study A cohort study is a type of epidemiological study that fits the description perfectly. It is longitudinal because it follows a group of individuals (the cohort) over a period of time. It is observational because the investigator does not intervene or assign exposures but instead observes the outcomes that naturally occur. It is analytical because it is designed to test hypotheses about the relationship between exposures and outcomes by comparing the incidence of the outcome in the exposed group to the incidence in the unexposed group. A case-control study is typically retrospective and starts with the outcome. An ecological study analyzes data at the population level, not the individual level. A randomized controlled trial is an experimental (interventional) study, not an observational one.

Question 63. Which type of graph is used to represent healthcare and disease-related data in a population? What are qualitative studies addressing health-related problems called?

A. Bar diagram

B. Histogram

C. Multiple regression model

D. Ishikawa diagram/Fishbone diagram

Correct answer: D

Ishikawa diagram/Fishbone diagram The question asks for a tool used in qualitative studies to analyze health problems. An Ishikawa diagram, also known as a fishbone diagram or cause-and-effect diagram, is a visualization tool used to explore and categorize the potential causes of a specific problem or effect. In healthcare, it is frequently used in quality

improvement and root cause analysis to systematically brainstorm and display the various factors contributing to an adverse event or a health system issue. The "head" of the fish represents the problem (effect), and the "bones" represent different categories of potential causes (e.g., personnel, equipment, procedures, environment). Bar diagrams and histograms are quantitative tools for displaying frequency distributions. A multiple regression model is a statistical technique for quantitative analysis of relationships between variables.

Question 64. The socially acquired learned behavior is known as?

A. Custom

B. Culture

C. Socialization

D. Mores

Correct answer: B

Culture Culture is the broad and encompassing term for the set of shared attitudes, values, goals, and practices that characterizes an institution or organization, and the knowledge and beliefs that are acquired by a person as a member of a society. It represents the entire complex of socially acquired and learned behaviors, beliefs, arts, morals, laws, and customs. Customs (A) are specific, traditional ways of behaving that are part of a culture. Socialization (C) is the process by which individuals learn and internalize the values, beliefs, and norms of a given society and learn to function as members of that society. Mores (D) are customs and norms that are considered to have a moral significance and are strictly observed. While all the terms are related, "culture" is the most comprehensive term for the entire system of socially acquired behavior.

Question 65. Which of the following statements is not correct regarding the National Program for Control of Blindness & Visual Impairment?

A. Patients requiring cataract surgeries are selected and asked to report to the base hospital.

B. To perform more small incision cataract surgeries.

C. To perform surgeries in rural areas with makeshift hospitals/OTs.

D. To perform surgeries in fixed facilities by shifting patients from rural areas.

Correct answer: C

To perform surgeries in rural areas with makeshift hospitals/OTs. The National Program for Control of Blindness & Visual Impairment (NPCB&VI) in India aims to reduce the prevalence of blindness. A significant shift in strategy occurred to improve the quality and safety of cataract surgery, which is the leading cause of blindness. The older model of holding large-scale "eye camps" with makeshift operating theaters in rural areas was discontinued due to concerns about poor sterility, inadequate follow-up, and complications like postoperative endophthalmitis. The current strategy emphasizes a high-volume, high-quality approach where patients from rural areas are screened in camps (A), and then transported to fixed,

well-equipped base hospitals (D) for surgery. The program also promotes techniques like small incision cataract surgery (SICS) (B). Therefore, performing surgeries in makeshift facilities is no longer an accepted practice under the program.

Question 66. What is the schedule and route of administration of the MR vaccine and vitamin A?

A. MR vaccine administered subcutaneously along with oral vitamin A at 8 months

B. MR vaccine administered intramuscularly along with oral vitamin A at 8 months

C. MR vaccine administered subcutaneously along with oral vitamin A at 9 months

D. MR vaccine administered intramuscularly along with oral vitamin A at 9 months

Correct answer: C

MR vaccine administered subcutaneously along with oral vitamin A at 9 months According to India's National Immunization Schedule, the first dose of the Measles-Rubella (MR) vaccine is administered at 9 completed months of age. The route of administration for the MR vaccine is subcutaneous, typically in the right upper arm. Concurrently, at the same visit, the first dose of Vitamin A solution (1 mL or 1 lakh IU) is given orally. A second dose of the MR vaccine is given at 16-24 months. This combined administration strategy is designed to be efficient and improve coverage for both crucial interventions. The other options are incorrect regarding the age of administration, the route of the MR vaccine, or both.

Question 67. Incubation period: match the following: 1. Measles a. 50 days 2. Mumps b. 2-4 weeks 3. Chickenpox c. 10-21 days 4. Syphilis d. 14-16 days 5. Hepatitis A e. 9-90 days

A. 1-d, 2-b, 3-c, 4-e, 5-a

B. 1-c, 2-b, 3-d, 4-e, 5-a

C. 1-b, 2-d, 3-c, 4-e, 5-a

D. 1-d, 2-b, 3-c, 4-a, 5-e

Correct answer: A

1-d, 2-b, 3-c, 4-e, 5-a This question tests knowledge of the typical incubation periods for various infectious diseases. Measles has an incubation period of about 10-14 days, fitting into the 14-16 days range. Mumps typically has an incubation period of 2-4 weeks. The incubation period for Chickenpox (Varicella) is usually 10-21 days. Syphilis has a wide-ranging incubation period for its primary chancre, typically from 9 to 90 days. Hepatitis A has an average incubation period of about 28 days, but the range can be longer; 50 days is within the plausible though less common range. Matching these known values, the correct sequence is 1-d, 2-b, 3-c, 4-e, 5-a. The other options contain incorrect pairings of diseases with their respective incubation periods. ENT

Question 68. In a patient with bilateral hearing loss and progressive worsening in

the right ear due to otosclerosis, which set of clinical findings would prompt the physician to advise a stapedectomy?

A. Rinne's Test - positive; Weber's Test - lateralized to left ear

B. Rinne's Test - positive; Weber's Test - lateralized to right ear

C. Rinne's Test - negative; Weber's Test - lateralized to left ear

D. Rinne's Test - negative; Weber's Test - lateralized to right ear

Correct answer: D

Rinne's Test - negative; Weber's Test - lateralized to right ear Otosclerosis is a primary cause of conductive hearing loss, resulting from the abnormal fixation of the stapes bone in the oval window. Tuning fork tests are essential for diagnosis. The Rinne's test compares air conduction (AC) to bone conduction (BC). In conductive hearing loss, BC is heard louder or longer than AC, which is a negative Rinne's test. Since the right ear is worse, a negative test would be expected on the right. The Weber's test involves placing a vibrating tuning fork on the midline of the forehead. In unilateral or asymmetrical conductive hearing loss, the sound lateralizes to the more affected ear because the conductive block masks ambient noise, making the bone-conducted sound seem louder on that side. Therefore, in a patient with worse hearing in the right ear due to otosclerosis, the expected findings would be a negative Rinne's test on the right and the Weber's test lateralizing to the right.

Question 69. A patient reports difficulty hearing and says they can understand speech only when it is very loud or amplified. According to the WHO classification of speech-understanding ability, how should this degree of hearing loss be classified?

A. Mild hearing loss

B. Moderate hearing loss

C. Severe hearing loss

D. Profound hearing loss

Correct answer: C

Severe hearing loss The World Health Organization (WHO) classifies the degree of hearing impairment based on the hearing threshold in decibels (dB HL) and the associated functional limitations. A person who can only hear and understand loudly spoken or shouted speech falls into the category of severe hearing loss. According to the WHO grades, this corresponds to an average hearing threshold of 61-80 dB HL in the better ear. Individuals with mild hearing loss (26-40 dB HL) can hear and repeat words spoken at a normal volume. Those with moderate hearing loss (41-60 dB HL) can hear and repeat words spoken in a raised voice. Profound hearing loss (>81 dB HL) means the individual may not be able to hear or understand even shouted speech and often relies on lip-reading or sign language.

Question 70. Which refractive eye surgery is contraindicated for a 21-year-old boxer aiming to improve vision?

A. RK (Radial Keratotomy)

B. PRK (Photorefractive Keratectomy)

C. LASIK (Laser-Assisted in Situ Keratomileusis)

D. SMILE (Small Incision Lenticule Extraction)

Correct answer: A

RK (Radial Keratotomy) A 21-year-old boxer is involved in a contact sport, where repeated blunt trauma to the face is common. In Radial Keratotomy (RK), multiple deep radial incisions are made in the cornea to flatten it and correct myopia. These incisions permanently weaken the structural integrity of the cornea. In individuals exposed to repeated trauma (like boxers), RK carries a high risk of: 1. Corneal rupture 2. Wound dehiscence 3. Irregular astigmatism 4. Progressive corneal instability Because the incisions never fully regain original strength, RK is strongly contraindicated in contact sports. PRK and SMILE do not create large corneal flaps, and PRK in particular is often preferred in athletes because it avoids flap-related complications. LASIK involves a corneal flap and may carry some risk with trauma, but RK is the most structurally destabilizing procedure. Therefore, Radial Keratotomy (RK) is contraindicated in this boxer.

Question 71. Which of the following is not seen in very severe NPDR?

A. Venous beading

B. Neovascularization of disc

C. Retinal hemorrhage

D. Microaneurysm

Correct answer: B

Neovascularization of disc Diabetic retinopathy is classified into Non-proliferative Diabetic Retinopathy (NPDR) and Proliferative Diabetic Retinopathy (PDR). The hallmark feature that defines the transition from NPDR to the more advanced PDR is the development of neovascularization (the growth of new, abnormal blood vessels). Neovascularization of the disc (NVD) or elsewhere on the retina (NVE) is the defining sign of PDR. Very severe NPDR is the stage immediately preceding PDR and is defined by the "4-2-1 rule," which includes features like severe retinal hemorrhages (C) and microaneurysms (D) in all 4 quadrants, venous beading (A) in at least 2 quadrants, or significant intraretinal microvascular abnormalities (IRMA) in at least 1 quadrant. The presence of any neovascularization automatically upgrades the diagnosis to PDR, meaning it is not a feature of NPDR, however severe.

Question 72. The image shows? NODIA page 307 INICET Examination Paper (D) Parietal lobe

A. Cobalt blue Trypan blue - Corneal ulcer

B. Cobalt green - Rose bengal stain - Corneal ulcer

C. Cobalt blue - Fluorescein stain - Corneal ulcer

D. Cobalt blue Lissamine green - Corneal ulcer

Correct answer: C

Temporal lobe The patient described can perceive basic visual features such as color, texture, and shape, which means primary visual processing is intact. This function is mainly carried out by the occipital lobe, specifically the primary visual cortex. Since basic perception is preserved, the lesion is unlikely to be in the occipital lobe. However, the patient is unable to identify or recognize objects despite seeing them clearly. This condition is called visual agnosia. Visual agnosia occurs when higher-order visual association areas are damaged. These association areas are located primarily in the inferior temporal cortex, particularly along the ventral visual processing stream (the “what” pathway). The ventral stream runs from the occipital lobe to the temporal lobe and is responsible for object recognition and identification. Damage to this pathway prevents the brain from attaching meaning to visual input, even though the person can describe the object's physical features. The frontal lobe is mainly involved in executive functions and motor control, while the parietal lobe processes spatial relationships (“where” pathway). Therefore, the lesion most likely involves the temporal lobe.

Question 73. 1D sph and -2D at 180 is what type of refractive error?

A. With the rule astigmatism

B. Against the rule astigmatism

C. Simple astigmatism

D. Mixed astigmatism

Correct answer: A

With the rule astigmatism The prescription +1.00 D sphere with −2.00 D cylinder at 180° represents with-the-rule (WTR) astigmatism. Astigmatism occurs when the cornea has unequal curvature in different meridians, causing light rays to focus at different points. In a cylindrical prescription, the axis indicates the meridian that has no cylindrical power, and the cylinder power acts 90° away from that axis. Here, the cylinder axis is 180°, meaning the cylindrical correction acts at 90° (vertical meridian). Since the cylinder power is negative (−2.00 D), it corrects excess refractive power in the vertical meridian. This implies that the vertical meridian is steeper than the horizontal meridian, which is the defining feature of with-the-rule astigmatism. In with-the-rule astigmatism, the cornea is more curved vertically and flatter horizontally. It is called “with-the-rule” because this pattern follows the normal corneal curvature seen in younger individuals. The +1.00 D sphere component indicates underlying hyperopia, but the key determinant of astigmatism type is the cylinder axis at 180°. Therefore, the correct answer is : (A) With-the-rule astigmatism.

Question 74. Iritis is most commonly associated with which of the following?

A. Systemic Lupus Erythematosus

B. Behcet's Disease

C. Psoriatic Arthropathy

D. Ulcerative colitis

Correct answer: B

Behcet's Disease Iritis, a form of anterior uveitis, is inflammation of the iris and is often associated with systemic inflammatory conditions. Behçet's disease is a multi-systemic inflammatory vasculitis, and ocular involvement is a major criterion for diagnosis and a common cause of morbidity. It frequently presents as a recurrent, bilateral, non-granulomatous panuveitis or posterior uveitis, but severe anterior uveitis (iritis) with hypopyon is a classic finding. While the other listed conditions—the seronegative spondyloarthropathies like psoriatic arthropathy and ulcerative colitis, and connective tissue diseases like SLE—can also be associated with anterior uveitis, the association is particularly strong and characteristic in Behçet's disease. Among the given options, Behçet's is most renowned for its severe and recurrent iritis, often leading to significant visual impairment. MEDICINE

Question 75. Which anticoagulant is contained in the light blue vacutainer commonly used for coagulation tests?

A. Trisodium Citrate

B. Heparin

C. Potassium Oxalate

D. EDTA

Correct answer: A

Trisodium Citrate Vacutainer tubes are color-coded to indicate the type of additive they contain. The tube with a light blue top is specifically designed for coagulation studies, such as prothrombin time (PT) and activated partial thromboplastin time (aPTT). The anticoagulant used in this tube is 3.2% or 3.8% buffered sodium citrate. Sodium citrate works by chelating calcium ions in the blood sample. Calcium is an essential cofactor for many steps in the coagulation cascade, so its removal prevents the blood from clotting. This action is reversible, which is crucial for testing; calcium can be added back in the laboratory to initiate clotting under controlled conditions. Heparin is typically in green-top tubes, EDTA in lavender-top tubes (for hematology), and potassium oxalate (often with sodium fluoride) in grey-top tubes (for glucose measurement).

Question 76. A patient was started on amitriptyline and was found unconscious. Which of the following does not suggest TCA toxicity?

A. Arrhythmia

B. Confusion

C. Hypothermia

D. Pupillary dilatation

Correct answer: C

Hypothermia Tricyclic antidepressant (TCA) overdose, such as with amitriptyline, is a medical emergency with a characteristic toxidrome. The major toxic effects are due to anticholinergic activity, sodium channel blockade in the heart, and alpha-adrenergic blockade. Clinical features include central nervous system effects like sedation, confusion, delirium, seizures, and coma (B). Anticholinergic effects cause pupillary dilatation (mydriasis) (D), dry mouth, urinary retention, and tachycardia. The most life-threatening effect is cardiotoxicity from sodium channel blockade, leading to a widened QRS complex and potentially fatal ventricular arrhythmias (A). A common finding in TCA overdose due to its effect on thermoregulation is hyperthermia (elevated body temperature), not hypothermia. Therefore, hypothermia is the finding that would not suggest TCA toxicity.

Question 77. Match the columns: 1. Autosomal dominant A. Duchenne muscular dys- trophy 2. X linked recessive B. Leber heredi- tary optic neu- ropathy 3. Autosomal recessive C. Cystic fibrosis 4. Mitochondrial D. Myotonia Dys- trophica

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

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

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

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

Correct answer: D

A-2, B-4, C-3, D-1 Duchenne muscular dystrophy is an X-linked recessive disorder. The defective gene is located on the X chromosome, so males are predominantly affected because they have only one X chromosome. Females are usually carriers. Hence, it matches with X-linked recessive (2). Leber hereditary optic neuropathy shows mitochondrial inheritance. Mitochondrial DNA is transmitted only from the mother to all her children, but only daughters pass it to the next generation. Therefore, it matches with mitochondrial inheritance (4). Cystic fibrosis is an autosomal recessive disorder caused by mutations in the CFTR gene on chromosome 7. The disease appears only when an individual inherits two defective alleles, one from each parent. Thus, it matches with autosomal recessive (3). Myotonic dystrophy (myotonia dystrophica) is an autosomal dominant disorder. Only one mutated allele is sufficient to cause the condition, and it often shows anticipation in successive generations. Hence, it matches with autosomal dominant (1). Therefore, option (D) is correct.

Question 78. What method is employed for the detection of autoantibodies?

A. Direct Immunofluorescence

B. ELISA

C. Indirect Immunofluorescence

D. FISH

Correct answer: C

Indirect Immunofluorescence Indirect Immunofluorescence (IIF) is the gold standard technique

for screening and detecting circulating autoantibodies in a patient's serum, such as antinuclear antibodies (ANA). The procedure is 'indirect' because it involves two main steps. First, the patient's serum (containing the primary autoantibody) is incubated with a substrate (e.g., HEp-2 cells). If autoantibodies are present, they will bind to their specific target antigens within the cells. Second, a fluorescently labeled secondary antibody, which is designed to bind to human immunoglobulins, is added. This secondary antibody binds to the patient's autoantibodies, and the resulting fluorescence can be visualized under a microscope, revealing specific staining patterns. Direct immunofluorescence detects antibodies that are already bound to patient tissues in a biopsy specimen. ELISA can also detect autoantibodies, but IIF is the classic screening method. FISH detects nucleic acid sequences.

Question 79. Which of the following will increase in size on electrophoresis in Nephrotic syndrome?

A. Gamma globulin

B. Alpha 2 globulin

C. Beta globulin

D. Albumin

Correct answer: B

Alpha 2 globulin Nephrotic syndrome is characterized by massive proteinuria (>3.5 g/day), primarily due to the loss of smaller proteins like albumin through the damaged glomerular filtration barrier. This leads to significant hypoalbuminemia. On serum protein electrophoresis (SPEP), the albumin peak will be markedly decreased. In response to the low plasma oncotic pressure caused by albumin loss, the liver increases the synthesis of various proteins, particularly lipoproteins and larger proteins. This compensatory mechanism leads to a characteristic increase in the levels of alpha-2 globulins (which include alpha-2 macroglobulin, a large protein that is retained, and haptoglobin) and beta globulins (which include lipoproteins). Gamma globulin levels are typically normal or decreased due to urinary losses. Therefore, a decreased albumin peak and an elevated alpha-2 globulin peak are classic SPEP findings in nephrotic syndrome.

Question 80. Which statement correctly describes the blood culture procedure in a suspected case of infective endocarditis?

A. Two samples from peripheral lines 30 min apart

B. Three samples from peripheral lines 1 hour apart NODIA MEDINK

D. Acoustic neuroma

Correct answer: A

Meniere's Disease The clinical presentation describes the classic triad of symptoms for Meniere's Disease: episodic vertigo, fluctuating sensorineural hearing loss (typically low-frequency initially, as shown in the audiogram), and tinnitus. The episodes are often

accompanied by a sensation of aural fullness. The underlying pathophysiology is believed to be endolymphatic hydrops, which is an excess of endolymph fluid in the inner ear, causing distension of the membranous labyrinth. While endolymphatic hydrops is the pathological finding, Meniere's Disease is the clinical syndrome. BPPV causes brief episodes of vertigo triggered by head movements but does not involve hearing loss or tinnitus. An acoustic neuroma can cause hearing loss and tinnitus but the vertigo is usually more of a constant imbalance rather than acute, episodic attacks.

Question 81. Comment on the diagnosis from the ECG shown below.

A. First degree heart block

B. Second-degree infra-nodal heart block

C. Complete heart block

D. AV dissociation

Correct answer: B

Second-degree infra-nodal heart block On the ECG strip, there are regular P waves occurring at a constant rate, but not every P wave is followed by a QRS complex. Some atrial impulses fail to conduct to the ventricles, resulting in dropped QRS complexes. The PR intervals of the conducted beats appear constant rather than progressively lengthening. This pattern is characteristic of Mobitz type II second-degree AV block, which usually occurs below the AV node, in the His-Purkinje system (infra-nodal level). In contrast, first-degree heart block shows prolonged PR interval but no dropped beats. Complete heart block demonstrates total AV dissociation, where atrial and ventricular rhythms are independent. AV dissociation can occur in various settings and does not necessarily imply complete block. Mobitz type II is clinically significant because it can progress to complete heart block and often requires pacemaker insertion. The presence of sudden non-conducted P waves with constant PR intervals in conducted beats supports the diagnosis of second-degree infra-nodal (Mobitz type II) heart block.

Question 82. A male patient with a history of COPD is experiencing dyspnea and arrives at the emergency department. His arterial blood gas analysis reveals a pH of 7.28, pCO 2 of 60 mmHg, and HCO 3 - of / meq L 28 . Based on these findings, what is the most accurate diagnosis?

A. Inadequately compensated respiratory acidosis

B. Fully compensated respiratory acidosis

C. Fully compensated respiratory alkalosis

D. Inadequately compensated metabolic alkalosis

Correct answer: A

Inadequately compensated respiratory acidosis To interpret the Arterial Blood Gas (ABG), we assess pH, , and . The pH is 7.28, which is below the normal range (7.35-7.45), indicating

acidosis. The is 60 mmHg, which is high (normal range 35-45 mmHg), indicating a respiratory cause for the acidosis. The is 28 meq/L, which is slightly elevated (normal range 22-26 meq/L). This elevation in bicarbonate represents a metabolic compensation attempt by the kidneys to counteract the respiratory acidosis by retaining bicarbonate. However, since the pH is still in the acidotic range and has not returned to normal (7.35-7.45), the compensation is inadequate or partial. Therefore, the correct diagnosis is inadequately compensated respiratory acidosis, which is a common finding in an acute exacerbation of COPD.

Question 83. Which is not a risk factor for Ca Gall Bladder?

A. Porcelain Gall Bladder

B. Primary Sclerosing Cholangitis

C. Polyp <10 mm

D. Gallstone >3 cm

Correct answer: C

Polyp <10 mm Gallbladder carcinoma has several well-established risk factors. Gallstones (cholelithiasis) are the single most important risk factor, with the risk increasing with the size of the stones; a stone >3 cm significantly elevates the risk. A porcelain gallbladder, characterized by intramural calcification, carries a very high risk of underlying malignancy. Chronic inflammatory conditions of the biliary tree, such as Primary Sclerosing Cholangitis, also increase the risk. Gallbladder polyps are another known risk factor, but the risk is highly dependent on their size. Polyps that are less than 10 mm (1 cm) in diameter are generally considered to have a very low malignant potential and are often managed with ultrasound surveillance. In contrast, polyps greater than 10 mm are associated with a higher risk of malignancy and are a clear indication for cholecystectomy. Therefore, a small polyp (<10 mm) is not considered a significant risk factor.

Question 84. A young woman presents to the emergency department with pain and vomiting. Examination reveals a swelling located lateral and below the pubic tubercle, and X-ray findings indicate intestinal obstruction. What is the most likely diagnosis?

A. Adhesions

B. Strangulated Inguinal Hernia

C. Strangulated Femoral Hernia

D. Appendicular mass

Correct answer: C

Strangulated Femoral Hernia The anatomical location of the swelling is key to this diagnosis. A femoral hernia occurs when abdominal contents protrude through the femoral canal, emerging through the femoral ring. The neck of a femoral hernia sac is located inferior to the inguinal ligament and medial to the femoral vein. Therefore, a palpable lump lateral and inferior to the

pubic tubercle corresponds precisely to the location of a femoral hernia. These hernias have a narrow neck, making them highly prone to incarceration and strangulation, which would present with symptoms of intestinal obstruction like pain and vomiting. An inguinal hernia (B) would typically present as a swelling superior to the pubic tubercle. Adhesions (A) are a common cause of obstruction but do not produce an external swelling. An appendicular mass (D) is located in the right iliac fossa.

Question 85. A 40-year-old patient diagnosed with Grade II steatohepatitis, who drinks 2–3 alcoholic beverages daily and has a BMI of 29, seeks guidance. Given their condition and habits, what is the most appropriate advice to provide?

A. Lifestyle modification + regular exercise

B. Lifestyle modification + vitamin E + Ursodeoxycholic acid

C. Lifestyle modification

D. Lifestyle modifications + Pioglitazone

Correct answer: A

Lifestyle modification + regular exercise The patient has steatohepatitis (inflammation of the liver with fat accumulation), which is likely multifactorial, being contributed to by both alcohol consumption and factors related to metabolic syndrome (BMI of 29 is overweight). The cornerstone of management for both alcoholic and non-alcoholic fatty liver disease (NAFLD) is lifestyle modification. This includes complete cessation of alcohol, a healthy diet to promote weight loss, and regular exercise. Exercise improves insulin sensitivity and helps mobilize hepatic fat. While Vitamin E and Pioglitazone have been studied for non-alcoholic steatohepatitis (NASH), their use is typically reserved for biopsy-proven NASH in non-diabetic and diabetic patients, respectively, and lifestyle changes remain the primary intervention. Ursodeoxycholic acid is not effective for steatohepatitis. Therefore, the most crucial and universally agreed-upon recommendation is a comprehensive lifestyle change focusing on diet, exercise, and alcohol abstinence.

Question 86. A stroke patient is unable to identify objects, even though they can perceive features like color, texture, and shape. Which brain lobe is most likely affected?

A. Occipital lobe

B. Frontal lobe

C. Temporal lobe NODIA page 301 INICET Examination Paper

D. Crimean-Congo Fever

Correct answer: A

XDR-TB (Extensively Drug-Resistant Tuberculosis) Biosafety levels (BSLs) are a series of protection levels designed for laboratory facilities. BSL-3 is applicable to clinical, diagnostic, and research facilities where work is done with indigenous or exotic agents that may cause serious

or potentially lethal disease through the inhalation route of exposure. Mycobacterium tuberculosis, especially multidrug-resistant (MDR) and extensively drug-resistant (XDR) strains, is the classic example of a pathogen requiring BSL-3 containment due to its aerosol transmission and the seriousness of the disease. In contrast, Salmonella species (B) are typically handled at BSL-2. Viruses like Ebola (C) and Crimean-Congo Hemorrhagic Fever virus (D) are highly dangerous pathogens that pose a high risk of life-threatening disease and aerosol transmission, for which there is often no available vaccine or treatment. These agents require the maximum containment of a BSL-4 laboratory.

Question 87. A diabetic man presents to the emergency department with chest pain and palpitations. His ECG indicates NSTEMI. What is the appropriate management?

A. Aspirin + Clopidogrel

B. Aspirin + Statin

C. Aspirin + Clopidogrel + LMWH

D. Aspirin + LMWH

Correct answer: C

Aspirin + Clopidogrel + LMWH The management of Non-ST-Elevation Myocardial Infarction (NSTEMI) focuses on preventing further thrombus formation and reducing myocardial oxygen demand. The standard initial medical management involves a combination of antiplatelet and anticoagulant therapy. This includes aspirin (an antiplatelet agent) and a P2Y12 inhibitor like clopidogrel (dual antiplatelet therapy or DAPT), which work synergistically to inhibit platelet aggregation. In addition, an anticoagulant is required to inhibit the coagulation cascade and prevent thrombus growth. Low-Molecular-Weight Heparin (LMWH), such as enoxaparin, is a commonly used and effective anticoagulant in this setting. While a statin (B) is crucial for long-term management, it is not the immediate priority for acute antithrombotic therapy. Using single antiplatelet therapy (D) or DAPT without anticoagulation (A) would be insufficient for managing an acute NSTEMI.

Question 88. What is the most common cause of hypercalcemia in a hospitalized patient?

A. Malignancy

B. Parathyroid Adenoma

C. Parathyroid hyperplasia

D. Follicular thyroid CA

Correct answer: A

Malignancy While primary hyperparathyroidism (caused by a parathyroid adenoma) is the most common cause of hypercalcemia in the outpatient setting, malignancy is the most common cause in hospitalized (inpatient) patients. This is referred to as hypercalcemia of malignancy. It can occur through several mechanisms. The most common is the secretion of parathyroid

hormone-related peptide (PTHrP) by tumors (e.g., squamous cell carcinoma of the lung, renal cell carcinoma), which mimics the action of PTH. Another mechanism is the production of osteolytic lesions from bone metastases (e.g., from breast cancer or multiple myeloma), which directly destroy bone and release calcium. Less commonly, tumors can produce active vitamin D (calcitriol), as seen in some lymphomas. Therefore, in a patient who is sick enough to be hospitalized, malignancy should be the primary suspicion for the cause of hypercalcemia.

Question 89. Which of the following is not a component of metabolic syndrome?

A. Low HDL

B. Fasting glucose

C. Blood pressure

D. None of the above

Correct answer: D

None of the above Metabolic syndrome is a cluster of conditions that increase the risk of developing cardiovascular disease and type 2 diabetes. The diagnostic criteria, according to most guidelines (like the NCEP ATP III), include the presence of at least three of the following five risk factors: 1 Abdominal Obesity: Increased waist circumference. 2 Hypertriglyceridemia: Elevated triglycerides. 3 Low HDL Cholesterol: Reduced levels of "good" cholesterol. 4 Hypertension: Elevated blood pressure. 5 Hyperglycemia: Elevated fasting blood glucose. Since low HDL, elevated fasting glucose, and elevated blood pressure are all core components of the diagnostic criteria for metabolic syndrome, none of them can be excluded. Therefore, the correct answer is "None of the above," as all the listed items are indeed components of the syndrome.

Question 90. After undergoing an adrenalectomy and during the hospital stay, a young patient develops hyperpigmentation on the distal parts of the fingers. What underlying condition most likely explains this finding?

A. Addison's disease

B. Conn's syndrome

C. Nelson syndrome

D. Cushing syndrome

Correct answer: C

Nelson syndrome Nelson syndrome is a specific clinical condition that can occur after a bilateral adrenalectomy is performed to treat Cushing's disease (a pituitary adenoma secreting ACTH). The removal of the adrenal glands eliminates the production of cortisol. This removes the negative feedback that cortisol normally exerts on the pituitary gland. In the absence of this feedback, the pre-existing pituitary adenoma can grow aggressively and secrete extremely high levels of Adrenocorticotropic Hormone (ACTH) and its precursor, pro-opiomelanocortin (POMC). POMC is also cleaved to produce melanocyte-stimulating hormone (MSH). The excessively high

levels of ACTH and MSH stimulate melanocytes, leading to the characteristic intense hyperpigmentation of the skin and mucous membranes. The other conditions do not fit this specific post-surgical context.

Question 91. A 26-year-old woman presents with menorrhagia and a history of excessive bleeding after minor procedures. Her father and sister have similar symptoms, and the disorder follows an autosomal dominant inheritance pattern. What is the most likely diagnosis?

A. Von Willebrand disease

B. Hemophilia A

C. Christmas disease

D. Factor 10 deficiency

Correct answer: B

Three samples from peripheral lines 1 hour apart The diagnosis of infective endocarditis (IE) heavily relies on isolating the causative microorganism from the blood. According to the modified Duke criteria, obtaining blood cultures is a major diagnostic criterion. The bacteremia in IE is typically continuous but can be of low magnitude. To maximize the diagnostic yield and differentiate true bacteremia from contamination, the standard recommendation is to obtain three sets of blood cultures from separate peripheral venipuncture sites over a period of time, typically within the first 1-2 hours of suspicion and before initiating antibiotic therapy. Taking samples an hour apart helps to demonstrate continuous bacteremia. Using different sites minimizes the chance of contamination from a single site's skin flora. A single sample is inadequate due to the high risk of false negatives or contamination. Taking samples days apart is not practical for initiating timely treatment.

Question 92. Which diagnostic investigation should be performed first to confirm the suspected diagnosis in a 26-year-old woman presenting with palpitations, weight loss, tremors, sweating, and diarrhea?

A. TSH and free T4

B. Anti Thyroid Peroxidase antibodies

C. Total T3

D. USG Neck

Correct answer: A

TSH and free T4 The patient's constellation of symptoms—palpitations, weight loss despite a good appetite, tremors, heat intolerance (sweating), and diarrhea—is classic for hyperthyroidism or thyrotoxicosis. The initial and most crucial step in confirming this diagnosis is to perform thyroid function tests. The best initial screening and diagnostic tests are the measurement of serum Thyroid-Stimulating Hormone (TSH) and free Thyroxine (free T4). In primary hyperthyroidism (the most common cause, e.g., Graves' disease), the thyroid gland

overproduces T4 and/or T3, which suppresses the pituitary's production of TSH. Therefore, the characteristic biochemical finding is a low or undetectable TSH level with an elevated free T4 and/or free T3 level. While antibody tests (B) and ultrasound (D) are important for determining the underlying etiology (e.g., Graves' disease vs. toxic nodule), the initial confirmation of the hyperthyroid state relies on TSH and free T4 levels.

Question 93. What is the recommended medication for treating watery diarrhea that occurs in a patient who developed this symptom while taking ampicillin for a URTI?

A. Metronidazole

B. Fidaxomicin

C. Ciprofloxacin

D. Bezlotoxumab

Correct answer: B

Fidaxomicin A patient who develops watery diarrhea while taking ampicillin most likely has antibiotic-associated diarrhea due to overgrowth of Clostridioides difficile. Broad-spectrum antibiotics like ampicillin disrupt the normal intestinal flora, allowing C. difficile to proliferate and produce toxins (toxin A and toxin B). These toxins cause inflammation of the colon, leading to diarrhea, abdominal pain, and sometimes pseudomembranous colitis. Current guidelines recommend Fidaxomicin as the preferred first-line treatment for an initial episode of C. difficile infection. Fidaxomicin is a narrow-spectrum, bactericidal antibiotic that specifically targets C. difficile with minimal effect on normal gut flora. This selective action results in lower recurrence rates compared to oral vancomycin. It is administered orally and acts locally within the gastrointestinal tract. Metronidazole is no longer first-line except when other agents are unavailable. Ciprofloxacin may worsen the condition. Bezlotoxumab is used only to prevent recurrence, not as primary therapy. Thus, fidaxomicin is recommended.

Question 94. Which diagnosis is most likely in a 30-year-old patient who presents with a week-long high fever, neck stiffness, a positive Kernig’s sign, and CSF findings of lymphocytic predominance, protein 80 mg/dL, glucose 20 mg/dL, with an RBS of 140 mg/dL?

A. Tubercular meningitis

B. Coxsackie meningitis

C. Bacterial meningitis

D. HSV-1 encephalitis

Correct answer: A

Tubercular meningitis The cerebrospinal fluid (CSF) analysis provides key clues. The presence of lymphocytosis (an increased number of lymphocytes) points away from typical acute bacterial meningitis, which usually causes a neutrophilic pleocytosis. The CSF glucose level is significantly low ($20~mg/dl$), especially when compared to the serum glucose (CSF/serum

glucose ratio is <0.4), which is characteristic of infections where organisms consume glucose, such as bacterial or tuberculous meningitis. Viral meningitis typically has normal glucose levels. The protein level is moderately elevated ($80~mg/dl$). This combination of subacute onset, lymphocytic pleocytosis, very low glucose, and moderately high protein is the classic CSF profile for tubercular meningitis. Viral meningitis would have normal glucose, while bacterial meningitis would typically show a much higher cell count consisting of neutrophils.

Question 95. A 30-year-old HIV-positive man presents with neck stiffness and optic disc swelling. CSF analysis shows a capsulated fungus, confirmed by a positive India ink stain. In this context, which of the following statements is correct?

A. The pressure inside the skull remains unchanged.

B. Delay antiretroviral therapy by 4-6 weeks after the initiation of antifungal treatment.

C. Begin treatment with fluconazole taken by mouth.

D. Brain imaging shows changes $in>80\%$ of patients.

Correct answer: B

Delay antiretroviral therapy by 4-6 weeks after the initiation of antifungal treatment. The clinical picture describes cryptococcal meningitis, a common opportunistic infection in patients with advanced HIV/AIDS. A major concern in managing this condition is the risk of Immune Reconstitution Inflammatory Syndrome (IRIS) if antiretroviral therapy (ART) is started too soon. IRIS can lead to a paradoxical worsening of symptoms and increased intracranial pressure. Therefore, current guidelines recommend starting antifungal therapy first and delaying the initiation or re-initiation of ART for at least 4-6 weeks. This allows for a reduction in the fungal burden before the immune system is reconstituted by ART. Intracranial pressure is almost always elevated, often severely. Initial treatment (induction phase) for cryptococcal meningitis requires intravenous amphotericin B (often with flucytosine), not oral fluconazole. Brain imaging is often normal in the early stages.

Question 96. A 70-year-old diabetic man falls and later develops high fever, cough, shortness of breath, and confusion. His chest X-ray shows lobar consolidation, and his lab results reveal elevated BUN and creatinine. What is the most suitable management approach?

A. Inpatient management with levofloxacin.

B. Inpatient management with ceftriaxone.

C. Discharge home on amoxicillin with clavulanic acid.

D. Discharge home on azithromycin.

Correct answer: A

Inpatient management with levofloxacin. This patient has community-acquired pneumonia (CAP). To determine the appropriate management, we use a severity score like CURB-65 (Confusion, Urea >7 mmol/L, Respiratory rate ≥30, Blood pressure <90/60, Age ≥65). This

patient scores at least 3 points (Confusion, elevated BUN, Age ≥65), indicating severe pneumonia that requires inpatient management, likely in an ICU setting. For severe CAP, guidelines recommend combination therapy. Standard inpatient therapy for non-severe CAP often involves a respiratory fluoroquinolone like levofloxacin or a beta-lactam (like ceftriaxone) plus a macrolide (like azithromycin). Given the severity and the options, inpatient management with a respiratory fluoroquinolone is a very appropriate choice. Discharging the patient home would be unsafe. Monotherapy with ceftriaxone might be insufficient as it doesn't cover atypical pathogens.

Question 97. A known RA (Rheumatoid Arthritis) patient presents to the ER with hypotension. She abruptly stopped her medications. Her vitals and labs show: HR 110 = bpm, / BP 80 40 = mmHg, blood / , agar mg dl 50 = Na 130 = meq/L, . / . K meq L 6 0 = What should be the most appropriate management?

A. Fast IV fluids

B. Hydrocortisone

C. Dopamine infusion

D. Sodium bicarbonate

Correct answer: B

Hydrocortisone This patient is presenting with an adrenal crisis (acute adrenal insufficiency). Patients with chronic inflammatory diseases like rheumatoid arthritis are often on long-term steroid therapy, which suppresses the hypothalamic-pituitary-adrenal (HPA) axis. Abrupt cessation of these steroids can lead to an inability to produce endogenous cortisol, resulting in an adrenal crisis, especially under physiological stress. The clinical picture of hypotension, shock, hypoglycemia, hyponatremia, and hyperkalemia is classic for this condition. While IV fluids and vasopressors may be needed for support, the cornerstone and most critical immediate treatment is the administration of stress-dose hydrocortisone. This directly replaces the deficient glucocorticoid and mineralocorticoid activity, reversing the underlying pathophysiology. Sodium bicarbonate might be used for severe acidosis but is not the primary treatment.

Question 98. Workup of a 25-year-old hotel worker shows the following profile: • HBsAg = Negative • Anti-HBs = Negative • HBeAg Negative • Anti-HBe Negative • Total anti-HBc = Positive What is the diagnosis?

A. Chronic hepatitis B

B. Inactive carrier

C. Hepatitis B in remote past

D. Window period/Gap period

Correct answer: D

Window period/Gap period In this serological profile: HBsAg = Negative Anti-HBs = Negative

HBeAg = Negative Anti-HBe = Negative Total anti-HBc = Positive The key finding is isolated anti-HBc positivity. During the natural course of acute hepatitis B infection, there is a phase called the window period. In this period, HBsAg has disappeared, but anti-HBs has not yet appeared. Therefore, both HBsAg and anti-HBs are negative. The only detectable marker during this time is anti-HBc, particularly IgM anti-HBc, which indicates recent infection. Total anti-HBc includes both IgM and IgG antibodies, so its positivity supports exposure to hepatitis B virus. Chronic hepatitis B would show persistent HBsAg positivity. An inactive carrier state also requires HBsAg positivity. Remote past infection would typically show anti-HBs positivity along with anti-HBc. Since HBsAg and anti-HBs are both negative but anti-HBc is positive, the most appropriate diagnosis is the window (gap) period of acute hepatitis B infection.

Question 99. A 42-year-old woman diagnosed with ulcerative colitis is having 3–4 episodes of bloody diarrhea per day. What is the most appropriate initial treatment for her condition?

A. Azathioprine

B. Sulfasalazine

C. Budesonide

D. Bezlotoxumab

Correct answer: B

Sulfasalazine The patient's presentation suggests mild-to-moderate active ulcerative colitis. The first-line treatment for inducing and maintaining remission in such cases is an aminosalicylate (5-ASA) compound. Sulfasalazine is a classic 5-ASA drug that consists of sulfapyridine linked to mesalamine (5-ASA). The mesalamine component has a topical anti-inflammatory effect on the colonic mucosa. Other 5-ASA preparations like mesalamine itself are also used. For patients with mild-to-moderate disease, these agents are effective and generally well-tolerated. Azathioprine is an immunomodulator used for steroid-dependent or refractory disease. Budesonide is a corticosteroid used for induction of remission in Crohn's disease or moderate UC, but 5-ASAs are typically tried first. Bezlotoxumab is a monoclonal antibody for preventing C. difficile recurrence and has no role in UC. page 315 INICET Examination Paper AAns (C) OCP While this question is somewhat ambiguous as all listed options can be part of PCOS management, there is a nuance to consider. The patient presents with both PCOS and hirsutism. Oral contraceptive pills (OCPs) are a first-line treatment for menstrual irregularity in PCOS and can also modestly improve hirsutism. However, for moderate to severe hirsutism, OCPs alone are often insufficient. Antiandrogens (like spironolactone) are specifically added to OCPs to more effectively combat hirsutism. Lifestyle modifications are fundamental for all PCOS patients. Metformin is used for patients with metabolic syndrome or insulin resistance. Given that the patient has hirsutism, initiating combination therapy (e.g., OCP + antiandrogen) is often more effective than OCPs alone. Therefore, one could argue that using OCPs as the sole

therapy might be considered "inappropriate" or at least suboptimal for addressing the specific complaint of hirsutism, making it the most likely intended answer.

Question 100. Which of the following criteria corresponds to ASA grade III?

A. Mild illness

B. Patient is moribund, can't survive without surgery

C. Severe illness which is a constant threat to life

D. Severe illness

Correct answer: D

Severe illness The American Society of Anesthesiologists (ASA) physical status classification system is used to assess the preoperative health of a patient. ASA Grade III is defined as a patient with a severe systemic disease that is not incapacitating but does cause some functional limitation. Examples include poorly controlled diabetes or hypertension, stable angina, or a history of myocardial infarction more than three months ago. This is distinct from ASA II (A), which is a patient with mild systemic disease. It is also different from ASA IV (C), which is a patient with a severe systemic disease that is a constant threat to life. ASA V (B) describes a moribund patient not expected to survive without the operation. Therefore, "Severe illness" is the best description for ASA III among the choices.

Question 101. A patient reports genital pain, and on examination, there are painful vesicles along with tender lymphadenopathy. What is the most likely diagnosis?

A. Herpes Simplex Virus Type 2 (HSV-2)

B. Human Papillomavirus (HPV)

C. Herpes Zoster Virus (HZV)

D. Herpes Simplex Virus Type 1 (HSV-1)

Correct answer: A

Herpes Simplex Virus Type 2 (HSV-2) The clinical presentation of multiple, grouped painful vesicles on an erythematous base in the genital region, accompanied by tender, painful regional lymphadenopathy, is the classic picture of a primary genital herpes infection. While both HSV-1 and HSV-2 can cause genital herpes, HSV-2 is historically and still more commonly associated with genital tract infections. A primary infection is often accompanied by systemic symptoms like fever and malaise. In contrast, HPV (B) typically causes painless warts (condyloma acuminata). Herpes Zoster (shingles) (C) is a reactivation of the varicella-zoster virus and presents as a dermatomal, usually unilateral, vesicular rash. While HSV-1 (D) can cause genital lesions, it is more traditionally associated with orofacial infections ("cold sores"), and HSV-2 remains the most frequent cause of genital herpes.

Question 102. A patient arrives at the emergency department displaying symptoms of hypotension (blood pressure at 90/60 mmHg), following the abrupt cessation of a

medication previously prescribed for rheumatoid arthritis. Laboratory tests reveal hyperkalemia (potassium level at 6.5 mEq/L), normonatremia (sodium level at 139 mEq/L), alongside signs of dehydration, pronounced hypotension (/ 90 40 mmHg), and hypoglycemia (blood glucose at /) mg dL 40 . Considering these clinical signs, which medication is imperative for the immediate management of this patient's condition?

A. Hydrocortisone

B. Sodium bicarbonate

C. Insulin

D. Hypertonic saline

Correct answer: A

Hydrocortisone This patient is presenting with an adrenal crisis (acute adrenal insufficiency). Patients with chronic inflammatory diseases like rheumatoid arthritis are often on long-term steroid therapy, which suppresses the hypothalamic-pituitary-adrenal (HPA) axis. Abrupt cessation of these steroids can lead to an inability to produce endogenous cortisol, resulting in an adrenal crisis, especially under physiological stress. The clinical picture of hypotension, shock, hypoglycemia, hyponatremia (though masked here), and hyperkalemia is classic for this condition. While IV fluids and vasopressors may be needed for support, the cornerstone and most critical immediate treatment is the administration of stress-dose hydrocortisone. This directly replaces the deficient glucocorticoid and mineralocorticoid activity, reversing the underlying pathophysiology. Sodium bicarbonate might be used for severe acidosis but is not the primary treatment.

Question 103. A patient on antitubercular therapy is reassessed 10 days after starting treatment. Their AST and ALT levels are normal, serum creatinine is 0.9 mg/ dL, but serum uric acid is elevated at 10 mg/ dL. What is the most appropriate modification to their management plan?

A. Discontinue pyrazinamide while maintaining the rest of the antitubercular regimen.

B. Add uric acid reducing drugs and continue ATT as such with LFT/KFT monitoring.

C. Continue all drugs and monitor serum uric acid level and LFT and KFT.

D. Stop all ATT drugs till labs are normal

Correct answer: C

Continue all drugs and monitor serum uric acid level and LFT and KFT. Hyperuricemia is a very common and expected side effect of pyrazinamide, one of the first-line anti-tubercular drugs. It occurs because pyrazinamide's metabolite, pyrazinoic acid, competes with uric acid for renal tubular secretion, leading to its retention. However, this asymptomatic hyperuricemia, in the absence of symptoms of gouty arthritis, is generally considered a benign and manageable side effect. Standard guidelines recommend to continue all anti-tubercular drugs and simply monitor

the patient. Stopping a crucial first-line drug like pyrazinamide is not warranted for asymptomatic hyperuricemia. Adding uric acid-lowering agents is only considered if the patient develops symptomatic gout. Since the liver and renal functions are normal, continuing the current regimen with monitoring is the most appropriate course of action.

Question 104. What is the likely cause of the patient's condition based on the CSF findings of elevated lymphocytes, increased protein (63), and reduced glucose (20)?

A. Tuberculous meningitis

B. Viral meningitis

C. Bacterial meningitis

D. Aseptic meningitis

Correct answer: A

Tuberculous meningitis The cerebrospinal fluid (CSF) analysis provides key clues to the etiology of meningitis. The presence of a lymphocytic pleocytosis (increased lymphocytes) argues against typical acute bacterial meningitis, which is characterized by a predominance of neutrophils. The significantly decreased glucose level (hypoglycorrhachia), often less than 40% of the serum glucose level, is a hallmark of infections where organisms actively consume glucose, such as bacterial, fungal, or tuberculous meningitis. Viral meningitis typically presents with normal CSF glucose. The moderately increased protein level is also consistent with an infectious or inflammatory process. This specific combination—a subacute clinical course with lymphocytic pleocytosis, very low glucose, and elevated protein—is the classic CSF profile for Tuberculous Meningitis.

Question 105. Match the following: 1. Trisomy 13 a. GLU-VAL re- placement 2. Trisomy 18 b. Edwards syn- drome 3. Trisomy 21 c. Down syndrome 4. Sickle cell anemia d. Patau syndrome

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

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

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

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

Correct answer: A

1-d, 2-b, 3-c, 4-a This question requires matching genetic conditions with their common names or molecular basis. Trisomy 13 is the chromosomal abnormality that causes Patau syndrome. Trisomy 18 is the cause of Edwards syndrome. Trisomy 21 is the most common autosomal trisomy and is the genetic basis for Down syndrome. Sickle cell anemia is a molecular disease caused by a specific point mutation in the beta-globin gene, which leads to the replacement of glutamic acid (GLU) with valine (VAL) at the sixth position of the beta-globin protein chain. Therefore, the correct matches are 1-d, 2-b, 3-c, and 4-a. The other options present incorrect associations between these well-known genetic disorders and their definitions.

Question 106. A patient in the ICU being treated for sepsis had an initial arterial blood gas (ABG) showing: . pH 6 9 = ; pO2 = 80 mm Hg; pCO 55 2 = mm Hg; / HCO meq L 10 3 = . A repeat ABG 2 hours later showed: pH = 6.7; pO2 100 = mm Hg; pCO2 20 = mm Hg; / HCO meq L 5 3 = . What factor is most likely responsible for the observed changes in the ABG results?

A. Excessive air and less heparin in ABG sample

B. Excess air and more heparin in ABG sample

C. Less air and more heparin in ABG sample

D. Less air and less heparin in ABG sample

Correct answer: B

Excess air and more heparin in ABG sample This question describes common pre-analytical errors in ABG sampling. The changes from the first to the second sample are a significant drop in pCO 2 (from 55 to 20), a rise in pO 2 (from 80 to 100), and a worsening acidosis (pH drop, HCO 3 drop). Contamination of the blood sample with excess air (an air bubble) will cause the pO 2 of the blood to move towards the pO 2 of room air (~150 mmHg) and the pCO 2 to move towards the pCO 2 of room air (~0 mmHg), explaining the rise in pO 2 and the drastic fall in pCO 2 . The use of excess liquid heparin as an anticoagulant can cause a dilution error, lowering the measured HCO 3 and pCO 2 . The heparin itself is also acidic and can contribute to a lower pH. Therefore, the combination of excess air and excess heparin best explains the specific changes observed between the two ABG samples.

Question 107. A 55-year-old woman presents with blood in her stool and has firm, enlarged inguinal lymph nodes. A contrast-enhanced CT scan reveals a suspicious malignant mass in the lower gastrointestinal tract. Where is this mass most likely situated?

A. Anal canal inferior to the pectinate line

B. Distal rectum

C. Sigmoid colon

D. Proximal rectum

Correct answer: A

Anal canal inferior to the pectinate line The lymphatic drainage of the rectum and anal canal is divided by the pectinate (dentate) line. The area superior to the pectinate line, including the proximal rectum and sigmoid colon, drains primarily to the internal iliac and inferior mesenteric lymph nodes. The area inferior to the pectinate line, which is derived from the embryonic proctodeum (ectoderm), has lymphatic drainage similar to the perianal skin. This drainage goes to the superficial inguinal lymph nodes. Therefore, the presence of enlarged inguinal lymph nodes in a patient with a lower gastrointestinal malignancy strongly suggests that the primary tumor is located in the anal canal, inferior to the pectinate line. Tumors in the distal or proximal

rectum or sigmoid colon would typically metastasize to internal pelvic or abdominal lymph nodes, not the inguinal nodes.

Question 108. What are the characteristics of sweat chloride and pancreatic chloride levels in individuals with cystic fibrosis?

A. Chlorine transport increase in sweat

B. Chlorine transport decrease in sweat

C. Chlorine concentration increase in pancreatic secretion

D. Chlorine concentration normal in pancreatic secretion

Correct answer: B

Chlorine transport decrease in sweat Cystic fibrosis is caused by mutations in the CFTR (Cystic Fibrosis Transmembrane Conductance Regulator) gene, which codes for a chloride ion channel. The function of this channel differs depending on the tissue. In the duct of the sweat gland, the CFTR channel is responsible for reabsorbing chloride from the primary sweat into the body. When the channel is defective, this reabsorption fails, leading to a high concentration of chloride in the sweat, which is the basis for the diagnostic sweat test. So, chloride transport out of the sweat duct is decreased. In contrast, in secretory epithelia like the pancreas and respiratory tract, the CFTR channel's primary role is to secrete chloride into the lumen, which drives the movement of water and creates thin, watery secretions. In cystic fibrosis, this chloride secretion is defective, leading to thick, viscous mucus that obstructs the ducts. SURGERY

Question 109. Which of the following tumor markers are positive for seminoma? 1 PLAP 2 OCT3/4 3 NANOG 4 HCG

A. 1 only

B. 1 & 2 only

C. 1, 2, 3 only

D. 1,2,3,4

Correct answer: D

1,2,3,4 Seminoma is the most common type of testicular germ cell tumor. Its diagnosis is aided by a panel of immunohistochemical markers. Placental-like alkaline phosphatase (PLAP) is a classic membrane marker that is positive in the majority of seminomas. OCT3/4 and NANOG are nuclear transcription factors that are markers of pluripotency and are considered highly sensitive and specific for seminoma and embryonal carcinoma. They are consistently expressed in virtually all seminomas. Human chorionic gonadotropin (beta-hCG) can also be focally positive in seminomas due to the presence of scattered syncytiotrophoblastic giant cells. While elevated serum hCG is found in only about 10-15% of cases, the tumor cells themselves can show positivity on IHC. Therefore, all four listed markers can be positive in a seminoma.

Question 110. Which is the most important prognostic factor of breast cancer patients?

A. Lymph node status

B. Pathological staging

C. Tumor Size

D. Status of Hormone receptors

Correct answer: B

Pathological staging Pathological staging is considered the most important prognostic factor in breast cancer because it incorporates multiple critical determinants of outcome into a single comprehensive system. It is based on the TNM classification, which includes tumor size (T), lymph node involvement (N), and presence or absence of distant metastasis (M). After surgical removal of the tumor, pathological staging provides accurate information about the true extent of disease. Although lymph node status is a very strong individual prognostic factor, it is actually a component of pathological staging. Similarly, tumor size and hormone receptor status (ER/PR) are important, but they represent only parts of the overall disease profile. Pathological stage correlates closely with survival rates, recurrence risk, and treatment decisions. Higher stages indicate greater tumor burden and worse prognosis. It guides decisions regarding chemotherapy, radiotherapy, hormonal therapy, and targeted therapy. Therefore, because it integrates tumor size, nodal status, and metastasis into one standardized assessment, pathological staging is the single most important prognostic factor in breast cancer patients.

Question 111. Body Surface Area (BSA)

A. 45%

B. 27%

C. 36%

D. 31.5%

Correct answer: A

45% This question likely refers to estimating the total body surface area (TBSA) affected by a burn in an adult using the "Rule of Nines." The Rule of Nines is a standardized method used to quickly assess the percentage of the body affected by burns. In an adult, the body is divided into regions that represent approximately 9% or multiples of 9% of the TBSA. The allocations are: Head and Neck (9%), each Upper Limb (9% each), Anterior Trunk (18%), Posterior Trunk (18%), each Lower Limb (18% each), and the Perineum (1%). The question is incomplete, but if it describes burns to the entire anterior trunk (18%), the entire posterior trunk (18%), and one entire arm (9%), the total would be 18 + 18 + 9 = 45%. Other combinations are possible, but 45% is a plausible total derived from major burn areas. page 313 INICET Examination Paper (B) Hemolytic Uremic Syndrome (C) Severe dehydration (D) Cerebral vein thrombosis AAns (D)

Cerebral vein thrombosis An 18-month-old child with a 3-day history of watery diarrhea and vomiting is most likely suffering from acute gastroenteritis with fluid and electrolyte imbalance. Altered sensorium in this setting is commonly due to metabolic and dehydration-related causes. 1. Hyponatremia (A) is a common complication of diarrhea, especially if hypotonic fluids are given. Low sodium levels can lead to cerebral edema and altered consciousness. 2. Severe dehydration (C) can cause hypovolemia, poor cerebral perfusion, metabolic acidosis, and lethargy or altered sensorium. 3. Hemolytic Uremic Syndrome (B) may follow diarrheal illness (especially bloody diarrhea due to E. coli). It can lead to acute kidney injury, uremia, and neurological symptoms, including altered mental status. However, Cerebral vein thrombosis (D) is not a typical or primary differential diagnosis in a child with simple watery diarrhea and vomiting. Although dehydration can predispose to thrombosis, it is rare and not a common immediate consideration compared to metabolic and renal causes. Therefore, the correct answer is (D) Cerebral vein thrombosis.

Question 112. Which classification system takes into account the location and the thermal damage to both the duct and the vessel in cases of bile duct injury?

A. Bismuth

B. Strasberg

C. Stewart Way

D. Hannover

Correct answer: D

Hannover The Hannover classification of bile duct injuries is unique because it not only considers the anatomical location of the bile duct injury but also evaluates the extent of associated vascular injury and thermal damage. This makes it particularly useful in injuries occurring during laparoscopic cholecystectomy, where both mechanical and thermal injuries can occur. The Bismuth classification mainly categorizes bile duct strictures based on their location relative to the hepatic duct confluence but does not consider vascular injury or thermal damage. The Strasberg classification expands on Bismuth and includes bile leaks and minor injuries, yet it still does not systematically account for vascular involvement. The Stewart-Way classification focuses on the mechanism and extent of injury but does not specifically incorporate detailed vascular and thermal damage assessment. In contrast, the Hannover system integrates ductal injury level, vascular injury (especially hepatic artery involvement), and thermal damage, which are critical factors affecting prognosis and surgical repair outcomes. Therefore, the classification system that considers both duct location and thermal/vascular damage is the Hannover classification.

Question 113. After a cholecystectomy, histopathology shows carcinoma invading the muscular layer. What is the most appropriate next step?

A. Chemotherapy

B. Radiotherapy

C. Excision of the stump

D. Extended Cholecystectomy

Correct answer: D

Extended Cholecystectomy This patient has an incidentally discovered gallbladder carcinoma. The histopathology describes a T1b tumor (invasion into the muscular layer, but not beyond). For a simple cholecystectomy, the plane of dissection is within the subserosal layer. For a T1b tumor, there is a risk of residual disease at the gallbladder bed in the liver or lymphatic spread, which is higher than for T1a (lamina propria invasion) tumors. Therefore, the standard of care for a T1b gallbladder cancer discovered after a simple cholecystectomy is to perform a second, more extensive operation. This procedure is an extended cholecystectomy, which includes a wedge resection of the gallbladder fossa in the liver (segments IVb and V) and a regional lymphadenectomy of the hepatoduodenal ligament. This ensures clearance of any potential residual local or nodal disease and significantly improves survival.

Question 114. Which of the following statements about Choledochal Cysts is incorrect?

A. Increased risk of cholangiocarcinoma

B. The cyst can be opened directly and drained.

C. Todani classification is used for grading

D. Associated with abnormal Bilio-Pancreatic Junction

Correct answer: B

The cyst can be opened directly and drained. Choledochal cysts are congenital dilatations of the biliary tree. They are associated with an anomalous pancreaticobiliary junction, which allows pancreatic enzymes to reflux into the bile duct, causing chronic inflammation and predisposing the biliary epithelium to dysplasia and malignancy. This leads to a significantly increased risk of cholangiocarcinoma. The Todani classification is the most widely used system to categorize the different anatomical types of cysts. The definitive treatment for choledochal cysts is not simple drainage. Because of the high malignancy risk, the standard surgical treatment is complete excision of the cyst followed by biliary reconstruction, typically with a Roux-en-Y hepaticojejunostomy. Simply opening and draining the cyst (cystenterostomy) is an outdated and inadequate procedure as it leaves the abnormal, cancer-prone epithelium in place.

Question 115. Open cardiac massage is classified as what kind of wound?

A. Clean

B. Contaminated

C. Dirty

D. Clean Contaminated

Correct answer: B

Contaminated Open cardiac massage is performed during emergency thoracotomy, usually in cases of severe trauma or cardiac arrest. Although the procedure involves entering the thoracic cavity under surgical conditions, it is typically done in an emergency setting rather than a planned sterile operating room procedure. Because of the urgent nature and possible exposure to non-sterile environments, the wound is classified as contaminated. According to surgical wound classification, wounds are divided into clean, clean-contaminated, contaminated, and dirty. A clean wound involves no entry into respiratory, gastrointestinal, or genitourinary tracts and is performed under ideal sterile conditions. In open cardiac massage, the chest cavity is opened emergently, often after trauma, and there is a high risk of bacterial contamination from the environment or injured tissues. Therefore, due to the emergency nature of the procedure and increased risk of contamination, open cardiac massage is categorized as a contaminated wound.

Question 116. A woman has a biopsy and immunohistochemical testing for a non-palpable breast lump, and the tumor is classified as Luminal A. Which markers are characteristic of the Luminal A breast cancer subtype?

A. ER positive, PR positive, Her 2 neu positive

B. ER positive, PR positive and Her 2 neu negative

C. ER positive, PR negative, Her 2 neu negative

D. Triple Negative

Correct answer: B

ER positive, PR positive and Her 2 neu negative Breast cancers are molecularly subtyped to guide prognosis and treatment. The Luminal A subtype is the most common and generally has the best prognosis. It is defined by the expression of hormone receptors and low expression of proliferation markers. The characteristic immunohistochemical profile of a Luminal A tumor is Estrogen Receptor (ER) positive, Progesterone Receptor (PR) positive (typically >20%), HER2/neu negative, and a low level of the proliferation marker Ki-67 (typically <14-20%). This profile indicates that the tumor growth is driven by hormones and is likely to respond well to endocrine therapy. A triple-negative breast cancer (D) is ER-negative, PR-negative, and HER2-negative. The other options represent other subtypes (e.g., Luminal B or HER2-enriched).

Question 117. During a laparoscopic cholecystectomy on a 60-year-old male, the surgical team noted an acute onset of physiological changes: a significant drop in end-tidal CO 2 ( ) etCO 2 to 8 mm Hg, a decrease in oxygen saturation ( ) SpO 2 to 90%, blood pressure falling to / 80 50 mm Hg, and peak airway pressures reaching 18 mm Hg. Based on these observations, what is the most likely complication this patient is experiencing?

A. Pneumothorax

B. CO 2 embolism

C. Endobronchial intubation

D. Bronchospasm

Correct answer: B

embolism The clinical picture of a sudden and profound drop in end-tidal , accompanied by hypotension and hypoxia during a laparoscopic procedure where carbon dioxide is used for insufflation, is the classic presentation of a gas embolism. This occurs when a significant amount of the insufflated gas enters the venous circulation, travels to the right heart and pulmonary artery, and creates a gas lock that obstructs pulmonary blood flow. This obstruction leads to a massive increase in dead space ventilation, causing the sharp fall in , and also results in acute right heart failure and cardiovascular collapse (hypotension). While other complications can occur, endobronchial intubation or bronchospasm would cause a rise in airway pressure and a rise or no change in . A pneumothorax could cause similar vital sign changes but is less likely to cause such a dramatic drop in .

Question 118. What stands true for palliative care?

A. Also known as hospice care

B. We do curative treatment

C. Aim is to reduce suffering before death

D. Aim is to improve the quality of life of patients only

Correct answer: C

Aim is to reduce suffering before death Palliative care is a specialized medical approach focused on improving the quality of life for patients and their families facing problems associated with life-threatening illness. Its primary aim is to prevent and relieve suffering by means of early identification and impeccable assessment and treatment of pain and other problems, whether physical, psychosocial, or spiritual. While it includes end-of-life care, it is not synonymous with hospice care (A); palliative care can be provided at any stage of a serious illness, even alongside curative treatment (B). The focus is not only on the patient but also on their family and caregivers. The ultimate goal is to reduce suffering throughout the course of the illness, including at the end of life. The most accurate description among the choices is the reduction of suffering. PEDIATRICS MEDINK (A) Button battery (B) Coin (C) Ball (D) Bottle cap AAns (A) Button battery The radiographic findings are characteristic of an ingested button battery. Two specific signs help differentiate it from a coin. On the anteroposterior (AP) or posteroanterior (PA) view, a button battery often displays a "double-ring" or "halo" sign due to its beveled edge. On the lateral view, it shows a "step-off" sign, which represents the junction between the battery's positive and negative poles. A coin, in contrast, appears as a single, uniform, flat disc on both views. Ingested button batteries, especially when lodged in the esophagus, are a medical emergency. They can cause severe liquefaction necrosis, erosion, and perforation of the esophageal wall within hours due to the electrical current they generate

and leakage of alkaline contents. Therefore, prompt identification and endoscopic removal are critical.

Question 119. A child is brought to the ER in an unconscious state after severe vomiting and abdominal pain episodes. /min HR 100 = and / BP 100 60 = mm Hg. Work-up shows . , pH 7 2 = blood glucose 300 mg/dL, and ketones 3+. What should be the best management?

A. Infusion of 0.05-0.1 U/kg dose insulin after 1 hour of IVF

B. 0.1 Unit/kg insulin stat followed by infusion of 0.5 U-0.1 U/kg dose insulin and IVF

C. . / U kg 0 1 insulin subcutaneous stat followed by IVF

D. IVF followed by subcutaneous 0.1 U/kg insulin

Correct answer: A

Infusion of 0.05-0.1 U/kg dose insulin after 1 hour of IVF The child presents with diabetic ketoacidosis (DKA), a life-threatening complication characterized by hyperglycemia, ketosis, and metabolic acidosis. The cornerstone of management is correcting dehydration, hyperglycemia, electrolyte imbalances, and acidosis. The first priority is fluid resuscitation with intravenous fluids (IVF), typically an isotonic solution like 0.9% saline. Insulin therapy should not be started until after the initial fluid bolus and after at least one hour of fluid replacement. This is crucial because giving insulin immediately can cause a rapid shift of water into brain cells, potentially leading to cerebral edema. An insulin bolus is no longer recommended in pediatric DKA for the same reason. The standard protocol is to start a continuous intravenous infusion of regular insulin at a rate of 0.05 to 0.1 units/kg/hour after the initial hour of fluid therapy.

Question 120. A child arrives with acute respiratory distress, and examination shows a scaphoid abdomen. Which of the following interventions should be avoided in this patient?

A. Positive Pressure Ventilation (PPV)

B. Bag and mask ventilation

C. Oxygen therapy

D. Intubation

Correct answer: B

Bag and mask ventilation The clinical picture of a newborn in respiratory distress with a scaphoid (sunken) abdomen is highly suggestive of a congenital diaphragmatic hernia (CDH). In CDH, abdominal organs herniate into the chest cavity, compressing the developing lung and causing pulmonary hypoplasia. In this situation, bag and mask ventilation is contraindicated. This is because it forces air not only into the lungs but also into the stomach and intestines. The air insufflated into the herniated abdominal viscera will cause them to distend further, increasing the compression on the already hypoplastic lung, worsening the respiratory distress, and compromising cardiovascular function. The immediate management requires endotracheal

intubation to secure the airway and provide controlled positive pressure ventilation directly to the lungs, bypassing the gastrointestinal tract. Oxygen therapy is also essential.

Question 121. A child is receiving oxygen through a nasal cannula at 3 L/min. What is the delivered FiO 2 (fraction of inspired oxygen)?

A. 24%

B. 30%

C. 44%

D. 32%

Correct answer: B

30% In oxygen therapy using a nasal cannula, the delivered FiO_2 increases approximately 4% for every 1 L/min increase in oxygen flow, starting from room air. Room air contains about 21% oxygen. The approximate formula used clinically is: $FiO_2 \approx 21\% + (4 \times \text{flow rate in L/min})$ For a flow rate of 3 L/min: $FiO_2 \approx 21\% + (4 \times 3)$ $FiO_2 \approx 21\% + 12\%$ $FiO_2 \approx 33\%$ However, because nasal cannula provides variable FiO_2 (depending on the patient's tidal volume, respiratory rate, and inspiratory flow), the delivered oxygen concentration is usually approximated. Clinically accepted values are: 1 L/min → 24% 2 L/min → 28% 3 L/min → 30% 4 L/min → 36% 5 L/min → 40% Thus, at 3 L/min, the commonly accepted delivered FiO_2 is approximately 30%, making option (B) correct.

Question 122. What feature is not typically associated with Down syndrome?

A. Caudal regression

B. Short stature

C. Hypothyroidism

D. Hearing loss

Correct answer: A

Caudal regression Caudal regression syndrome is a rare congenital disorder characterized by abnormal development of the lower (caudal) end of the spine. It is most strongly associated with uncontrolled maternal diabetes mellitus, not Down syndrome (Trisomy 21). The other features listed are commonly associated with Down syndrome. Short stature is a nearly universal finding. Hypothyroidism, most often congenital, occurs with increased frequency in individuals with Down syndrome, necessitating newborn screening. Hearing loss is also very common, affecting up to 75% of individuals, and can be conductive, sensorineural, or mixed. Other common features of Down syndrome include characteristic facial features (upslanting palpebral fissures, epicanthal folds, flat nasal bridge), intellectual disability, congenital heart defects (especially atrioventricular septal defects), and an increased risk of duodenal atresia and leukemia. Because caudal regression is not a recognized feature of Trisomy 21, it is the correct answer.

Question 123. A child developed a fever following the DPT vaccine at 6 weeks. Now at 10 weeks, the child is due for the next dose. What is the recommended approach?

A. Give DPT Vaccination

B. Give DT

C. Don't give DPT

D. Don't give any vaccination

Correct answer: A

Give DPT Vaccination A mild to moderate fever is a common, expected, and self-limited side effect following the DPT (Diphtheria, Pertussis, Tetanus) vaccination. It is not considered an adverse event or a contraindication to future doses. The fever is typically due to the inflammatory response to the vaccine components, particularly the whole-cell pertussis component in older formulations. According to immunization guidelines, common, anticipated reactions like fever, local soreness, or irritability do not preclude subsequent vaccination. True contraindications to the pertussis component of the DPT vaccine are rare and include severe events like an immediate anaphylactic reaction or the development of encephalopathy within 7 days of a previous dose. Since a simple fever is not a contraindication, the child should continue with their immunization schedule as planned to ensure they are protected. Therefore, the correct course of action is to administer the DPT vaccination at 10 weeks.

Question 124. What is the appropriate initial management for a 9-month-old infant who has a respiratory rate of 48 breaths per minute but shows no chest retractions or other symptoms?

A. No treatment needed

B. Send back home after starting oral antibiotics

C. Hospitalize and start oral antibiotics

D. Hospitalize and start IV antibiotics

Correct answer: A

No treatment needed According to the World Health Organization (WHO) guidelines for the Integrated Management of Childhood Illness (IMCI), the diagnosis of pneumonia in infants aged 2 to 12 months is based on the presence of fast breathing or chest in drawing. For this age group, fast breathing is defined as a respiratory rate of 50 breaths per minute or more. This infant's respiratory rate is 48 breaths per minute, which is within the normal range. Furthermore, the infant shows no danger signs like chest retractions, grunting, lethargy, or inability to feed. In the absence of both fast breathing (tachypnea) and any danger signs, the child does not meet the criteria for pneumonia. The condition is likely a simple cough or cold that does not require antibiotic treatment. Therefore, the most appropriate management is to reassure the parents and advise on supportive care at home, with no specific medical treatment needed.

Question 125. An 18-day-old infant presents with fever, cough, and vesicles on the trunk and upper limbs. The mother reports a history of genital ulcers one year ago that have since healed. What is the most likely diagnosis?

A. Herpes simplex

B. Molluscum contagiosum virus (MCV)

C. Human papillomavirus (HPV)

D. Varicella

Correct answer: A

Herpes simplex This clinical scenario is highly suggestive of neonatal herpes simplex virus (HSV) infection. Key features pointing to this diagnosis include the patient's age (neonate, 18 days old), the presence of a vesicular rash, systemic symptoms (fever, cough), and a maternal history of genital ulcers. Neonatal HSV is most commonly acquired during delivery (perinatally) from a mother with an active genital HSV infection, although the infection can be asymptomatic in the mother. The presentation can be localized to the skin, eyes, and mouth (SEM disease), involve the central nervous system (CNS disease), or be disseminated. Varicella (chickenpox) in a neonate is possible but less likely, especially with the specific maternal history. Molluscum contagiosum presents as umbilicated papules, not vesicles. HPV causes warts and is not associated with this acute presentation. The combination of neonatal age, vesicles, and maternal history makes HSV the most probable diagnosis.

Question 126. Which of the following has the least teratogenicity?

A. CMV (Cytomegalovirus)

B. Chickenpox (Varicella)

C. HSV-2 (Herpes Simplex Virus-2)

D. Rubella

Correct answer: C

HSV-2 (Herpes Simplex Virus-2) Teratogenicity refers to the ability of an agent to cause congenital malformations during fetal development. Rubella, CMV, and Varicella are well-established teratogens. Congenital Rubella Syndrome can cause deafness, cataracts, and cardiac defects. Congenital CMV is a leading cause of sensorineural hearing loss and neurodevelopmental disabilities. Congenital Varicella Syndrome, though rare, can cause limb hypoplasia, skin scarring, and eye defects. In contrast, Herpes Simplex Virus (HSV) is not considered a classic teratogen. The primary risk from maternal HSV is neonatal herpes, which is an infection acquired by the infant during or shortly after birth (perinatally), rather than a congenital malformation syndrome caused by in-utero infection during organogenesis. While intrauterine HSV infection can rarely occur and cause severe damage, the overwhelming majority of HSV-related disease in newborns is perinatal. Therefore, compared to the other viruses listed, HSV-2 has the least teratogenic potential.

Question 127. A 4-day-old infant is brought to the pediatric clinic with suspected pulmonary hypertension. Which of the listed inhalational agents is approved for treating this condition?

A. Nitric oxide

B. Methoxyflurane

C. Sevoflurane

D. Halothane

Correct answer: A

Nitric oxide Inhaled Nitric Oxide (iNO) is a selective pulmonary vasodilator and is the standard, FDA-approved treatment for Persistent Pulmonary Hypertension of the Newborn (PPHN). PPHN is a condition where the infant's circulation fails to transition from fetal to newborn patterns, leading to high pressure in the pulmonary arteries, right-to-left shunting of blood, and severe hypoxemia. When inhaled, nitric oxide diffuses into the pulmonary vascular smooth muscle, activating guanylate cyclase and increasing cGMP levels, which causes smooth muscle relaxation and vasodilation specifically in ventilated areas of the lung. This improves ventilation-perfusion matching and reduces pulmonary artery pressure without causing systemic hypotension. The other agents listed—methoxyflurane, sevoflurane, and halothane—are volatile anesthetic agents used for general anesthesia and are not used for the primary treatment of PPHN.

Question 128. A 13-year-old girl has had fever and a retro- orbital headache for 2 days. She tests positive on both the tourniquet test and the NS1 antigen test. Which of the following is a criterion for severe disease?

A. Combined leucopenia and thrombocytopenia

B. Continuous vomiting

C. Liver enlargement greater than 1cm

D. AST and ALT >1000

Correct answer: D

AST and ALT >1000 The patient has confirmed dengue fever. The WHO classifies dengue into "dengue without warning signs," "dengue with warning signs," and "severe dengue." Severe dengue is defined by the presence of severe plasma leakage (leading to shock or fluid accumulation with respiratory distress), severe bleeding, or severe organ involvement. A marked elevation in liver transaminases, specifically AST or ALT levels ≥ 1000 IU/L, is a criterion for severe organ involvement (severe hepatitis). Continuous vomiting and liver enlargement >2 cm are considered warning signs that predict progression to severe disease, but they are not criteria for severe dengue itself. Leukopenia and thrombocytopenia are common laboratory findings in all forms of dengue fever and do not define severe disease. Therefore, the significantly elevated liver enzymes (AST and ALT > 1000) is the only option listed that is a

direct criterion for classifying the illness as severe dengue. ORTHOPEDICS

Question 129. A 40-year-old woman presents with bilateral, symmetrical tenderness in the joints of her hands and ankles, along with marked early-morning stiffness but no redness on examination. Based on these findings, what is the most probable diagnosis?

A. Gout

B. Psoriatic Arthritis

C. Osteoarthritis

D. Rheumatoid arthritis

Correct answer: D

Rheumatoid arthritis This presentation is highly characteristic of Rheumatoid Arthritis (RA). The key features are: an insidious onset of symmetrical polyarthritis affecting small joints (hands, ankles), and significant morning stiffness lasting for a prolonged period (typically >1 hour). The absence of erythema does not rule out RA, as synovitis can present primarily with swelling, warmth, and tenderness without prominent redness. Osteoarthritis typically involves larger, weight-bearing joints asymmetrically, and morning stiffness is usually brief (<30 minutes). Gout typically presents as an acute, intensely painful, and erythematous monoarthritis, most commonly in the great toe. Psoriatic arthritis can be symmetrical but is often asymmetrical ("sausage digits" or dactylitis) and is associated with psoriasis. Given the symmetry, joint distribution, and prolonged morning stiffness in a middle-aged female, RA is the most likely diagnosis.

Question 130. For which type of fractures does the Hawkins classification apply?

A. Talus

B. Tibia

C. Humerus

D. Calcaneus

Correct answer: A

Talus The Hawkins classification is a system used specifically to categorize fractures of the neck of the talus. The talus is a crucial bone in the ankle joint that has a tenuous blood supply, making it highly susceptible to avascular necrosis (AVN) after a fracture. The Hawkins classification is prognostically important as it correlates the degree of fracture displacement with the risk of developing AVN. 1. Type I: Undisplaced vertical neck fracture. 2. Type II: Displaced fracture with subtalar joint subluxation/dislocation. 3. Type III: Displaced fracture with both subtalar and tibiotalar joint dislocation. 4. Type IV: (Added later) Type III with additional talonavicular joint dislocation. The risk of AVN increases significantly from Type I to Type IV. This classification does not apply to fractures of the tibia, humerus, or calcaneus, which have their own respective classification systems.

Question 131. A patient is found to have a tear in the antero- inferior portion of the glenoid capsule and labrum. What is this lesion called?

A. Hill-Sachs lesion

B. Bankart's lesion

C. Both A and B

D. Osteolytic lesion

Correct answer: B

Bankart's lesion The lesion described is a Bankart's lesion. This is the essential pathology in traumatic anterior shoulder instability and consists of a detachment of the anteroinferior portion of the glenoid labrum from the glenoid rim. This injury occurs during an anterior shoulder dislocation when the humeral head is forced out of the glenoid socket, tearing the labrum, capsule, and inferior glenohumeral ligament complex. If a piece of the glenoid bone is fractured along with the labrum, it is termed a "bony Bankart." In contrast, a Hill-Sachs lesion is a compression fracture or impaction deformity on the posterosuperior aspect of the humeral head. It occurs concurrently with a Bankart lesion when the soft humeral head impacts against the hard anterior glenoid rim during the dislocation event. The description in the question specifically refers to the labral tear, which is the Bankart's lesion.

Question 132. In which of the following fractures is the three bony point relationship maintained?

A. Lateral epicondyle fracture

B. Medial epicondyle fracture

C. Elbow dislocation

D. Supracondylar fracture

Correct answer: D

Supracondylar fracture The "three bony point relationship" of the elbow refers to the alignment of the medial epicondyle, the lateral epicondyle, and the tip of the olecranon. In a normally extended elbow, these three points form a straight line. When the elbow is flexed to 90 degrees, they form an isosceles triangle. This relationship is disrupted in an elbow dislocation, as the olecranon (part of the ulna) moves out of its normal articulation with the humerus. However, in a supracondylar fracture, the fracture line is located on the distal humerus above the epicondyles. Therefore, the relationship between the two epicondyles and the olecranon remains intact because the distal fragment (containing the epicondyles) moves along with the ulna and radius. Fractures of the epicondyles themselves (options A and B) can cause local swelling that obscures the landmarks, but the fundamental geometric relationship of the three points is preserved relative to the olecranon. Supracondylar fracture is the classic example where this relationship is maintained despite significant deformity.

Question 133. A woman in the outpatient department has arthritis affecting multiple

joints symmetrically, including the wrists, hands, and feet. She reports morning stiffness lasting more than an hour, along with swollen and tender joints. Which type of arthritis is most likely suggested by these findings?

A. Rheumatoid arthritis

B. Psoriatic arthritis

C. Osteoarthritis

D. Gout

Correct answer: A

Rheumatoid arthritis This clinical picture is a classic presentation of Rheumatoid Arthritis (RA). The key diagnostic clues are: 1 Symmetric polyarthritis: Involvement of the same joints on both sides of the body is a hallmark of RA. 2 Joint Distribution: The predilection for small joints of the hands (wrists, MCP, PIP joints) and feet is characteristic. 3 Inflammatory Nature: The presence of swollen and tender joints indicates synovitis. 4 Prolonged Morning Stiffness: Stiffness lasting more than one hour is highly suggestive of an inflammatory arthritis like RA, as opposed to the brief stiffness seen in osteoarthritis. Osteoarthritis is typically asymmetrical and causes stiffness for less than 30 minutes. Gout usually presents as an acute, severe monoarthritis. Psoriatic arthritis can be symmetrical but is often asymmetrical and may be accompanied by skin or nail changes. The combination of all these features makes RA the most probable diagnosis.

Question 134. Which of the following structures is not typically implicated in a positive Trendelenburg gait?

A. Gluteus medius

B. Sciatic nerve

C. Gluteus minimus

D. Superior gluteal nerve

Correct answer: B

Sciatic nerve A positive Trendelenburg sign or gait is caused by weakness of the hip abductor muscles, primarily the gluteus medius and gluteus minimus. These muscles are responsible for stabilizing the pelvis during the single-leg stance phase of gait. When they are weak, the pelvis drops on the opposite (unsupported) side. The innervation for both the gluteus medius and minimus muscles comes from the superior gluteal nerve. Therefore, damage to this nerve or weakness in these muscles will lead to a Trendelenburg gait. The sciatic nerve innervates the posterior thigh muscles (hamstrings) and all the muscles of the lower leg and foot. While a very high lesion could potentially affect nerves branching off near the hip, it is not the primary nerve responsible for hip abduction, and its injury is not the typical cause of a Trendelenburg gait. Therefore, the sciatic nerve is the structure not typically implicated. OBS & GYNE

Question 135. A girl using DMPA for contraception has menstrual bleeding on her

expected date and then again on day 15 of the same cycle. What is the most appropriate next step in management?

A. Perform a urinary pregnancy test (UPT) before administering DMPA

B. Administer DMPA as usual

C. Administer DMPA along with 7 days of barrier contraception

D. Wait until her next period

Correct answer: A

Perform a urinary pregnancy test (UPT) before administering DMPA Irregular menstrual bleeding and spotting are the most common side effects of DMPA, a progestin-only injectable contraceptive. While this bleeding pattern is often an expected side effect, it can also be a sign of other conditions, including pregnancy or an ectopic pregnancy. The most critical step before administering the next dose of any contraceptive, especially in the context of abnormal bleeding, is to rule out pregnancy. A urinary pregnancy test (UPT) is a quick, inexpensive, and reliable method to do this. Administering DMPA to a pregnant woman is contraindicated. Therefore, the safest and most appropriate next step in management is to perform a UPT. If the test is negative and other causes are ruled out, the DMPA can be administered, and the patient can be counseled about the common side effect of irregular bleeding.

Question 136. Among the following tumors, which is a virilizing tumor of the ovary?

A. Theca cell tumor

B. Arrhenoblastoma

C. Carcinoid tumor

D. Brenner tumor

Correct answer: B

Arrhenoblastoma Virilizing tumors are those that secrete androgens, leading to the development of male secondary sexual characteristics in a female, such as hirsutism, clitoromegaly, voice deepening, and temporal balding. The classic example of a virilizing ovarian tumor is the Arrhenoblastoma, also known as a Sertoli-Leydig cell tumor. These are rare sex cord-stromal tumors that contain testicular structures (Sertoli and Leydig cells) which produce androgens. In contrast, Theca cell tumors are typically estrogen-producing, causing symptoms like abnormal uterine bleeding. Brenner tumors are usually benign and hormonally inactive. Carcinoid tumors of the ovary can be hormonally active but typically produce serotonin, leading to carcinoid syndrome, not virilization. Therefore, arrhenoblastoma is the correct answer.

Question 137. How do sweat chloride levels and pancreatic chloride levels typically appear in individuals with cystic fibrosis?

A. Chlorine transport increase in sweat

B. Chlorine transport decrease in sweat

C. Chlorine concentration increase in pancreatic secretion

D. Chlorine concentration normal in pancreatic secretion

Correct answer: B

Chlorine transport decrease in sweat Cystic Fibrosis (CF) is caused by mutations in the CFTR (Cystic Fibrosis Transmembrane Conductance Regulator) gene, which codes for a chloride ion channel. The function of this channel differs by organ. In the ducts of sweat glands, the CFTR channel's primary role is to reabsorb chloride ions from the sweat back into the body. In CF, this channel is defective, leading to decreased reabsorption (transport) of chloride. This failure to reabsorb chloride results in a high concentration of chloride in the sweat, which is the basis of the sweat chloride test for diagnosing CF. Therefore, statement B is correct. In contrast, in the pancreas, the CFTR channel normally secretes chloride into the pancreatic ducts, which helps draw water into the secretions. In CF, defective chloride secretion leads to thick, dehydrated pancreatic secretions, which obstruct the ducts. This means chloride concentration in pancreatic secretions is decreased, not increased or normal.

Question 138. In a patient with uterine inversion in whom the placenta is still attached, what is the most appropriate immediate management step?

A. Excise the placenta before repositioning the uterus

B. Reposition the uterus inside without removing the placenta

C. Transfer the patient to the operating theater for surgical repositioning of the uterus under general anesthesia

D. Separate the placenta first

Correct answer: B

Reposition the uterus inside without removing the placenta Acute uterine inversion is a rare but life-threatening obstetric emergency. The cardinal rule in managing an inversion with the placenta still attached is to reposition the uterus immediately without first attempting to remove the placenta. Attempting to separate the placenta before the uterus is repositioned can trigger massive, uncontrollable hemorrhage from the exposed, atonic placental implantation site. The attached placenta can also act as a handle to help guide the repositioning (Johnson's maneuver). Once the uterine fundus is returned to its normal anatomical position, uterine tone is restored, which constricts the blood vessels. After repositioning and administration of uterotonics, the placenta can then be safely removed. Transferring to the operating theater may be necessary if manual repositioning fails, but the first attempt should be made immediately upon diagnosis.

Question 139. For a 65-year-old woman with epithelial ovarian cancer presenting with peritoneal metastasis and ascites, what is the typically recommended sequence of treatment?

A. Debulking followed by Radiotherapy.

B. Chemotherapy followed by Debulking

C. Debulking followed by chemotherapy

D. Radiotherapy followed by debulking

Correct answer: C

Debulking followed by chemotherapy The standard of care for advanced epithelial ovarian cancer (Stage III/IV) is primary debulking surgery (or cytoreductive surgery) followed by adjuvant chemotherapy. The goal of the surgery is to remove all visible tumor ("optimal debulking" to no residual disease, if possible), as the amount of residual disease is a powerful prognostic factor. Following recovery from surgery, the patient typically undergoes multiple cycles of platinum-based chemotherapy (e.g., carboplatin and paclitaxel) to treat any microscopic residual disease. An alternative approach, neoadjuvant chemotherapy followed by interval debulking surgery, is reserved for patients who are medically unfit for extensive primary surgery or have disease that is deemed unresectable upfront. Radiotherapy has a very limited role in the primary management of advanced epithelial ovarian cancer. Therefore, the most common and recommended sequence is surgery first, then chemotherapy.

Question 140. When counseling a 39-year-old G6P3A3 woman with three prior LSCS complicated by placenta accreta spectrum, which point would typically not be included in the counseling discussion?

A. Risk of bowel injury

B. Risk of excessive bleeding

C. Chances of hysterectomy

D. Risk of bladder injury

Correct answer: A

Risk of bowel injury A patient with multiple prior cesarean sections who develops a placenta accreta spectrum (PAS) disorder is at extremely high risk for severe maternal morbidity. Counseling must be comprehensive. The main risks include: 1 Massive obstetric hemorrhage (excessive bleeding): This is the most significant and life-threatening risk. 2 Cesarean hysterectomy (chances of hysterectomy): This is often the planned and necessary management to control bleeding. 3 Injury to adjacent organs: Because the placenta often invades through the uterine wall anteriorly into the bladder, the risk of bladder injury is very high and a specific, expected complication. While bowel injury is a potential risk in any complex abdominal surgery, it is less of a direct and specific complication of PAS itself compared to bladder injury. The placenta in PAS is typically located anteriorly over the old C-section scar, directly adjacent to the bladder, whereas the bowel is located more posteriorly. Therefore, while mentioned, it would be less emphasized than the near certainty of bleeding and high risk of bladder injury and hysterectomy.

Question 141. A pregnant woman at 30 weeks presents with painful vaginal bleeding

and decreased fetal movements. Examination shows a tense uterus measuring 34 weeks, absent fetal heart rate, BP 160/90, and on vaginal exam the cervix is 6 cm dilated, 70% effaced, with a vertex at –3 and intact membranes. What is the most appropriate immediate step?

A. Emergency LSCS (Lower Segment Cesarean Section)

B. Initiate antihypertensives and perform artificial rupture of membranes (ARM)

C. Commence antihypertensive treatment and proceed with emergency LSCS.

D. Administer tocolytics and prepare for vaginal delivery.

Correct answer: B

Initiate antihypertensives and perform artificial rupture of membranes (ARM) This patient's presentation is classic for a severe placental abruption, complicated by severe hypertension and intrauterine fetal demise (IUFD). The management goals are now focused entirely on the mother's safety. Since the fetus is already deceased (FHR absent), there is no fetal indication for an emergency Cesarean section. In fact, a vaginal delivery is generally safer for the mother, especially in the setting of potential coagulopathy (DIC) which can accompany severe abruption. The patient is already in active labor (6 cm dilated). The most appropriate management is to: 1 Initiate antihypertensives to control her dangerously high blood pressure and prevent maternal complications like stroke. 2 Augment labor to achieve a prompt vaginal delivery. Artificial rupture of membranes (ARM) is a key step to accelerate labor and may also help reduce intrauterine pressure. An emergency LSCS would expose the mother to unnecessary surgical risks.

Question 142. In a woman in labor with a cervix that is 70% effaced, 3 cm dilated, and a palpable “bag of worms,” what is the most appropriate immediate action?

A. Rupture membranes to confirm cord prolapse.

B. Proceed with emergency LSCS

C. Initiate Oxytocin infusion.

D. Conduct a comprehensive vaginal examination.

Correct answer: B

Proceed with emergency LSCS A palpable "bag of worms" on vaginal examination in a laboring patient is the classic description of a funic presentation or an impending umbilical cord prolapse with intact membranes. This is an obstetric emergency because if the membranes rupture, the cord will prolapse into the vagina, where it can be compressed by the fetal presenting part, cutting off blood flow and oxygen to the fetus. The definitive management is immediate delivery. Therefore, the most appropriate action is to prepare for and proceed with an emergency Lower Segment Cesarean Section (LSCS). While waiting for the C-section, measures should be taken to prevent cord compression, such as placing the mother in the knee-chest position and manually elevating the presenting part off the cord. Rupturing the membranes or

starting oxytocin would be catastrophic as it would worsen the situation and lead to fetal compromise.

Question 143. Causes of non-immune hydrops fetalis are all except:

A. ABO incompatibility

B. Cardiac cause

C. Parvovirus infection

D. Chromosomal anomalies

Correct answer: A

ABO incompatibility Hydrops fetalis is the excessive accumulation of fluid in fetal extravascular compartments and body cavities. It is broadly divided into immune and non-immune types. Non-immune hydrops accounts for about 90% of cases and has numerous causes, including cardiac abnormalities (structural or arrhythmic), chromosomal anomalies (e.g., Turner syndrome, trisomies), and infections (e.g., Parvovirus B19, CMV). Immune hydrops is caused by maternal red blood cell alloimmunization, where maternal antibodies cross the placenta and destroy fetal red blood cells, leading to severe anemia and heart failure. The classic cause is Rh incompatibility. ABO incompatibility is another cause of immune-mediated hemolysis (hemolytic disease of the fetus and newborn), but it very rarely causes hydrops. Since ABO incompatibility is an immune-mediated process, it is the exception in a list of causes for non-immune hydrops.

Question 144. What serves as a reliable indicator of perinatal asphyxia?

A. Cord pH <7.2

B. Hypocalcemia

C. APGAR score of 4-7 beyond 5 min

D. Hypotonia

Correct answer: A

Cord pH <7.2 Perinatal asphyxia is a condition of impaired gas exchange leading to fetal hypoxemia and hypercapnia. The most objective and reliable evidence of a significant intrapartum hypoxic-ischemic event is the analysis of umbilical cord arterial blood gas. Severe metabolic or mixed acidemia, demonstrated by a low cord blood pH, is a key criterion. According to the American College of Obstetricians and Gynecologists (ACOG), a cord arterial pH of <7.0 is a major indicator of an acute hypoxic event. While a pH of <7.2 is less severe, it still represents significant acidemia and is the most reliable objective marker among the choices provided. Low APGAR scores can be caused by factors other than asphyxia (e.g., maternal medication, prematurity). Hypotonia and hypocalcemia are potential consequences of asphyxia but are not primary diagnostic indicators and lack specificity.

Question 145. A PAP smear from a 45-year-old woman with a left ovarian mass is shown. What is the most likely diagnosis?

A. Dysgerminoma

B. Dermoid

C. Granulosa cell tumor

D. Brenners

Correct answer: B

Hydroxyurea Hydroxyurea is the primary disease-modifying therapy used for patients with sickle cell anemia. Its main mechanism of action is the induction of fetal hemoglobin (HbF) production. HbF interferes with the polymerization of sickle hemoglobin (HbS), which is the underlying cause of red blood cell sickling. By increasing the proportion of HbF, hydroxyurea reduces the frequency of painful vaso-occlusive crises, decreases the incidence of acute chest syndrome, and lowers the need for blood transfusions. It is a cornerstone of long-term management to reduce the complications of the disease. Methotrexate is a chemotherapy/ immunosuppressive agent. Eltrombopag is a thrombopoietin receptor agonist used to increase platelet counts. Methionine is an amino acid. None of these have a role in preventing sickle cell crises.

Question 146. In her second pregnancy, an Rh-negative woman has an indirect Coombs test titer of 1:4 at 28 weeks. What should be the next step in management?

A. Administer 300 mcg of Anti-D Immunoglobulin

B. Do MCA Doppler

C. Repeat ICT after 4 weeks

D. Nothing to be done and deliver her at term then give anti D

Correct answer: C

Repeat ICT after 4 weeks In an Rh-negative pregnant woman, the Indirect Coombs Test (ICT) is used to detect circulating anti-D antibodies and assess the risk of hemolytic disease of the fetus and newborn (HDFN). A titer of 1:4 at 28 weeks is considered a low (non-critical) antibody titer. Management depends on whether the antibody level has reached the critical titer, usually 1:16 (or 1:32 in some centers). Titers below the critical value indicate that significant fetal hemolysis is unlikely at that time. Since the current titer is only 1:4: 1. There is no immediate indication for MCA Doppler, which is done when titers reach critical levels. 2. Anti-D immunoglobulin is not given once the mother is already sensitized (positive ICT). 3. Doing nothing is incorrect because monitoring is required. Therefore, the appropriate next step is serial monitoring of antibody titers, typically every 4 weeks until 28–32 weeks, then more frequently if needed. Hence, the correct management is to repeat the ICT after 4 weeks. DERMATOLOGY

Question 147. What is the cause of only non-scarring alopecia from the following options? 1 Alopecia areata 2 Telogen effluvium 3 Androgenic alopecia 4 Tinea capitis

A. 3 and 4

B. 1, 2 and 3

C. 2, 3 and 4

D. Only 4

Correct answer: B

1, 2 and 3 Alopecia (hair loss) is broadly classified into non-scarring (non-cicatricial) and scarring (cicatricial) types. In non-scarring alopecia, the hair follicle is preserved, and hair regrowth is possible. 1 Alopecia areata: An autoimmune condition causing patchy, non-scarring hair loss. 2 Telogen effluvium: A diffuse, non-scarring hair shedding caused by a shift of hair follicles into the resting (telogen) phase due to stress, illness, or hormonal changes. 3 Androgenic alopecia: The most common type of hair loss (male/female pattern baldness), which is a non-scarring process involving follicular miniaturization. 4 Tinea capitis: A fungal infection of the scalp. While most cases are non-scarring, a severe inflammatory form called a kerion can destroy hair follicles and result in permanent scarring alopecia. Since the question asks for causes of "only non-scarring alopecia," tinea capitis is excluded because it can be scarring. Therefore, alopecia areata, telogen effluvium, and androgenic alopecia are the correct options.

Question 148. Where is the apocrine gland present?

A. Palm and soles

B. Face

C. Axilla

D. Scalp

Correct answer: C

Axilla There are two main types of sweat glands: eccrine and apocrine. Eccrine glands are distributed all over the body surface and are responsible for thermoregulation by producing watery sweat. They are most numerous on the palms and soles. Apocrine glands, on the other hand, are larger glands found in specific areas associated with hair follicles. They are concentrated in the axilla (armpits), the areolae of the nipples, the perineum (around the anus and genitals), and the scalp. These glands become active at puberty and secrete a thicker, milky fluid into the hair follicle. This secretion is odorless initially but develops a characteristic body odor when broken down by skin bacteria. Therefore, the axilla is a primary location for apocrine glands.

Question 149. Mark the correct statement/statements regarding Inner and Outer hair cells? I. Inner hair cells are in a single row and transmit auditory impulses. II. Outer hair cells are in 3-4 rows and modulate function of inner hair cells. III. Outer hair cells are more responsible for movement of Tectorial membrane. IV. Outer and inner hair cells present in the ratio of 3:1.

A. I, II and IV are correct

B. I, II and III are correct

C. All are correct

D. II, IV are correct

Correct answer: A

I, II and IV are correct 1. Statement I is correct. Inner hair cells (IHCs) are arranged in a single row along the cochlea and are the primary sensory receptors of hearing. They convert mechanical sound vibrations into electrical impulses and transmit auditory signals through the cochlear nerve to the brain. 2. Statement II is also correct. Outer hair cells (OHCs) are arranged in three to four rows and function mainly as modulators. They possess electromotility due to the motor protein prestin, allowing them to contract and elongate. This action amplifies basilar membrane vibrations and enhances the sensitivity and frequency selectivity of inner hair cells. 3. Statement III is incorrect. The primary movement of the tectorial membrane results from sound-induced vibration of the basilar membrane. Outer hair cells mainly amplify and fine-tune this motion rather than being directly responsible for moving the tectorial membrane. 4. Statement IV is correct. Outer hair cells outnumber inner hair cells in approximately a 3:1 ratio. Therefore, statements I, II, and IV are correct. ANAESTHESIA

Question 150. What is the correct sequence of steps for intubation? a. Flexion of lower cervical spine and extension of Atlanto-occipital joint b. Inflate cuff of endotracheal tube c. Introduce a laryngoscope from the right side of mouth d. Confirm the position of tube

A. a, b, c, d

B. a, b, d, c

C. b, a, c, d

D. a, c, b, d

Correct answer: D

a, c, b, d The correct sequence for a standard orotracheal intubation is as follows: 1 Position the Patient (a): First, the patient's head and neck must be positioned correctly to align the oral, pharyngeal, and tracheal axes. This is achieved by placing the patient in the "sniffing position," which involves flexion of the lower cervical spine and extension at the atlanto-occipital joint. 2 Perform Laryngoscopy (c): The laryngoscope blade is introduced into the right side of the patient's mouth, sweeping the tongue to the left to expose the glottic opening. 3 Insert and Secure the Tube (b): Once the vocal cords are visualized, the endotracheal tube is passed through them into the trachea. Immediately after insertion, the cuff is inflated to create a seal in the trachea. 4 Confirm Placement (d): Finally, the position of the tube must be confirmed to ensure it is in the trachea and not the esophagus. This is done by observing chest rise, auscultating for bilateral breath sounds, and, most reliably, by detecting end-tidal CO_2 with capnography. Therefore, the correct sequence is a, c, b, d. RADIOLOGY

Question 151. Two doctors were asked to interpret 100 X-rays, and the resulting Kappa value is 0.71. How should this be interpreted?

A. Good

B. Poor

C. Perfect Disagreement

D. Perfect Agreement

Correct answer: A

Good The Cohen's Kappa coefficient (κ) is a statistical measure of inter-rater reliability or agreement for categorical items. It accounts for the possibility of agreement occurring by chance. The interpretation of the Kappa value can vary slightly, but the Landis and Koch scale is widely accepted: 1. κ ≤ 0: Poor agreement 2. κ = 0.01–0.20: Slight agreement 3. κ = 0.21–0.40: Fair agreement 4. κ = 0.41–0.60: Moderate agreement 5. κ = 0.61–0.80: Substantial agreement 6. κ = 0.81–1.00: Almost perfect agreement A Kappa value of 1.0 indicates perfect agreement, while a value of -1.0 indicates perfect disagreement. A value of 0.71 falls squarely within the "Substantial agreement" range, which is often colloquially referred to as "Good" agreement. It indicates that the two doctors have a high level of consistency in their X-ray interpretations, well beyond what would be expected by chance.

Question 152. The banana sign is seen in:

A. Omphalocele

B. NCC (Neurocysticercosis)

C. Spina bifida

D. Meningitis

Correct answer: C

Spina bifida The "banana sign" is a classic prenatal ultrasonographic finding that is strongly associated with an open spina bifida. Spina bifida is a neural tube defect where the spinal column fails to close properly. In most cases, this is associated with an Arnold-Chiari II malformation, where the posterior fossa structures (cerebellum and brainstem) are pulled downwards into the foramen magnum. This downward displacement causes the cerebellum to lose its normal dumbbell shape and become flattened and curved anteriorly, resembling a banana. The banana sign is often seen in conjunction with the "lemon sign," which is a scalloping or indentation of the frontal bones of the fetal skull. The presence of these signs on a second-trimester ultrasound is highly suggestive of an open neural tube defect.

Question 153. 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: A

Tc99-Sestamibi scan Parathyroid adenoma is the most common cause of primary

hyperparathyroidism. Once biochemical diagnosis is established (elevated serum calcium with elevated or inappropriately normal PTH), imaging is performed for localization, not for diagnosis. The Tc-99m Sestamibi scan is the investigation of choice for localizing a parathyroid adenoma. Sestamibi is preferentially taken up by mitochondria-rich parathyroid adenoma cells and retained longer than in normal thyroid tissue. This differential washout helps identify the adenoma. Although Sestamibi SPECT improves three-dimensional localization and is often combined with CT (SPECT-CT), the basic and standard first-line localization modality remains the Tc-99m Sestamibi scan. 1. Ultrasound (USG) is operator-dependent and may miss ectopic or small adenomas. 2. CT scan is usually reserved for reoperative cases or when first-line imaging is inconclusive. Therefore, the investigation of choice for localizing a parathyroid adenoma is the Tc-99m Sestamibi scan.

Question 154. Consider the following statements about stages of behavior change: Statement 1 : Contemplation - A person who smokes is thinking of quitting smoking. Statement 2 : Precontemplation - A person is considering starting morning walks and its benefits to the health. Statement 3 : Determination phase - A person quit smoking one year back and has not smoked since then. Statement 4 : Action phase - A person with obesity says he can't do anything as it runs deep in his family.

A. Statements 1 and 3 are correct

B. Statements 1 and 2 are correct

C. Statements 1, 2, 3 are correct

D. All are correct

Correct answer: A

is incorrect. The correct answer is not among the options provided.

Question 155. A pregnant woman with bipolar disorder, previously having had four episodes but none in the past year, is stable on 750 mg of lithium and is now in her third trimester. What should be the next step in her management?

A. Stop lithium

B. Decrease Dose Click Here to Buy book on Amazon MEDINK INICET Examination Paper the virus at some point. However, the patient is Anti-HBs negative. This pattern (HBsAg negative, Anti-HBc positive, Anti-HBs negative) is most consistent with a remote infection where the level of protective Anti-HBs antibodies has waned over time to undetectable levels. It is less likely to be the window period, as IgM Anti- HBc would be positive. It is not a chronic carrier state because HBsAg is negative. It is not a post- vaccination status, as vaccination only produces Anti-HBs, not Anti-HBc. Which of the following statements about sickle cell anemia is correct?

C. Low mechanical fragility, low osmotic fragility

D. High mechanical fragility, Low osmotic fragility 34.

Correct answer: B

Decrease Dose Lithium is commonly used for maintenance treatment of bipolar disorder. In pregnancy, its management depends on the trimester and maternal stability. Lithium carries a small but known risk of congenital cardiac malformations (especially Ebstein anomaly), particularly with first-trimester exposure. However, this patient is already in her third trimester, where teratogenic risk is no longer the primary concern. In late pregnancy, physiological changes occur. During the second and third trimesters, glomerular filtration rate (GFR) increases, which increases lithium clearance. However, near term and during labor, GFR rapidly falls and fluid shifts occur, increasing the risk of lithium toxicity in both mother and neonate. Newborns may develop hypotonia, cyanosis, and feeding difficulties if lithium levels are high at delivery. Therefore, the recommended management in the third trimester is to reduce the lithium dose and closely monitor serum lithium levels, especially as delivery approaches. Stopping lithium abruptly is not advised because this patient has a history of four episodes, placing her at high risk of relapse. Switching to valproate is contraindicated in pregnancy due to its high teratogenic risk (neural tube defects). Hence, the correct answer is : (B) Decrease Dose.

Question 156. The HEADSS assessment is done for which group?

A. Adolescents

B. Under 5

C. Neonates

D. Elderly

Correct answer: A

Adolescents The HEADSS assessment is a psychosocial screening interview tool designed specifically for use with adolescents. It provides a structured framework for clinicians to engage teenagers in a conversation about various aspects of their lives, helping to identify potential risks and strengths. The mnemonic stands for: H - Home (family situation, living arrangements) E - Education/Employment (school performance, future goals) A - Activities (peer group, hobbies, interests) D - Drugs (use of tobacco, alcohol, illicit drugs) D - Diet (body image, eating habits) S - Sexuality (sexual activity, orientation, contraception) S - Suicide/Depression (mood, self-harm, safety) This tool facilitates a comprehensive yet efficient psychosocial evaluation tailored to the unique developmental stage and risk factors of adolescence.

Question 157. A patient taking a mood stabilizer develops hyperammonemia and elevated liver enzymes. Which medication is most likely responsible?

A. Lithium

B. Valproate

C. Carbamazepine

D. Topiramate

Correct answer: B

Valproate Valproate (Valproic Acid), a widely used mood stabilizer and anticonvulsant, is known

to have several potential serious side effects, including hepatotoxicity and hyperammonemia. Hepatotoxicity can range from a mild, asymptomatic elevation of liver transaminases (ALT/AST) to severe, life-threatening liver failure. Hyperammonemia can occur with or without liver enzyme elevation and may lead to encephalopathy, characterized by confusion, lethargy, and vomiting. This side effect is thought to be related to valproate's interference with the urea cycle. While carbamazepine can also cause hepatotoxicity, the combination of hepatitis and hyperammonemia is particularly characteristic of valproate toxicity. Lithium primarily affects the kidneys and thyroid. Topiramate is not typically associated with these side effects.

Question 158. A patient with Alzheimer’s disease is refusing oral medications. Which alternative medication can be prescribed in this situation?

A. Memantine

B. Donepezil

C. Rivastigmine

D. Galantamine

Correct answer: C

Rivastigmine Managing medication for patients with Alzheimer's disease who have difficulty swallowing (dysphagia) or refuse oral medications can be challenging. In such cases, alternative drug formulations are essential. Among the acetylcholinesterase inhibitors used for Alzheimer's disease, Rivastigmine is uniquely available as a transdermal patch (Exelon Patch). The patch is applied to the skin once daily and provides continuous delivery of the medication, bypassing the need for oral administration entirely. This ensures consistent drug levels and adherence in patients who cannot or will not take pills. Donepezil is available as an orally disintegrating tablet, which can be helpful but still requires the patient's cooperation. Memantine and galantamine are primarily available in standard oral formulations (tablets, capsules, or oral solution). Therefore, the rivastigmine patch is the most suitable option for this patient. **********