INI-CET November 2020 Question Paper

137 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. Reticular fibers are absent in :

A. Bone marrow

B. Spleen

C. Thymus

D. Lymph node

Correct answer: C

Thymus Reticular fibers, which are composed of type III collagen, form a delicate, intricate meshwork that provides structural support to the parenchymal cells of most lymphoid and hematopoietic organs. This reticular stroma is a characteristic feature of the bone marrow (A), the spleen (B) (in the white and red pulp), and the lymph nodes (D), creating a scaffold for lymphocytes, macrophages, and other immune cells. The thymus (C) is the distinct exception among these organs. The structural framework of the thymus is not made of reticular fibers but is instead formed by a unique cytoreticulum composed of specialized cells called thymic epithelial cells (also known as epithelioreticular cells). These cells provide the necessary support and create the microenvironment essential for the maturation and selection of T-lymphocytes (thymocytes). This cellular, rather than fibrous, stroma is a key histological feature that distinguishes the thymus from other lymphoid tissues.

Question 2. A patient is unable to abduct the upper limb. Which nerve root is affected?

A. C4

B. C5

C. C6

D. C7

Correct answer: B

C5 The abduction of the upper limb is a complex movement primarily performed by the deltoid and supraspinatus muscles. The initiation of abduction (the first 0-15 degrees) is by the supraspinatus muscle, which is innervated by the suprascapular nerve (with root values C5 and C6). The main power for abduction from 15 to 90 degrees comes from the deltoid muscle, which is innervated by the axillary nerve. The axillary nerve is derived from the posterior cord of the

brachial plexus and receives its fibers from the C5 and C6 nerve roots. The C5 root is considered the primary contributor to both the axillary and suprascapular nerves and is therefore the most critical nerve root for shoulder abduction. A lesion affecting the C5 root, such as in an upper brachial plexus injury (Erb's palsy), characteristically results in a profound inability to abduct the arm. The C6 root also contributes but is more associated with elbow flexion.

Question 3. Which of the following muscles does not take part in abducting the arm overhead?

A. Serratus anterior

B. Deltoid

C. Trapezius

D. Pectoralis major

Correct answer: D

Pectoralis major Abduction of the arm to an overhead position (180 degrees) is a coordinated movement involving both the glenohumeral joint and the scapulothoracic articulation, a process known as scapulohumeral rhythm. The deltoid muscle (B) is the prime mover of abduction at the glenohumeral joint up to 90 degrees. To achieve abduction beyond 90 degrees, the scapula must upwardly rotate on the thoracic wall. This crucial upward rotation is accomplished by a force couple created by the upper and lower fibers of the trapezius muscle (C) and the powerful serratus anterior muscle (A). The serratus anterior protracts the scapula and is essential for its upward rotation. In contrast, the primary actions of the pectoralis major muscle (D) are adduction and medial rotation of the humerus. It acts as an antagonist to abduction and therefore is not involved in, and in fact opposes, the action of overhead abduction.

Question 4. The slow waves (basic electrical rhythm or BER frequency) are lowest in which of the following?

A. Stomach

B. Duodenum

C. Jejunum

D. Ileum

Correct answer: A

Stomach Slow waves, also known as the basic electrical rhythm (BER), are spontaneous, rhythmic fluctuations in the membrane potential of gastrointestinal smooth muscle cells. They are generated by specialized pacemaker cells called the interstitial cells of Cajal. While these waves do not cause contractions themselves, they determine the maximum frequency at which contractions can occur. The frequency of the BER follows a gradient along the GI tract. It is highest in the proximal small intestine, with the duodenum (B) having a rate of about 12 cycles per minute. The frequency then decreases distally through the jejunum (C) and ileum (D) (to

about 8-9 cycles per minute). The stomach (A), however, has a much lower intrinsic BER frequency, with only about 3 slow waves per minute. Therefore, among the options provided, the frequency of slow waves is least in the stomach.

Question 5. All of the following substances show an increase in concentration within the Proximal Convoluted Tubule (PCT), except which one? :

A. Amino acid

B. Glucose

C. Chloride

D. Bicarbonate

Correct answer: A

Amino acid In the proximal convoluted tubule (PCT), a large proportion of filtered substances are reabsorbed back into the bloodstream. However, the concentration of a substance within the tubular fluid depends on whether it is reabsorbed more rapidly than water. Amino acids and glucose are almost completely reabsorbed early in the PCT by active transport (via sodium-dependent cotransporters). Because they are reabsorbed rapidly and nearly completely, their concentration in tubular fluid decreases, not increases. Bicarbonate is also significantly reabsorbed in the PCT (about 80–90%). Its concentration generally falls as it is reclaimed efficiently. In contrast, chloride initially shows a relative increase in concentration in the early PCT. This occurs because water and bicarbonate are reabsorbed faster than chloride, leaving chloride behind and increasing its tubular concentration temporarily before it is later reabsorbed. Thus, the substance that does not show an increase in concentration in the PCT is amino acid, making option (A) correct.

Question 6. What happens when a person moves from a lying (supine) position to standing?

A. Increase firing in baroreceptor afferents

B. Decrease firing in baroreceptor afferents

C. Vagal output to cardiac fibers increase

D. B and C Both

Correct answer: B

Decrease firing in baroreceptor afferents When a person stands up from a supine position, gravity causes blood to pool in the veins of the lower extremities. This leads to a transient decrease in venous return to the heart, a decrease in cardiac output, and consequently, a drop in arterial blood pressure. This fall in blood pressure is sensed by the high-pressure baroreceptors located in the carotid sinus and the aortic arch. These receptors are stretch receptors, and the reduced stretch due to the lower blood pressure causes a decrease in the firing rate of the baroreceptor afferent nerves that travel to the brainstem. This decreased afferent signal triggers a compensatory reflex : sympathetic output increases (causing

vasoconstriction and increased heart rate), and vagal (parasympathetic) output to the heart decreases (C is incorrect), all aimed at restoring the blood pressure to its normal level.

Question 7. What is the sequence of events after the "P" wave? A. "a" wave B. 1st heart sound C. Rapid filling of ventricles D. "t" wave

A. A > C > B > D

B. C > A > D > B

C. B > D > A > C

D. A > C > D > B

Correct answer: A

A > C > B > D. Cardiac Cycle Sequence To understand the correct order, let's trace the events that follow the P wave, which represents the electrical depolarization of the atria. 1. P wave (Atrial Depolarization) → Atrial Contraction i. A. "a" wave : The contraction of the atria increases atrial pressure, causing a corresponding pressure wave in the jugular veins known as the "a" wave. This happens immediately after the P wave. ii. C. Rapid filling of ventricles : The contracting atria push the final volume of blood into the ventricles. This phase is more accurately called "late ventricular filling" or the "atrial kick," but it follows the "a" wave as the pressure from the contraction drives the blood flow. 2. QRS Complex (Ventricular Depolarization) → Ventricular Contraction B. 1st heart sound (S1) : As the ventricles begin to contract (systole), the pressure inside them quickly rises above the pressure in the atria. This forces the atrioventricular (mitral and tricuspid) valves to snap shut, producing the first heart sound ("lub"). This event occurs after the QRS complex, which follows the P wave. 3. T wave (Ventricular Repolarization) D. "t" wave : This wave on the ECG represents the repolarization (electrical reset) of the ventricles. It occurs during the latter part of ventricular contraction, after the first heart sound but before the second heart sound. Therefore, the correct chronological sequence of these events after the P wave is : "a" wave → filling of ventricles → 1st heart sound → "t" wave.

Question 8. Match the following pulmonary conditions with their radiological features:

1. Asbestosis a. Caplan syndrome nodules

2. Silicosis b. Pleural effusion with mediastinal shift

3. Mesothelioma c. Mostly involves base of lung

4. Caplan syndrome d. Crazy paving pattern

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

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

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

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

Correct answer: A

1-c, 2-d, 3-b, 4-a 1. Asbestosis : This is a pneumoconiosis caused by asbestos fiber inhalation. Radiologically, it characteristically causes interstitial fibrosis that mostly involves the lower lobes or the base of the lung (c), often with associated pleural plaques. 2. Silicosis : A pneumoconiosis from silica dust. Acute silicosis can present with a specific HRCT finding where there are diffuse ground-glass opacities with superimposed septal thickening, known as a "crazy-paving" pattern (d). 3. Mesothelioma : This is a highly aggressive malignancy of the pleura strongly linked to asbestos exposure. It often presents with a large, unilateral pleural effusion, which can become massive enough to cause a mediastinal shift (b) away from the affected side. 4. Caplan syndrome : This is a rare condition defined by the co-occurrence of rheumatoid arthritis with pneumoconiotic nodules. It was first discovered in coal workers with coal worker's pneumoconiosis but can also occur with silicosis or asbestosis (a).

Question 9. In membrane receptors, the transmembrane region is made up of which type of amino acids?

A. Hydrophobic

B. Hydrophilic

C. Charged

D. None

Correct answer: A

Hydrophobic Transmembrane proteins, including membrane receptors, must span the lipid bilayer of the cell membrane. The core of the lipid bilayer is composed of the fatty acid tails of phospholipids, creating a highly nonpolar, oily environment. To be stably embedded within this environment, the segment of the protein that passes through the membrane must be composed of amino acids with nonpolar, hydrophobic side chains. These amino acids (such as leucine, isoleucine, valine, and phenylalanine) interact favorably with the lipid tails, anchoring the protein in the membrane. Typically, this transmembrane domain is arranged in an alpha-helical structure. In contrast, the extracellular and intracellular domains of the receptor, which are exposed to the aqueous environments outside and inside the cell, are primarily composed of hydrophilic (B) and charged (C) amino acids.

Question 10. High anion gap acidosis is seen in all except :

A. Diabetic ketoacidosis (DKA)

B. Lactic acidosis

C. Renal aciduria

D. Respiratory disorders

Correct answer: D

Respiratory disorders A high anion gap metabolic acidosis is caused by the accumulation of unmeasured organic acids in the blood. In diabetic ketoacidosis (A), the acids are acetoacetate and beta-hydroxybutyrate. In lactic acidosis (B), the acid is lactate. Certain types of renal failure

(uremia) can also lead to the accumulation of acids like sulfates and phosphates, causing a high anion gap. The term "renal aciduria" (C) is ambiguous but likely refers to this or a renal tubular acidosis that can sometimes be associated with a high anion gap. In contrast, respiratory disorders (D) cause respiratory acidosis or alkalosis, not metabolic acidosis. Respiratory acidosis is caused by the retention of CO 2 . While this lowers the pH, it does not involve the addition of an unmeasured anion and therefore does not cause a high anion gap. It is a distinct acid-base disturbance with a different underlying pathophysiology.

Question 11. The macula densa is located in :

A. Proximal Convoluted Tubule (PCT)

B. Bowman's Capsule

C. Distal Convoluted Tubule (DCT)

D. Glomerular Capillaries

Correct answer: C

Distal Convoluted Tubule (DCT) The macula densa is a specialized plaque of densely packed epithelial cells that is a key component of the juxtaglomerular apparatus (JGA). The JGA is a structure that regulates renal blood flow and glomerular filtration rate. Anatomically, the macula densa is located at the very beginning of the distal convoluted tubule (DCT), at the precise point where the tubule passes between the afferent and efferent arterioles of its own glomerulus. Some texts describe its location as the terminal part of the thick ascending limb of the loop of Henle, right at the transition to the DCT. These cells function as chemoreceptors, sensing the concentration of sodium chloride in the tubular fluid. This information is then used to signal the afferent arteriole to constrict or dilate, a process known as tubuloglomerular feedback, which helps to autoregulate the filtration rate of the individual nephron.

Question 12. Calculate the Respiratory quotient. The values of O 2 = 250 ml. CO 2 = 200 ml.

A. 1.5

B. 0.8

C. 1

D. 2

Correct answer: B

0.8 The Respiratory Quotient (RQ) is defined as the ratio of carbon dioxide produced to oxygen consumed during metabolism.

Question 13. Which of the following statements about skeletal muscle contraction are correct?

A. Extracellular Ca ++ not important for contraction

B. Ca ++ released from mitochondria

C. Ca ++ released from Sarcoplasmic Reticulum

D. A & C both

Correct answer: D

A & C both The process of excitation-contraction coupling in skeletal muscle has specific characteristics. The action potential travels down the T-tubules, where it activates voltage-sensitive DHP receptors. These receptors are mechanically linked to ryanodine receptors on the membrane of the sarcoplasmic reticulum (SR). This mechanical coupling triggers the opening of the ryanodine receptors, causing a massive release of stored calcium ions (Ca ++) from the SR into the cytoplasm (C is true). This rise in intracellular calcium initiates the cross-bridge cycle. Unlike cardiac muscle, skeletal muscle contraction is not directly dependent on the influx of extracellular calcium for triggering this release; the process is purely mechanical. Therefore, extracellular Ca ++ is not important for initiating the contraction (A is true). Calcium is released from the SR, not the mitochondria (B is incorrect). Since both statements A and C are true regarding skeletal muscle, option D is the correct answer. BIOCHEMISTRY

Question 14. DNA methylation is not associated with :

A. Chromatin remodeling

B. RNA splicing

C. Gene silencing

D. Methyl-directed Mismatch Repair

Correct answer: B

RNA splicing DNA methylation is a fundamental epigenetic mechanism that plays a role in several key cellular processes. It is a primary mechanism of gene silencing (C), as the methylation of CpG islands in a gene's promoter region typically prevents the binding of transcription factors and recruits repressive proteins. This process is intimately linked with chromatin remodeling (A), as methylated DNA promotes the formation of condensed, transcriptionally silent heterochromatin. In prokaryotes, it is also crucial for methyl-directed mismatch repair (D), a system that uses the methylation status of the parental DNA strand to identify and correct errors made during DNA replication on the newly synthesized strand. However, RNA splicing (B) is a post-transcriptional process. It involves the removal of introns from a pre-mRNA molecule to form mature mRNA. This process is carried out by the spliceosome and is regulated by splicing factors, but it is not directly controlled by the methylation status of the DNA from which the RNA was transcribed.

Question 15. Which of the following enzymes are involved in gluconeogenesis? A. Hexokinase B. PEPCK (Phosphoenolpyruvate carboxykinase) C. Pyruvate carboxylase D. Pyruvate kinase Choose the correct options :

A. A, B and D NODIA page 671 INICET Examination Paper PHYSIOLOGY 11. The slow waves

(basic electrical rhythm or BER frequency) are lowest in which of the following?

B. Duodenum

C. Jejunum

D. Ileum

Correct answer: A

Stomach Slow waves, also known as the basic electrical rhythm (BER), are spontaneous, rhythmic fluctuations in the membrane potential of gastrointestinal smooth muscle cells. They are generated by specialized pacemaker cells called the interstitial cells of Cajal. While these waves do not cause contractions themselves, they determine the maximum frequency at which contractions can occur. The frequency of the BER follows a gradient along the GI tract. It is highest in the proximal small intestine, with the duodenum (B) having a rate of about 12 cycles per minute. The frequency then decreases distally through the jejunum (C) and ileum (D) (to about 8-9 cycles per minute). The stomach (A), however, has a much lower intrinsic BER frequency, with only about 3 slow waves per minute. Therefore, among the options provided, the frequency of slow waves is least in the stomach. 12. Rees-Ecker fluid is used as a diluent for which of the following? AAns (A) Rees-Ecker fluid is a specific diluting solution used for the manual counting of platelets (thrombocytes). The equipment shown in A is a Thoma Red Blood Cell (RBC) pipette, identified by the red bead in its mixing bulb. Platelets are present in very high numbers in the blood, similar in magnitude to red blood cells. Therefore, a high dilution (like the 1 :100 or 1 :200 provided by the RBC pipette) is required to dilute the sample enough to count the platelets accurately in a hemocytometer. The other options are incorrect : B is a White Blood Cell (WBC) pipette (note the white bead), which provides a lower dilution (1 :20) unsuitable for a platelet count. C is a Wintrobe tube, used for Erythrocyte Sedimentation Rate (ESR). D is a Sahli's hemoglobinometer pipette, used for estimating hemoglobin. 13. All of the following substances show an increase in concentration within the Proximal Convoluted Tubule (PCT), except which one? : (A) Amino acid (B) Glucose (C) Chloride (D) Bicarbonate AAns (A) Amino acid In the proximal convoluted tubule (PCT), a large proportion of filtered substances are reabsorbed back into the bloodstream. However, the concentration of a substance within the tubular fluid depends on whether it is reabsorbed more rapidly than water. Amino acids and glucose are almost completely reabsorbed early in the PCT by active transport (via sodium-dependent cotransporters). Because they are reabsorbed rapidly and nearly completely, their concentration in tubular fluid decreases, not increases. Bicarbonate is also significantly reabsorbed in the PCT (about 80–90%). Its concentration generally falls as it is reclaimed efficiently. In contrast, chloride initially shows a relative increase in concentration in the early PCT. This occurs because water and bicarbonate are reabsorbed faster than chloride, leaving chloride behind and increasing its tubular concentration temporarily before it is later reabsorbed. Thus, the substance that does not show an increase in concentration in the PCT is amino acid, making option (A) correct. 14. What happens when a person moves from a lying

(supine) position to standing? (A) Increase firing in baroreceptor afferents (B) Decrease firing in baroreceptor afferents (C) Vagal output to cardiac fibers increase (D) B and C Both AAns (B) Decrease firing in baroreceptor afferents When a person stands up from a supine position, gravity causes blood to pool in the veins of the lower extremities. This leads to a transient decrease in venous return to the heart, a decrease in cardiac output, and consequently, a drop in arterial blood pressure. This fall in blood pressure is sensed by the high-pressure baroreceptors located in the carotid sinus and the aortic arch. These receptors are stretch receptors, and the reduced stretch due to the lower blood pressure causes a decrease in the firing rate of the baroreceptor afferent nerves that travel to the brainstem. This decreased afferent signal triggers a compensatory reflex : sympathetic output increases (causing vasoconstriction and increased heart rate), and vagal (parasympathetic) output to the heart decreases (C is incorrect), all aimed at restoring the blood pressure to its normal level. 15. This graph shows the filterability of dextran through the kidney, where “1” indicates complete filtration and “0” indicates no filtration. Identify the substances labeled “A,” “B,” and “C” respectively. (A) Polycationic, Neutral, Polyanionic (B) Polyanionic, Neutral, Polycationic (C) Neutral, Polycationic, Polyanionic (D) Neutral, Polyanionic, Polycationic AAns (A) Polycationic, Neutral, Polyanionic The graph shows that for any given molecular size, the relative filterability of a substance across the glomerular filtration barrier is highly dependent on its electrical charge. The glomerular basement membrane is rich in negatively charged proteoglycans, which creates a charge barrier that repels other negatively charged molecules. 1. Curve A shows the highest filterability. This represents polycationic (positively charged) dextrans, which are attracted to the negatively charged barrier and are therefore filtered more easily than neutral molecules. 2. Curve B shows intermediate filterability. This represents neutral dextrans, whose filtration is determined primarily by their size. 3. Curve C shows the lowest filterability. This represents polyanionic (negatively charged) dextrans, which are strongly repelled by the negatively charged glomerular barrier, significantly restricting their filtration. Albumin, a key plasma protein, is polyanionic, which contributes to its very low filterability despite its size. 16. What is the sequence of events after the "P" wave? A. "a" wave B. 1st heart sound C. Rapid filling of ventricles D. "t" wave (A) A > C > B > D (B) C > A > D > B (C) B > D > A > C (D) A > C > D > B AAns (A) A > C > B > D. Cardiac Cycle Sequence To understand the correct order, let's trace the events that follow the P wave, which represents the electrical depolarization of the atria. 1. P wave (Atrial Depolarization) → Atrial Contraction i. A. "a" wave : The contraction of the atria increases atrial pressure, causing a corresponding pressure wave in the jugular veins known as the "a" wave. This happens immediately after the P wave. ii. C. Rapid filling of ventricles : The contracting atria push the final volume of blood into the ventricles. This phase is more accurately called "late ventricular filling" or the "atrial kick," but it follows the "a" wave as the pressure from the contraction drives the blood flow. 2. QRS Complex (Ventricular Depolarization) → Ventricular Contraction B. 1st heart sound (S1) : As the ventricles begin to

contract (systole), the pressure inside them quickly rises above the pressure in the atria. This forces the atrioventricular (mitral and tricuspid) valves to snap shut, producing the first heart sound ("lub"). This event occurs after the QRS complex, which follows the P wave. 3. T wave (Ventricular Repolarization) D. "t" wave : This wave on the ECG represents the repolarization (electrical reset) of the ventricles. It occurs during the latter part of ventricular contraction, after the first heart sound but before the second heart sound. Therefore, the correct chronological sequence of these events after the P wave is : "a" wave → filling of ventricles → 1st heart sound → "t" wave. 17. In the diagram, a simple muscle twitch with a corresponding time trace below is recorded from a frog’s gastrocnemius muscle. What is the minimum frequency required to produce tetanus in this muscle?

Question 16. Which of the following processes seen in Type 1 Diabetes Mellitus (DM) with low insulin levels lead to ketosis and ketonuria? A. Increased mobilization of fatty acids from adipose tissue B. Decreased beta-oxidation of fatty acids C. Decreased Acetyl CoA entering the TCA cycle D. Increased Beta-hydroxybutyrate dehydrogenase Choose the correct options :

A. A, C and D

B. B,C & D

C. B and C

D. A,B,C,D

Correct answer: A

A, C and D In Type 1 diabetes, the absolute deficiency of insulin leads to a state of uncontrolled catabolism, resulting in diabetic ketoacidosis (DKA). A. Increased mobilization of fatty acids : Insulin normally inhibits hormone-sensitive lipase. In insulin deficiency, this inhibition is lost, leading to massive lipolysis and the release of free fatty acids from adipose tissue into the bloodstream. (Correct) B. Decreased beta-oxidation : The flood of fatty acids to the liver leads to a massive increase in their breakdown via beta-oxidation, not a decrease. This process generates a large amount of acetyl-CoA. (Incorrect) C. Decreased Acetyl CoA entering the TCA cycle : The excess acetyl-CoA overwhelms the capacity of the TCA (Krebs) cycle, partly because oxaloacetate is being diverted to gluconeogenesis. This causes acetyl-CoA to accumulate. (Correct) D. Increased Beta-hydroxybutyrate dehydrogenase : The excess acetyl-CoA is shunted into ketogenesis, forming acetoacetate and beta-hydroxybutyrate. The enzyme beta-hydroxybutyrate dehydrogenase is active in this process. (Correct)

Question 17. Which of the following statements about telomerase is incorrect?

A. It has reverse transcriptase activity

B. It is only found in eukaryotes

C. It maintains high fidelity during DNA replication

D. It maintains the length of chromosomes

Correct answer: C

It maintains high fidelity during DNA replication Telomerase is a unique enzyme responsible for maintaining the length of chromosomes (D) by adding repetitive nucleotide sequences to the ends, or telomeres. It is a ribonucleoprotein that contains its own RNA template and synthesizes DNA from this RNA template. This enzymatic activity makes it a specialized type of reverse transcriptase (A). Telomerase is a feature of eukaryotic chromosomes; prokaryotes have circular chromosomes and do not require it (B). The statement that telomerase maintains high fidelity during DNA replication (C) is incorrect. The primary enzyme responsible for the high-fidelity replication of the main chromosomal DNA is DNA polymerase, which has proofreading capabilities. Telomerase's function is specifically to solve the "end-replication problem" by adding telomeric repeats, a process that is separate from the high-fidelity replication of the coding regions of the genome.

Question 18. The following values are given below: A. Km of an enzyme = 10 µM; kcat = 20s $^{-1}$ B. Km of an enzyme = 200 nM; kcat = 50s $^{-1}$ C. Km of an enzyme = 2 µM; kcat = 200s $^{-1}$ D. Km of an enzyme = 4 µM; kcat = 200s $^{-1}$ The highest catalytic efficiency is seen in :

A. A

B. B

C. C

D. D

Correct answer: B

B Catalytic efficiency is a measure of how efficiently an enzyme converts a substrate into a product. It is represented by the ratio of two kinetic parameters : kcat / Km. A higher kcat (turnover number) or a lower Km (substrate affinity) will result in a higher catalytic efficiency. We need to calculate this ratio for each option, ensuring the units are consistent. Let's convert all Km values to µM. A : Efficiency = 20 / 10 = 2 B : Km = 200 nM = 0.2 µM. Efficiency = 50 / 0.2 = 250 C : Efficiency = 200 / 2 = 100 D : Efficiency = 200 / 4 = 50 Comparing the calculated efficiency values (A=2, B=250, C=100, D=50), enzyme B clearly has the highest catalytic efficiency. This is because it has both a very high affinity for its substrate (very low Km) and a reasonably high turnover rate (kcat).

Question 19. Which of the following enzymes shows a decrease in Vitamin B12 deficiency? A. Methionine synthase B. Methyl malonyl CoA isomerase C. Homocysteine synthase D. Folate reductase Choose the correct options :

A. A and B

B. A, B and C

C. D only

D. B and C

Correct answer: A

A and B Vitamin B12 (cobalamin) is an essential cofactor for only two enzymes in the human body. A deficiency of Vitamin B12 will lead to decreased activity of these two specific enzymes. 1. Methionine synthase : This enzyme catalyzes the conversion of homocysteine to methionine. It requires methylcobalamin (a form of Vitamin B12) as a cofactor to transfer a methyl group from N5-methyltetrahydrofolate. Its deficiency leads to the accumulation of homocysteine. 2. Methylmalonyl-CoA mutase (the question incorrectly calls it an isomerase) : This enzyme catalyzes the conversion of L-methylmalonyl-CoA to succinyl-CoA, a step in the metabolism of odd-chain fatty acids and certain amino acids. It requires adenosylcobalamin as a cofactor. Its deficiency leads to the accumulation of methylmalonic acid. Homocysteine synthase (C) and folate reductase (D) are not standard names for B12-dependent enzymes. Therefore, the activity of both methionine synthase and methylmalonyl-CoA mutase will decrease.

Question 20. The steps of PCR (Polymerase Chain Reaction) are :

A. Hybridization → Denaturation → Annealing → Elongation

B. Denaturation → Annealing → Elongation

C. Denaturation → Elongation → Annealing → Hybridization

D. Hybridization → Annealing → Elongation → -> Denaturation

Correct answer: B

Denaturation → Annealing → Elongation The Polymerase Chain Reaction (PCR) is a technique used to amplify a specific segment of DNA exponentially. It consists of a series of repeated cycles, with each cycle comprising three distinct temperature-controlled steps : 1. Denaturation : The reaction mixture is heated to a high temperature (typically 94-98°C). This breaks the hydrogen bonds holding the double-stranded DNA template together, separating it into two single strands. 2. Annealing : The temperature is lowered (typically 50-65°C). This allows short, single-stranded DNA primers, which are complementary to the sequences flanking the target region, to bind (anneal) to their respective sites on the single-stranded DNA templates. 3. Elongation (or Extension) : The temperature is raised again (typically to 72°C), which is the optimal temperature for the thermostable DNA polymerase (like Taq polymerase). The polymerase then synthesizes a new complementary DNA strand, starting from the primers and extending along the template strand. This three-step cycle is repeated 25-35 times, leading to an exponential amplification of the target DNA sequence.

Question 21. Compare the normality of 2 mM HCl and 1 mM H 2 SO 4 .

A. Same

B. Double

C. Half

D. Four times

Correct answer: A

Same Normality (N) is a measure of concentration defined as the molarity (M) of a solution multiplied by its equivalence factor (or n-factor). For an acid, the n-factor is the number of moles of hydrogen ions (H +) that one mole of the acid can donate. For hydrochloric acid (HCl), it is a monoprotic acid, meaning it donates one H + ion per molecule. Therefore, its n-factor is 1. 1. Normality of 2 mM HCl = 2 mM × 1 = 2 mN (millinormal). 2. For sulfuric acid (H 2 SO 4), it is a diprotic acid, meaning it can donate two H + ions per molecule. Therefore, its n-factor is 2. 3. Normality of 1 mM H 2 SO 4 = 1 mM × 2 = 2 mN. Since both solutions have a normality of 2 mN, their normalities are the same.

Question 22. The thermogenic effect of food is highest for :

A. Lipid

B. Carbohydrates

C. Proteins

D. Mixed

Correct answer: C

Proteins This is a duplicate of a previous question. The thermic effect of food (TEF), also called specific dynamic action, is the energy expenditure required for the digestion, absorption, and metabolism of nutrients after a meal. This value varies significantly between the different macronutrients. Proteins have the highest TEF, with about 20-30% of their ingested energy being used for their processing and assimilation. This is due to the energy-intensive processes of deamination and urea synthesis. Carbohydrates (B) have an intermediate TEF, typically in the range of 5-10%. Lipids (A), or fats, have the lowest TEF, at only about 0-3%, meaning they are the most metabolically efficient macronutrient to store. Therefore, protein consumption leads to the greatest increase in metabolic rate compared to the other macronutrients, a principle often utilized in diets for weight management. PATHOLOGY

Question 23. In which of the following conditions is the JAK2 mutation found?

A. Polycythemia vera

B. Iron deficiency anemia

C. Megaloblastic anemia

D. Sickle cell anemia

Correct answer: A

Polycythemia vera The JAK2 (Janus kinase 2) gene encodes a tyrosine kinase that is a critical component of the signaling pathway for several hematopoietic growth factor receptors, including the erythropoietin receptor. A specific acquired somatic mutation in the JAK2 gene, known as JAK2 V617F, is the pathognomonic molecular marker for the classic BCR-ABL negative myeloproliferative neoplasms (MPNs). This gain-of-function mutation leads to constitutive, growth factor-independent activation of the signaling pathway, causing uncontrolled proliferation of hematopoietic cells. The JAK2 V617F mutation is found in over 95% of patients

with Polycythemia Vera, which is characterized by an overproduction of red blood cells. It is also found in about 50-60% of patients with essential thrombocythemia and primary myelofibrosis. The other anemias listed are not associated with this mutation.

Question 24. Which of the following increases in COPD? 1 FRC (Functional Residual Capacity) 2 TLC (Total Lung Capacity) 3 VC (Vital Capacity) 4 FEV1/FVC (Forced Expiratory Volume in 1 second / Forced Vital Capacity)

A. 1 & 2

B. 2 & 3

C. 3 & 4

D. 4 & 1

Correct answer: A

1 & 2 Chronic Obstructive Pulmonary Disease (COPD) is characterized by persistent airflow limitation. This obstruction leads to air trapping, where air gets trapped in the lungs at the end of expiration. This has several effects on lung volumes measured by spirometry and plethysmography. The trapped air leads to an increase in the volume of air remaining in the lungs after a normal expiration, which is the Functional Residual Capacity (FRC) (1). It also leads to an increase in the volume of air remaining after a maximal expiration (Residual Volume, RV). As a consequence of the increased RV, the Total Lung Capacity (TLC) (2), which is the sum of RV and Vital Capacity, is also typically increased or normal. In contrast, the Vital Capacity (VC) (3) (the maximum volume of air that can be exhaled) is often decreased. The hallmark of COPD is a reduced FEV1/FVC ratio (4), which is decreased, not increased.

Question 25. Which of the following is not a distinguishing feature between Classical Hodgkin Lymphoma (HL) and Nodular Lymphocyte Predominant Hodgkin Lymphoma (NLPHL)?

A. Nodular lymphocyte predominant has poor prognosis

B. Nodular lymphocyte predominant is not associated with EBV

C. Popcorn cells are positive for CD20 & EMA

D. Popcorn cells are negative for CD30 & CD15

Correct answer: A

Nodular lymphocyte predominant has poor prognosis This statement is the exception because it is false. Nodular Lymphocyte-Predominant Hodgkin Lymphoma (NLPHL) is an indolent lymphoma with a very favorable prognosis, which is generally better than that of most subtypes of Classical Hodgkin Lymphoma (CHL). The other statements correctly describe key differences between the two entities. NLPHL is not associated with the Epstein-Barr virus (EBV) (B), whereas many cases of CHL are. The malignant cell in NLPHL is the Lymphocytic and Histiocytic (L&H) cell, or "popcorn cell." These cells have a distinct immuno phenotype : they are characteristically positive for B-cell markers like CD20 and EMA (C), and crucially, they are

negative for the classic RS cell markers CD15 and CD30 (D). In contrast, the Reed-Sternberg cells of CHL are positive for CD15 and CD30 but are usually negative for CD20 and EMA.

Question 26. Which of the following is found in t(11;14)? A. SOX 11 B. Cyclin D1 C. CD10 D. CD200

A. Only A

B. A and C only

C. A, B and C only

D. B and D only

Correct answer: D

B and D only. The chromosomal translocation t(11;14) is the genetic signature of Mantle Cell Lymphoma (MCL). This genetic event is pivotal because it leads directly to the over expression of a key protein. B. Cyclin D1 : The t(11;14) translocation places the CCND1 gene (which codes for Cyclin D1) next to a powerful gene enhancer. This results in the massive overexpression of Cyclin D1, a protein that pushes the cell cycle forward. It's the defining molecular feature of MCL. D. CD200 : This is a cell surface glycoprotein. While not as fundamental as Cyclin D1, research shows that CD200 is expressed in a notable subset of MCL cases (around 25-40%). In contrast, CD10 (C) is a marker typically found in other B-cell lymphomas like Follicular Lymphoma and is characteristically negative in MCL. While SOX11 (A) is also a key diagnostic marker for MCL, option (D) is the best choice as it correctly pairs the essential marker (Cyclin D1) with another valid finding (CD200).

Question 27. Which of the following conditions is least likely to result in a dry tap during bone marrow aspiration?

A. Chronic myeloproliferative disorders

B. Follicular Lymphoma

C. M7 AML

D. Hairy Cell Leukemia

Correct answer: B

Follicular Lymphoma A "dry tap" on bone marrow aspiration occurs when no marrow particles can be aspirated, despite the needle being correctly positioned. This is most commonly due to marrow fibrosis (myelofibrosis) or packing of the marrow space by a dense infiltrate of cells. Conditions notorious for causing significant marrow fibrosis and a dry tap include hairy cell leukemia (D), chronic myeloproliferative disorders like primary myelofibrosis (A), and acute megakaryoblastic leukemia (M7 AML) (C). In these conditions, a bone marrow biopsy is essential for diagnosis. In contrast, while follicular lymphoma (B) can infiltrate the bone marrow, the infiltration is typically interstitial or paratrabecular and not usually associated with the extensive fibrosis that would lead to a dry tap. Therefore, among the choices provided, follicular lymphoma is the least likely to result in an inaspirable bone marrow.

Question 28. Which of the following is not true about telomerase?

A. Reverse transcriptase

B. Maintains chromosome length

C. Only in eukaryotes

D. DNA repair/synthesis

Correct answer: D

DNA repair/synthesis This question is a near duplicate of a previous one. Telomerase is a unique ribonucleoprotein enzyme. It acts as a specialized reverse transcriptase (A), using its own internal RNA component as a template to synthesize DNA. Its specific function is to add repetitive DNA sequences (telomeres) to the ends of chromosomes, thereby maintaining chromosome length (B) and compensating for the "end-replication problem." This process is specific to linear chromosomes and is thus a feature of eukaryotes (C). The statement that it is involved in general DNA repair/synthesis (D) is not true. While it does synthesize DNA, its function is highly specialized and restricted to the telomeres. The major enzymes for general DNA synthesis (replication) and repair are the various DNA polymerases, not telomerase.

Question 29. Which of the following statements about Nodular Lymphocyte Predominant Hodgkin Lymphoma (NLPHL) is incorrect?

A. EBV Negative

B. CD15/CD30 Negative

C. CD20 Positive

D. Poor prognosis compared to Classical Hodgkin Lymphoma (CHL)

Correct answer: D

Poor prognosis compared to Classical Hodgkin Lymphoma (CHL) This is a duplicate of question 27. The incorrect statement is that NLPHL has a poor prognosis. Nodular Lymphocyte-Predominant Hodgkin Lymphoma (NLPHL) is an indolent (slow-growing) form of lymphoma that typically has a very favorable prognosis, which is generally considered better than that of most subtypes of Classical Hodgkin Lymphoma (CHL). The other statements accurately describe the key features of NLPHL that distinguish it from CHL. It is characteristically negative for Epstein-Barr Virus (EBV) (A). The malignant cells, known as "popcorn cells," are diagnostically negative for the classic Hodgkin markers CD15 and CD30 (B). Instead, these cells retain their B-cell phenotype and are strongly positive for the B-cell marker CD20 (C), which has important therapeutic implications.

Question 30. Pancytopenia on blood examination is seen in :

A. Megaloblastic anemia

B. Hairy cell leukemia

C. Acute promyelocytic leukemia

D. Myelodysplastic syndrome

Correct answer: B

Hairy cell leukemia. All four options are valid causes of pancytopenia. Megaloblastic anemia, Acute promyelocytic leukemia, and Myelodysplastic syndrome all disrupt the bone marrow's ability to produce sufficient healthy blood cells, leading to low counts. However, Hairy cell leukemia is uniquely characterized by this presentation. The disease involves malignant B-lymphocytes (the "hairy cells") infiltrating the bone marrow. This infiltration, combined with the significant marrow fibrosis (scarring) it causes, physically crowds out and suppresses the normal production of red cells, white cells, and platelets. Therefore, pancytopenia is a hallmark and nearly universal finding at the time of diagnosis for Hairy cell leukemia, often accompanied by a massively enlarged spleen. This makes it a quintessential example of a disease presenting with pancytopenia.

Question 31. Which clotting factor deficiency does not affect clotting in vivo?

A. Factor V

B. Factor VII

C. Factor III (Tissue factor)

D. Factor XII

Correct answer: D

Factor XII Factor XII (Hageman factor) is the protein that initiates the intrinsic pathway of the coagulation cascade in vitro, as measured by the activated partial thromboplastin time (aPTT). A deficiency in Factor XII will therefore cause a markedly prolonged aPTT. However, extensive clinical observation has shown that individuals with Factor XII deficiency do not have a bleeding disorder and do not experience abnormal bleeding in vivo, even after major surgery or trauma. This indicates that the initiation of the intrinsic pathway via Factor XII is not essential for normal hemostasis in the body. In contrast, deficiencies of all other clotting factors, including Factor V (A), Factor VII (B), and Tissue Factor (Factor III) (C), lead to significant and often severe bleeding disorders, highlighting their crucial roles in the in vivo coagulation process. PHARMACOLOGY

Question 32. Which is used for absence seizures? 1. Ethosuximide 2. Carbamazepine 3. Valproic acid 4. Gabapentin

A. 1,2 & 3

B. 1 & 3 Only

C. 2 Only

D. 4 Only

Correct answer: B

1 & 3 Only Absence seizures are a type of generalized seizure characterized by brief episodes of staring and unresponsiveness, accompanied by a classic 3-Hz spike-and-wave pattern on EEG. The treatment for absence seizures is specific. 1. Ethosuximide : This is the first-line and most specific drug for treating uncomplicated childhood absence seizures. It works by blocking

T-type calcium channels in thalamic neurons. 3. Valproic acid : This is a broad-spectrum antiepileptic drug that is also highly effective for absence seizures and is the drug of choice if the patient also has co-existing generalized tonic-clonic seizures. 2. Carbamazepine : This is a narrow-spectrum drug used for focal seizures. It is contraindicated in absence seizures as it can exacerbate them. 4. Gabapentin : This is used as an add-on for focal seizures and for neuropathic pain; it is not effective for absence seizures. Therefore, only ethosuximide and valproic acid are used for the treatment of absence seizures.

Question 33. If codeine is being introduced to the market in combination with dextromethorphan as an antitussive, what steps should be taken next?

A. Should not be used as it is irrational

B. Can be used to treat cough effectively

C. Can be used as it has different MOA

D. Should not be used due to addiction

Correct answer: A

Should not be used as it is irrational This question assesses the principles of rational pharmacotherapy. Codeine is an opioid that suppresses cough by acting on the cough center in the brainstem. Dextromethorphan is a non-opioid, synthetic derivative of morphine that also acts centrally to suppress the cough reflex, likely via sigma-1 receptor agonism and NMDA receptor antagonism. Since both drugs are centrally acting antitussives that work to achieve the same therapeutic goal (cough suppression), combining them in a fixed-dose combination offers no proven synergistic or additive benefit over using an adequate dose of a single agent. Such a combination increases the risk of side effects, potential for confusion, and cost without providing any additional efficacy. This violates the principles of rational drug use, and therefore, the combination should not be used as it is irrational.

Question 34. Which of the following antidepressants is linked to the fewest sexual side effects?

A. Mirtazapine

B. Fluoxetine

C. Venlafaxine

D. Imipenem

Correct answer: A

Mirtazapine Sexual dysfunction (e.g., decreased libido, anorgasmia) is a very common and distressing side effect of many antidepressant medications, particularly those that work primarily by increasing serotonin levels. Selective Serotonin Reuptake Inhibitors (SSRIs) like fluoxetine (B) and Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs) like venlafaxine (C) are associated with a high incidence of sexual side effects. In contrast, mirtazapine is an atypical antidepressant with a different mechanism of action (a noradrenergic and specific serotonergic

antagonist, or NaSSA). It blocks α 2-adrenergic autoreceptors and certain serotonin receptors (5-HT2 and 5-HT3). This mechanism is associated with a significantly lower incidence of sexual dysfunction compared to SSRIs and SNRIs, and in some cases, it may even improve sexual function. Imipenem (D) is a carbapenem antibiotic, not an antidepressant.

Question 35. Which of the following is a bone-forming drug?

A. Raloxifene

B. Teriparatide

C. Calcitonin

D. Bisphosphonates

Correct answer: B

Teriparatide Osteoporosis medications are broadly classified as either anti-resorptive (slowing bone breakdown) or anabolic (promoting new bone formation). Most treatments fall into the first category. Bisphosphonates (D), raloxifene (A) (a SERM), and calcitonin (C) are all anti-resorptive agents that work by inhibiting the activity of osteoclasts, the cells that break down bone. In contrast, teriparatide is an anabolic agent. It is a recombinant form of the first 34 amino acids of human parathyroid hormone (PTH). When administered intermittently as a once-daily subcutaneous injection, PTH paradoxically stimulates the activity of osteoblasts, the cells responsible for forming new bone. This leads to a significant increase in bone mineral density and a substantial reduction in fracture risk. It is the primary anabolic or "bone-forming" drug used for the treatment of severe osteoporosis.

Question 36. Which of the following statements about disulfiram are correct?

A. Disulfiram action still persists for a few days after being stopped

B. Should be given in doubtful motivated persons

C. Anti-craving drug

D. A & C Both

Correct answer: A

Disulfiram action still persists for a few days after being stopped Disulfiram is a medication used as a deterrent therapy for alcohol dependence. It works by irreversibly inhibiting the enzyme aldehyde dehydrogenase. If a person taking disulfiram consumes alcohol, acetaldehyde accumulates, causing a highly unpleasant reaction (flushing, nausea, vomiting, tachycardia). This statement (A) is true : because the inhibition of the enzyme is irreversible, its action persists for several days (up to a week) after the last dose, until new enzyme is synthesized. It should only be given to highly motivated patients who are committed to abstinence, not those with doubtful motivation (B is false). Disulfiram is an aversive agent; it does not reduce the underlying desire or craving for alcohol. Naltrexone and acamprosate are anti-craving drugs (C is false). Therefore, only statement A is true.

Question 37. What is the preferred treatment for a condition characterized by subepidermal blisters and neutrophilic infiltration?

A. Rituximab

B. Dapsone

C. Cyclosporine

D. Azathioprine

Correct answer: B

Dapsone The histopathological finding of subepidermal blisters (or microabscesses) filled with neutrophils in the dermal papillae is the classic feature of dermatitis herpetiformis (DH). DH is an intensely pruritic, autoimmune blistering skin disease that is a cutaneous manifestation of celiac disease. The treatment of choice for dermatitis herpetiformis is the drug dapsone. Dapsone provides rapid and dramatic relief from the intense itching and blistering, often within 24-48 hours. Its mechanism of action in DH is thought to be related to its ability to inhibit neutrophil chemotaxis and function. While a strict gluten-free diet is essential for long-term management of the underlying celiac disease, dapsone is the first-line pharmacological agent for controlling the acute skin manifestations. Rituximab, cyclosporine, and azathioprine are other immunosuppressants used for different autoimmune conditions.

Question 38. The Nigro regimen is used in the treatment of which condition?

A. Carcinoma of the anal canal

B. Carcinoma of the colon

C. Carcinoma of the bladder

D. All of the above

Correct answer: A

Carcinoma of the anal canal The Nigro regimen is the standard, definitive treatment protocol for squamous cell carcinoma of the anal canal. It is a combined modality chemoradiation therapy that has transformed the management of this disease, allowing for sphincter preservation and avoiding the need for radical surgery (abdominoperineal resection) in the majority of cases. The original regimen, developed by Dr. Norman Nigro, consists of external beam radiation therapy delivered to the primary tumor and regional lymph nodes, given concurrently with chemotherapy. The classic chemotherapy agents used are mitomycin-C and 5-fluorouracil (5-FU). This combined approach is highly effective, achieving complete remission in over 80% of patients with localized disease. The Nigro regimen is specific to anal cancer and is not used for colon or bladder cancer.

Question 39. What is the mechanism through which anti- migraine drugs can produce angina-like symptoms?

A. Release NO

B. Inactivates Ca 2 + channels

C. 5-HT agonist

D. 5-HT antagonist

Correct answer: C

5-HT agonist The primary classes of drugs used for the acute treatment of migraine are the triptans (e.g., sumatriptan) and the ergot alkaloids (e.g., ergotamine). The mechanism of action of both classes involves agonism at serotonin (5-HT) receptors, specifically the 5-HT1B and 5-HT1D subtypes. Their therapeutic effect is mediated by constricting dilated intracranial blood vessels and inhibiting the release of pro-inflammatory neuropeptides in the trigeminal system. However, these drugs are not entirely selective, and their agonist activity at 5-HT1B receptors located on coronary arteries can cause vasoconstriction of the coronary arteries. In susceptible individuals, particularly those with underlying coronary artery disease, this vasoconstriction can be significant enough to induce myocardial ischemia, leading to angina-like symptoms such as chest pain, tightness, or pressure. This is a well-known and important potential side effect of these drugs.

Question 40. Match the following drugs with their respective antidotes. DRUGS ANTIDOTE A. Heparin 1. Levocarnitine B. Ethylene glycol 2. Protamine Sul- phate C. Hydrofluoric acid 3. Fomepizole D. Valproate 4. Calcium gluco- nate

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

B. A-1 : B-3; C-4; D-2

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

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

Correct answer: D

A-2; B-3; C-4; D-1 A. Heparin : The anticoagulant effect of heparin is rapidly reversed by the administration of protamine sulfate (2), a positively charged molecule that binds to and neutralizes the negatively charged heparin. B. Ethylene glycol : This toxic alcohol is metabolized by alcohol dehydrogenase to toxic metabolites. Fomepizole (3) is a potent inhibitor of alcohol dehydrogenase and is the specific antidote to prevent this toxic metabolism. C. Hydrofluoric acid : This is a highly corrosive acid that also causes severe systemic toxicity by binding to and depleting calcium and magnesium. The antidote is the administration of calcium gluconate (4) (topically, locally injected, or systemically) to bind the free fluoride ions. D. Valproate : Valproate toxicity can lead to hyperammonemia and hepatotoxicity, partly due to carnitine deficiency. Levocarnitine (L-carnitine) (1) is used as an antidote to replenish carnitine stores and facilitate fatty acid metabolism.

Question 41. Which of the following drugs can aggravate Myasthenia Gravis?

A. Meropenem

B. Alpha blocker

C. Lignocaine

D. Penicillin

Correct answer: C

Lignocaine. Myasthenia Gravis (MG) is an autoimmune disorder where antibodies block or destroy acetylcholine receptors at the neuromuscular junction. This leads to a decreased "safety factor" for muscle contraction, causing weakness. Drugs that interfere with this already fragile transmission can worsen symptoms or trigger a myasthenic crisis. (C) Lignocaine (Lidocaine) : This drug is a local anesthetic and antiarrhythmic that works by blocking voltage-gated sodium channels. These channels are crucial for generating and propagating action potentials along the muscle fiber membrane. By blocking them, lignocaine can further impair the muscle's ability to contract in response to nerve signals, thus worsening the weakness in MG patients. Why the other options are less likely : (A) Meropenem : While some antibiotics (especially aminoglycosides and fluoroquinolones) are well-known to worsen MG, carbapenems like meropenem are generally considered safer, though rare cases of exacerbation have been reported. It's not the most significant risk among the choices. (B) Alpha blocker : This class of drugs is not typically associated with worsening MG. Beta-blockers, however, are known to be a risk. (D) Penicillin : Penicillins are widely regarded as safe for use in patients with Myasthenia Gravis.

Question 42. The HPV vaccine is based on which viral proteins?

A. E6 & E7

B. E5

C. L1

D. E2

Correct answer: C

L1 The currently available Human papillomavirus vaccine is based on the L1 major capsid protein of the human papillomavirus (HPV). The L1 protein has the ability to self-assemble into virus-like particles (VLPs). These VLPs resemble the outer shell of the virus but do not contain viral DNA, making them non-infectious and safe. When administered, these L1-based VLPs stimulate a strong neutralizing antibody response. The antibodies prevent HPV from attaching to and infecting epithelial cells, thereby providing protection against cervical cancer and other HPV-related cancers. The early proteins E6 and E7 are oncogenic proteins responsible for malignant transformation (they inactivate tumor suppressor proteins p53 and Rb). However, they are not used in current prophylactic vaccines because they are expressed after infection and are associated with oncogenic activity. Therefore, HPV vaccines such as Gardasil and Cervarix are based on the L1 capsid protein, not E6 or E7.

Question 43. Which of the following methods can be used for therapeutic drug monitoring in a patient?

A. HPLC

B. Nuclear Magnetic Resonance

C. Spectrophotometry NODIA page 677 INICET Examination Paper

D. Flow cytometry

Correct answer: A

HPLC Therapeutic drug monitoring (TDM) is the clinical practice of measuring the plasma concentration of a specific drug to maintain it within a target therapeutic range. This is essential for drugs with a narrow therapeutic index, such as certain antiepileptics (e.g., phenytoin), antibiotics (e.g., vancomycin), and immunosuppressants (e.g., tacrolimus). Several analytical techniques are used for this purpose. High-Performance Liquid Chromatography (HPLC) is a powerful and widely used technique in clinical laboratories for TDM. It works by separating the components of a mixture (like plasma) based on their physicochemical properties, allowing for the precise and accurate quantification of the specific drug of interest. While immunoassays are also very common, HPLC is a gold-standard reference method for many drugs. Spectrophotometry (C) is less specific, and NMR (B) and flow cytometry (D) are not used for routine TDM.

Question 44. A psychotic patient presented with voluntary purposeless movements and was observed to stand still in the ward with negativism and waxy flexibility. What is the appropriate medical management?

A. Haloperidol

B. Lorazepam

C. Clonidine

D. Risperidone

Correct answer: B

Lorazepam The patient's symptoms—purposeless movements, immobility (stupor), negativism (resistance to instructions), and waxy flexibility (maintaining an imposed posture)—are the classic motor signs of catatonia. Catatonia is a psychomotor syndrome that can occur in the context of psychotic, mood, or medical disorders. The first-line medical treatment for catatonia is a benzodiazepine. A "lorazepam challenge" is often used both diagnostically and therapeutically. Administration of an intravenous or intramuscular dose of lorazepam (typically 1-2 mg) often produces a rapid and dramatic, albeit temporary, improvement in the catatonic symptoms, confirming the diagnosis and guiding further treatment. High doses of benzodiazepines are the mainstay of therapy. While antipsychotics like haloperidol (A) or risperidone (D) may be needed to treat the underlying psychosis, they can sometimes worsen catatonia and carry a risk of neuroleptic malignant syndrome.

Question 45. Which of the following is true regarding the treatment of gout?

A. Aspirin is used because it is effective & most safe.

B. Aspirin is not used because it increases uric acid levels.

C. Indomethacin is used.

D. Diclofenac can be used because it accumulates in the joint.

Correct answer: B

Aspirin is not used because it increases uric acid levels. The management of acute gout focuses on rapidly suppressing the intense inflammation. Aspirin is specifically avoided in the treatment of gout. At the low doses typically used for analgesia (<2 g/day), aspirin paradoxically decreases the renal excretion of uric acid by competing for the tubular secretion mechanism, which can worsen hyperuricemia and precipitate or prolong a gouty attack. Therefore, statement (B) is true, and (A) is false. The first-line treatments for an acute gout flare are NSAIDs, colchicine, or corticosteroids. Potent NSAIDs like indomethacin (C) or naproxen are highly effective and were traditionally the drugs of choice. While diclofenac (D) is also an effective NSAID, the reason given is not its primary justification. The most accurate statement regarding the options is the one explaining why aspirin is contraindicated.

Question 46. A patient taking antiepileptic medication is diagnosed with neurocysticercosis. What should be the next steps in this patient's management?

A. Give anti-parasite followed by steroid

B. Steroid followed by antihelminthic drug

C. Steroid after stopping antiepileptic

D. Antiepileptic followed by antihelminthic drug

Correct answer: B

Steroid followed by antihelminthic drug Neurocysticercosis is a parasitic infection of the central nervous system caused by the larval cysts of Taenia solium. When antihelminthic drugs (like albendazole or praziquantel) are administered, they kill the cysticerci within the brain. The death of the parasite triggers a significant host inflammatory response around the degenerating cyst. This inflammation can lead to a dangerous increase in cerebral edema, worsening of neurological symptoms, and an increased risk of seizures. To mitigate this inflammatory response, it is standard practice to administer corticosteroids (e.g., dexamethasone) before or concurrently with the initiation of the antihelminthic drug. The antiepileptic medication should be continued throughout this period to control seizures. Therefore, the correct sequence is to start steroids first to suppress inflammation, and then begin the anti-parasitic treatment. FORENSIC MEDICINE

Question 47. You are an assistant surgeon working in a CHC and 13 year old rape victim is brought to you by her parents with history of sexual assault by 22- year old male. The police from the concerned is not accompanying the victim. The victim is refusing to give consent for the medical examination and any further tests. What should be done in the above given scenario? 1 Start treatment for STD and pregnancy 2 Inform the police 3 Record refusal of consent 4 Take vaginal samples 5

Start medical examination

A. 1,2,3

B. 2,3,5

C. 1,2,5

D. 2,3

Correct answer: A

1,2,3 This is a 13-year-old minor and therefore a child under the Protection of Children from Sexual Offences Act (POCSO Act). Sexual assault of a minor is a mandatory reportable offence, and healthcare providers are legally obligated to inform the police. Hence, informing the police (2) is compulsory, even if police have not accompanied the victim. Since the child is refusing medical examination, consent is essential before any examination or sample collection. Under medico-legal and ethical guidelines, no physical examination or evidence collection (such as vaginal sampling) can be done without valid consent. Therefore, recording refusal of consent (3) in detail is mandatory. However, even if examination is refused, the doctor has a duty to provide necessary emergency medical care, including prophylaxis for sexually transmitted diseases and pregnancy prevention, as these are in the best interest of the child. Thus, starting treatment for STD and pregnancy (1) is appropriate. Taking vaginal samples (4) and starting examination (5) cannot be done without consent. Therefore, the correct combination is 1, 2, and 3 (Option A).

Question 48. Match the following : A. Zinc Chloride 1. Asphyxiant B. HCN 2. Agricultural Poison C. OPC 3. Inorganic Irritant D. Phosphorus 4. Corrosive

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

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

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

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

Correct answer: A

A-4, B-1, C-2, D-3 This question matches different poisons with their classification. A. Zinc Chloride : This is a metallic salt that acts as a powerful corrosive (4) poison, causing severe damage to mucous membranes upon contact. B. HCN (Hydrogen Cyanide) : This is a classic cellular or chemical asphyxiant (1). It inhibits cytochrome oxidase in the mitochondrial electron transport chain, blocking cellular respiration and causing histotoxic hypoxia. C. OPC (Organophosphorus Compound) : These are widely used as pesticides and are a common cause of agricultural poisoning (2). They act by inhibiting the enzyme acetylcholinesterase. D. Phosphorus : Elemental phosphorus is a protoplasmic poison that causes widespread cellular damage. It is classified as an inorganic irritant (3) poison, causing severe gastrointestinal irritation upon ingestion. Therefore, the correct matching sequence is A-4, B-1, C-2, D-3.

Question 49. Match the following A. Lathi 1. Graze wound B. Road 2. Stab wounds C.

Dagger 3. Chop wounds D. Axe 4. Contusion

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

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

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

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

Correct answer: A

A-4, B-1, C-2, D-3 This choice accurately pairs each chemical substance with its primary toxicological classification. A. Zinc Chloride → 4. Corrosive : Zinc chloride is a metallic salt that acts as a potent corrosive poison. When ingested or in contact with tissues, it causes severe chemical burns and destruction of the mucous membranes and underlying tissues. B. HCN → 1. Asphyxiant : Hydrogen cyanide (HCN) is a classic chemical asphyxiant. It functions by inhibiting the enzyme cytochrome oxidase in cells, which halts cellular respiration. This prevents the body's tissues from using oxygen, leading to rapid cellular suffocation, even when oxygen is plentiful in the blood. C. OPC → 2. Agricultural Poison : OPC stands for Organophosphorus Compounds. This class of chemicals, which includes substances like parathion and malathion, is widely used in farming as insecticides and pesticides. Therefore, they are categorized as agricultural poisons. D. Phosphorus → 3. Inorganic Irritant : Phosphorus, specifically the white or yellow allotrope, is classified as an inorganic irritant. Upon ingestion, it causes severe gastrointestinal irritation and can lead to systemic toxicity, particularly damaging the liver. Thus, the correct sequence is A-4, B-1, C-2, and D-3.

Question 50. What is the most common substance of abuse in India?

A. Cannabis

B. Tobacco

C. Alcohol

D. Opium

Correct answer: B

Tobacco Tobacco is the most commonly abused substance in India. It is widely used in both smoked and smokeless forms, making it highly prevalent across different age groups and socioeconomic strata. In India, tobacco is consumed as: 1. Cigarettes and bidis (smoked forms) 2. Gutka, khaini, paan with tobacco, and snuff (smokeless forms) National surveys such as the Global Adult Tobacco Survey (GATS) consistently show that tobacco use is more prevalent than alcohol or illicit drugs. The ease of availability, low cost (especially bidis and smokeless tobacco), cultural acceptance in some regions, and addictive nature of nicotine contribute to its widespread use. Although alcohol is also commonly consumed and cannabis or opium are used in certain areas, their overall prevalence is lower compared to tobacco. Tobacco abuse is a major public health concern because it is strongly associated with oral cancer, lung cancer, COPD, cardiovascular disease, and stroke. Therefore, the most common substance of abuse in

Question 51. Match the following : A. Brugia malayi 1. Sheep B. Diphyllobothrium 2. Crayfish C. Fasciola hepatica 3. Copepod D. Paragonimus wester- mani 4. Mansonia spp

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

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

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

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

Correct answer: A

A-4, B-3, C-1, D-2 This question requires matching parasites with their respective vectors or hosts. A. Brugia malayi : This is a nematode that causes lymphatic filariasis. It is transmitted by the bite of infected mosquitoes, primarily from the genus Mansonia (4). B. Diphyllobothrium latum : This is the fish tapeworm. Its life cycle involves two intermediate hosts. The first is a freshwater crustacean, a copepod (3), which is ingested by the second intermediate host, a freshwater fish. C. Fasciola hepatica : This is the sheep liver fluke. The main definitive hosts for this parasite are herbivores, particularly sheep (1) and cattle, where the adult flukes reside in the bile ducts. D. Paragonimus westermani : This is the oriental lung fluke. Humans become infected by eating raw or undercooked freshwater crabs or crayfish (2) that contain the metacercariae, the infective stage of the parasite.

Question 52. Match the following Column A Column B A. Balamuthia man- drillaris 1. Flagella B. Balantidium coli 2. Cilia C. Trichomonas vagi- nalis 3. pseudopod D. Toxoplasma gondii 4. No particular lo- comotive organ

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

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

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

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

Correct answer: A

A-3, B-2, C-1, D-4 This question matches various protozoan parasites with their characteristic organ of locomotion. A. Balamuthia mandrillaris : This is a free-living amoeba that can cause rare but fatal granulomatous amoebic encephalitis. As an amoeba, its primary mode of movement is through the extension of pseudopods (3). B. Balantidium coli : This is a large intestinal protozoan and is the only member of the ciliate group that is pathogenic to humans. Its entire surface is covered with rows of cilia (2), which it uses for motility and feeding. C. Trichomonas vaginalis : This is a sexually transmitted parasite that causes vaginitis. It is characterized by its tumbling motility, which is achieved through the action of several anterior flagella (1) and an undulating membrane. D. Toxoplasma gondii : This is an apicomplexan parasite. The motile stages, such as tachyzoites and sporozoites, do not possess cilia, flagella,

or pseudopods. They move via a unique mechanism called gliding motility, so "no particular locomotive organ" (4) is the most appropriate description.

Question 53. A 47-year-old man presents with painful lesions on the glans penis. What is the likely cause of this condition?

A. HSV (Herpes Simplex Virus)

B. Haemophilus

C. Chlamydia

D. Syphilis

Correct answer: A

HSV (Herpes Simplex Virus) The image displays multiple small blisters (vesicles) clustered together on a reddened base located on the glans penis. This clinical appearance of "grouped vesicles on an erythematous base" is the pathognomonic sign of a genital herpes infection, caused by the Herpes Simplex Virus (HSV), most commonly HSV-2. The patient's symptom of pain is also a classic feature of a herpetic outbreak, which can be accompanied by burning and itching. The vesicles eventually rupture to form painful, shallow ulcers that then crust over and heal. Haemophilus ducreyi (B) causes chancroid, which presents as a painful ulcer from the start, not vesicles. Chlamydia (C) typically causes urethritis, not external lesions. Primary syphilis (D) classically presents as a single, painless ulcer (chancre). The vesicular nature of the lesions is the key diagnostic clue pointing directly to HSV.

Question 54. Which disease has an almost 100% fatality rate once symptoms develop?

A. Rabies

B. Nipah

C. Ebola

D. Measles

Correct answer: A

Rabies Rabies is an acute progressive viral encephalitis transmitted to humans through the saliva of infected animals, typically via a bite. While the disease is preventable with timely post-exposure prophylaxis, once clinical signs and symptoms develop, the disease is almost invariably fatal. The case fatality rate for symptomatic rabies approaches 100%. There are only a very small number of documented survivors of clinical rabies in the entire history of modern medicine, most of whom were treated with an experimental and not reliably successful protocol. This makes rabies one of the most lethal infectious diseases known. In contrast, while Nipah virus infection (B) and Ebola virus disease (C) are also extremely dangerous and have very high case fatality rates (which can range from 40% to over 90% depending on the strain and outbreak), survival is possible with intensive supportive care. Measles (D) has a much lower mortality rate. page 683 INICET Examination Paper (A) Hyperkalemia (B) Hyperthyroidism (C)

Serum creatinine level (D) Decrease GFR AAns (A) Hyperkalemia While Chronic Kidney Disease (CKD) itself is a progressive condition, patients are at risk for several acute, life-threatening complications. The most common and immediate life-threatening electrolyte abnormality in advanced CKD is hyperkalemia (high serum potassium). The kidneys are the primary route for potassium excretion. As the glomerular filtration rate (GFR) falls, the ability to excrete potassium is impaired, leading to its accumulation in the blood. Severe hyperkalemia is a medical emergency because it alters the resting membrane potential of cardiac myocytes, leading to a high risk of fatal cardiac arrhythmias, such as ventricular fibrillation or asystole. While a decreased GFR (D) and high creatinine (C) define the disease, they are not the direct life-threatening event. Hyperthyroidism (B) is unrelated.

Question 55. A patient with meningitis has had a fever for 4 days, an erythematous chest rash, no history of travel or tick bite, and CSF findings showing high protein, normal glucose, and lymphocytosis. Which organism is the likely cause?

A. S. pneumoniae

B. Meningococci

C. West Nile virus

D. Echo Virus

Correct answer: D

Echo Virus The CSF findings show high protein, normal glucose, and lymphocytosis, which are characteristic of viral (aseptic) meningitis. In viral meningitis: 1. CSF protein → mildly to moderately elevated 2. CSF glucose → normal 3. Predominant cells → lymphocytes This pattern rules out bacterial causes such as Streptococcus pneumoniae and Neisseria meningitidis, which typically show very high protein, low glucose, and neutrophilic predominance. The presence of fever for 4 days and an erythematous chest rash supports a viral etiology. Echovirus, a member of the enterovirus group, is a common cause of viral meningitis and is often associated with a maculopapular rash. It frequently affects children and adults and does not require travel or tick exposure. West Nile virus may cause meningitis but is typically associated with mosquito exposure and can show additional neurological features. Thus, the clinical picture and CSF findings are most consistent with Echo virus infection.

Question 56. Which structure is disrupted by Vibrio cholerae?

A. Hemidesmosome

B. Gap junctions

C. Zona occludens

D. Zona adherens

Correct answer: C

Zona occludens The massive, watery diarrhea characteristic of cholera is caused primarily by the action of the cholera toxin, which leads to a profound secretory state in the intestinal

epithelial cells. However, the integrity of the intestinal barrier is also compromised. The zona occludens, also known as the tight junction, is the most apical intercellular junction that seals the space between adjacent epithelial cells, regulating the paracellular pathway. Vibrio cholerae produces several toxins in addition to the main cholera toxin. One of these is the zonula occludens toxin (Zot), which directly acts on and disrupts the structure of the tight junctions. This disruption increases the permeability of the paracellular pathway, leading to the leakage of fluid and electrolytes from the tissues into the intestinal lumen, which contributes significantly to the voluminous diarrhea. Hemidesmosomes (A) and zona adherens (D) are anchoring junctions, while gap junctions (B) are for cell-to-cell communication.

Question 57. Galactomannan in the serum is found in which of the following conditions?

A. Invasive aspergillosis

B. Candidiasis

C. Mucormycosis

D. Candida

Correct answer: A

Invasive aspergillosis Galactomannan is a polysaccharide that is a major component of the cell wall of fungi in the genus Aspergillus. During invasive growth, the fungus releases this antigen into the host's circulation. Therefore, the detection of galactomannan antigen in the serum or bronchoalveolar lavage (BAL) fluid is a highly specific and widely used biomarker for the diagnosis of invasive aspergillosis. This is particularly useful in high-risk, immunocompromised patients, such as those with neutropenia or who have undergone hematopoietic stem cell transplantation, as it allows for an early diagnosis before the disease becomes clinically apparent. The cell walls of Candida species (B, D) are primarily composed of beta-glucan and mannan, not galactomannan. The cell walls of the fungi causing mucormycosis (C) also do not contain galactomannan.

Question 58. In a fully and adequately immunized child against diphtheria, a throat swab shows Corynebacterium diphtheriae–like organisms on Albert staining. On further laboratory testing, these organisms may show which of the following characteristics?

A. It can grow on Potassium tellurite medium

B. It would show a positive Elek's gel precipitation test

C. It can be pathogenic to experimental guinea pigs

D. It can produce cytotoxicity in tissue cultures

Correct answer: A

It can grow on Potassium tellurite medium The diphtheria vaccine induces immunity against the diphtheria toxin, not against the bacterium Corynebacterium diphtheriae itself. Therefore, an

adequately immunized child can still be colonized with and carry the organism without developing the disease. The organisms seen on the Albert stain would be confirmed as C. diphtheriae by their ability to grow on a selective medium like potassium tellurite agar (A), where they produce characteristic gray-black colonies. However, the key to pathogenicity is toxin production. Since the child is immunized and healthy, the colonizing strain is almost certainly a non-toxigenic strain of C. diphtheriae. A non-toxigenic strain lacks the tox gene and therefore cannot produce the diphtheria toxin. Consequently, it would yield a negative Elek's gel precipitation test (B), would not be pathogenic to guinea pigs (C), and would not produce cytotoxicity in tissue cultures (D), as all of these tests are assays for the presence of the active toxin. MEDINK (A) RA (Rheumatoid Arthritis) (B) Ankylosing spondylitis (C) Reiter's disease (D) Fluorosis AAns (B) Ankylosing spondylitis The sagittal CT scan of the spine shows extensive calcification and ossification of the spinal ligaments, particularly the anterior longitudinal ligament, and fusion of the facet joints, leading to the bridging of adjacent vertebral bodies. This gives the spine a rigid, fused appearance that is classically described as a "bamboo spine." This radiographic finding is the pathognomonic sign of advanced ankylosing spondylitis (AS). AS is a chronic, inflammatory autoimmune disease that primarily affects the axial skeleton, including the sacroiliac joints and the spine. The progressive inflammation leads to fibrosis and ossification, causing the characteristic stiffness, loss of mobility, and eventual fusion of the spine. The patient's symptoms of increasing stiffness and difficulty with forward bending are also classic for this condition. The other conditions listed do not produce this specific bamboo spine appearance.

Question 59. A patient develops fever, prostration, malaise, dysentery, and dehydration. The illness is likely due to a diarrheagenic strain of Escherichia coli (E. coli), and no antibiotics were given. Which type of virulent E. coli best fits this presentation?

A. Enteroaggregative E. coli (EAEC)

B. Enterohemorrhagic E. coli (EHEC)

C. Enteroinvasive E. coli (EIEC)

D. Enteropathogenic E. coli (EPEC)

Correct answer: C

Enteroinvasive E. coli (EIEC) Escherichia coli has several diarrheagenic strains, each producing distinct clinical syndromes. Enteroinvasive E. coli (EIEC) invades and destroys colonic epithelial cells, producing an illness similar to shigellosis. It causes fever, malaise, prostration, abdominal cramps, and dysentery (blood and mucus in stool). Because it invades the intestinal mucosa, it produces inflammatory diarrhea with systemic symptoms and dehydration — matching this clinical presentation. In contrast: 1. EAEC causes persistent watery diarrhea, mainly in children and travelers, without prominent dysentery. 2. EHEC (e.g., O157:H7) causes bloody diarrhea

but typically has little or no fever and may lead to hemolytic uremic syndrome (HUS). Antibiotics are avoided due to HUS risk. 3. EPEC causes watery diarrhea, mainly in infants, without invasive dysentery. Since this patient has fever, systemic toxicity, dysentery, and dehydration, the presentation is most consistent with Enteroinvasive E. coli (EIEC).

Question 60. A patient presents with pneumonia, and culture shows Gram-positive branching rods with molar-tooth colonies on chocolate agar under strict anaerobic conditions. The organism is also catalase- and oxidase-positive. What is the most likely causative agent?

A. Actinomyces

B. H. influenza

C. Pseudomonas

D. E. coli

Correct answer: A

Actinomyces This question describes the key laboratory features of the genus Actinomyces. Actinomyces species are Gram-positive, filamentous, branching rods that are part of the normal oral flora. They are fastidious and grow best under strict anaerobic conditions. When cultured, they characteristically form colonies that are rough, white, and raised, resembling the surface of a molar tooth. The patient's presentation with pneumonia suggests an aspiration event, which is the typical route for pulmonary actinomycosis. While the question states the organism is catalase and oxidase positive, this is variable among species and may be an error in the question stem, as A. israelii is typically catalase-negative. However, the combination of Gram-positive branching rods, anaerobic growth, and molar tooth colonies is highly specific for Actinomyces. H. influenzae (B), Pseudomonas (C), and E. coli (D) are all Gram-negative organisms.

Question 61. What are the features of chancroid? 1. School of fish on Gram staining 2. Painful ulcer 3. Bleeds on touch 4. Groove sign

A. C & D

B. A,B & D

C. A B & C

D. A,C & D

Correct answer: C

A, B & C. Chancroid, a sexually transmitted infection caused by the bacterium Haemophilus ducreyi, has several distinct features : 1. School of fish on Gram staining (A) : This is the classic microscopic finding. When a sample from the ulcer is Gram-stained, the gram-negative coccobacilli arrange themselves in parallel chains, which is described as a "school of fish" or "railroad track" appearance. 2. Painful ulcer (B) : Unlike the painless chancre of primary syphilis, the genital ulcer of chancroid is typically soft, tender, and very painful. 3. Bleeds on

touch (C) : The base of the chancroid ulcer is friable, meaning it is delicate and bleeds easily upon contact or scraping. The Groove sign (D) is not a feature of chancroid. It is characteristic of lymphogranuloma venereum (LGV), where enlarged inguinal and femoral lymph nodes are separated by the inguinal ligament, creating a visible groove. PSM

Question 62. What is the most appropriate method for reviewing previous research studies?

A. Meta analysis

B. Chi-Square test

C. Cross-sectional study

D. Case control study

Correct answer: A

Meta analysis To synthesize and study the findings from a collection of previously conducted research studies on a specific topic, the most rigorous and powerful method is a meta-analysis. A meta-analysis is a quantitative, formal, epidemiological study design used to systematically assess the results of previous research to derive conclusions about that body of research. It goes beyond a simple literature review by using statistical methods to combine the effect estimates from individual studies, resulting in a single, more precise, and powerful summary estimate. This allows for a comprehensive and objective evaluation of the existing evidence. A chi-square test (B) is a statistical test used within a single study. Cross-sectional (C) and case-control (D) studies are designs for conducting primary research, not for synthesizing the results of previous studies.

Question 63. What is the most suitable option for mass chemoprophylaxis against anemia in a population?

A. Ferrous Sulphate

B. Ferrous Fumarate + B12 + Folic Acid + Vitamin C

C. Intravenous Iron

D. Ferrous Ascorbate

Correct answer: A

Ferrous Sulphate For mass chemoprophylaxis of anemia in a population, the ideal preparation should be effective, safe, inexpensive, widely available, and suitable for large-scale public health distribution. Ferrous sulphate fulfills these criteria and is the most commonly recommended iron preparation in national anemia control programs. Ferrous sulphate contains a high proportion of elemental iron, is cost-effective, and has well-established efficacy in preventing and treating iron deficiency anemia. It is included in government initiatives such as the Anemia Mukt Bharat strategy under the National Health Mission in India. The tablet form allows easy distribution in schools, antenatal clinics, and community health programs. Combination preparations containing vitamin B12, folic acid, and vitamin C are more expensive

and unnecessary for routine mass prophylaxis unless specific deficiencies are documented. Intravenous iron is reserved for severe anemia or malabsorption and is not practical for community-level prophylaxis. Therefore, for large-scale public health prevention of anemia, ferrous sulphate is the most suitable option.

Question 64. What does the difference between the maximum and minimum values in a dataset represent?

A. Mean

B. Median

C. Range

D. Mode

Correct answer: C

Range In descriptive statistics, several measures are used to summarize a dataset. The range is the simplest measure of dispersion or variability. It is defined as the difference between the maximum (highest) and minimum (lowest) observed values in a dataset. It provides a quick and easy-to-calculate indication of the spread of the data. For example, if the test scores in a class are from 65 to 95, the range is 95 - 65 = 30. While it is simple, it is highly sensitive to outliers and does not provide information about the distribution of values between the two extremes. The mean (A) is the average, the median (B) is the middle value, and the mode (D) is the most frequent value; these are all measures of central tendency, not dispersion.

Question 65. All of the following clinical features are seen in Zika fever except :

A. Guillain-Barre syndrome

B. Petechial rash

C. Fever with arthralgia

D. Conjunctivitis

Correct answer: B

Petechial rash Zika virus infection is typically a mild febrile illness. The most common clinical features are a low-grade fever with arthralgia (joint pain) (C), a diffuse maculopapular rash, and non-purulent conjunctivitis (D). While the acute illness is usually mild, Zika is known for its severe neurological complications. It is a recognized trigger for the development of Guillain-Barré syndrome (GBS) (A), an acute autoimmune demyelinating polyneuropathy, in adults. The most devastating complication is congenital Zika syndrome in infants born to mothers infected during pregnancy. The rash associated with Zika is typically maculopapular (composed of flat red spots and small raised bumps). A petechial rash (B), which consists of small, non-blanching spots caused by intradermal hemorrhage, is not a characteristic feature of Zika fever. Petechiae are more commonly associated with other viral infections like dengue fever or with meningococcemia.

Question 66. When to use hand sanitizer? A. Before touching the patient B. After touching the patient C. When hands are soiled. D. After touching patient's surrounding.

A. A & B

B. B & C

C. A, B & D

D. C & A

Correct answer: C

A, B & D The World Health Organization's "5 Moments for Hand Hygiene" outline the critical points during patient care when hand hygiene is required to prevent the transmission of healthcare-associated infections. Alcohol-based hand sanitizer is the preferred method for hand hygiene when hands are not visibly soiled. These moments include : 1. Moment : Before touching a patient (A), to protect the patient from harmful germs carried on your hands. 2. Moment : Before a clean or aseptic procedure. 3. Moment : After a body fluid exposure risk. 4. Moment : After touching a patient (B), to protect yourself and the healthcare environment from the patient's germs. 5. Moment : After touching the patient's surroundings (D), even if you haven't touched the patient directly. Crucially, hand sanitizer is not effective when hands are visibly dirty or soiled (C). In that situation, hands must be washed with soap and water.

Question 67. Which discrete probability distribution describes the likelihood of a certain number of events occurring within a fixed interval of time or space?

A. Gaussian

B. Binomial

C. Poisson

D. Erlang

Correct answer: C

Poisson The Poisson distribution is a discrete probability distribution that is used to model the number of events occurring within a specified, fixed interval of time or space. It is applicable when these events occur with a known constant mean rate and independently of the time since the last event. Classic examples include the number of phone calls received by a call center in one hour, the number of mutations in a given stretch of DNA, or the number of radioactive decay events in a second. The Binomial distribution (B) describes the number of successes in a fixed number of independent Bernoulli trials. The Gaussian (Normal) distribution (A) is a continuous probability distribution, not a discrete one. The Erlang distribution (D) is a continuous distribution related to waiting times.

Question 68. Which device is used to indicate heat exposure in vaccines?

A. VVM

B. VMV

C. MMV

D. VMM

Correct answer: A

VVM A Vaccine Vial Monitor (VVM) is a small, heat-sensitive label that is placed on a vaccine vial to provide a visual indication of its cumulative heat exposure over time. The VVM consists of a dark outer circle and a lighter inner square. The inner square is made of a heat-sensitive material that darkens gradually and irreversibly when exposed to heat. The rule for interpreting a VVM is : "If the inner square is the same color as or darker than the outer circle, do not use the vaccine." This simple tool allows healthcare workers to determine if a vaccine has been exposed to potentially damaging temperatures and should be discarded, ensuring that only potent vaccines are administered. It is a critical component of the cold chain management system for many vaccines. ENT

Question 69. All of the following are complications of Otitis Media, except :

A. Delta Sign

B. Griesinger Sign

C. Battle Sign

D. Bezold's Sign

Correct answer: C

Battle Sign Otitis media can lead to several serious intracranial and extracranial complications. Griesinger's sign (B) is edema and tenderness over the mastoid process due to thrombosis of the mastoid emissary vein, a sign of sigmoid sinus thrombosis. Bezold's abscess (D) is a deep neck abscess that forms when pus from mastoiditis erodes through the mastoid tip and tracks down the sternocleidomastoid muscle. The "empty delta sign" (A) is a radiological sign seen on contrast-enhanced CT or MRI, representing dural sinus thrombosis (often the sigmoid or superior sagittal sinus). In contrast, Battle's sign (C) is a clinical sign of a basal skull fracture. It consists of ecchymosis (bruising) over the mastoid process that appears 24-48 hours after head trauma. It is related to trauma, not a complication of otitis media.

Question 70. Sequence of Auditory Pathway? 1. Cochlear nucleus 2. Spiral ganglion 3. Auditary cortex 4. Inferior colliculus 5. Superior olivary nucleus 6. Lateral lemniscus 7. Medial geniculate body

A. 1234567

B. 2156473

C. 2134567

D. 2176543

Correct answer: B

2156473 The central auditory pathway follows a specific sequence from the ear to the brain. 1. The first-order neurons are in the spiral ganglion (2) in the cochlea. Their axons form the

auditory nerve. 2. The auditory nerve synapses on the cochlear nucleus (1) in the brainstem. 3. From the cochlear nucleus, fibers ascend bilaterally, with many crossing over and synapsing in the superior olivary nucleus (5), which is crucial for sound localization. 4. Axons from these nuclei then ascend in a tract called the lateral lemniscus (6). 5. The fibers of the lateral lemniscus synapse in the inferior colliculus (4) of the midbrain. 6. From the inferior colliculus, neurons project to the medial geniculate body (7) of the thalamus, the main auditory relay station. 7. Finally, fibers from the medial geniculate body project to the primary auditory cortex (3) in the temporal lobe. The correct sequence is 2 → 1 → 5 → 6 → 4 → 7 → 3.

Question 71. Which of the following is not an objective test?

A. Brainstem Evoked Response Audiometry (BERA)

B. Optical Coherence Tomography (OCT)

C. Impedance Audiometry

D. Pure Tone Audiometry

Correct answer: D

Pure Tone Audiometry Audiological tests can be classified as objective or subjective (behavioral). Objective tests do not require a behavioral response from the patient; they measure a physiological response. Brainstem Evoked Response Audiometry (BERA) or ABR (A), Impedance Audiometry (including tympanometry and acoustic reflex testing) (C), and otoacoustic emissions are all objective tests. Optical Coherence Tomography (OCT) (B) is an objective imaging test used in ophthalmology, not audiology. In contrast, Pure Tone Audiometry (PTA) is a subjective or behavioral test. It requires the patient to listen to tones of specific frequencies and intensities and provide a conscious response (e.g., by raising a hand or pressing a button) when they hear the tone. The results depend entirely on the patient's perception and cooperation, making it a subjective measure of hearing thresholds. MEDINK (D) Pulmonary TB AAns (A) Bronchiectasis The patient's long-standing history of a chronic productive cough with mucopurulent sputum is the classic symptom of bronchiectasis. Bronchiectasis is a chronic respiratory disease characterized by the permanent and abnormal dilation of the bronchi and bronchioles. This structural damage impairs the mucociliary clearance mechanism, leading to the pooling of secretions, chronic bacterial infection, and a persistent inflammatory cycle. Radiologically, the hallmark of bronchiectasis is bronchial wall thickening ("tram tracking") and airway dilation. On a CT scan, this can appear as dilated, thick-walled airways, a "signet ring" sign, or, in severe cases, the formation of clusters of cystic-like spaces, which is consistent with the finding described in the question. While cystic fibrosis (C) and post-infectious causes like TB (D) are major causes of bronchiectasis, the diagnosis describing the final pathological state is bronchiectasis itself.

Question 72. Which of the following statements is true regarding patients with primary open-angle glaucoma?

A. Relatives have 1% chance of developing the same condition

B. Relatives are more likely to develop steroid- induced glaucoma

C. When a pupil is dilated, IOP increases

D. Visual loss can be seen in the peripheral field with normal vision in the central field

Correct answer: D

Visual loss can be seen in the peripheral field with normal vision in the central field Primary open-angle glaucoma (POAG) is a chronic, progressive optic neuropathy characterized by a specific pattern of optic nerve head damage and corresponding visual field loss. A hallmark feature of glaucoma is that it typically affects the peripheral visual field first, while central visual acuity remains preserved until the late stages of the disease. The characteristic visual field defects include nasal steps, arcuate scotomas, and eventually tunnel vision. This insidious loss of peripheral vision is why glaucoma is often called the "silent thief of sight." Statement (A) is incorrect; first-degree relatives have a significantly higher risk (up to 10-fold) than 1%. A family history of POAG is a risk factor for steroid-induced glaucoma (B), but this is a more complex association. An increase in IOP upon pupillary dilation (C) is the mechanism for angle-closure glaucoma, not open-angle glaucoma.

Question 73. In which of the following conditions is iritis commonly observed?

A. Bechet's disease

B. SLE

C. Rheumatoid Arthritis

D. Psoriatic Arthritis

Correct answer: A

Behçet's disease. Iritis, which is inflammation of the iris (the colored part of the eye), is a form of anterior uveitis. While it can be associated with several systemic inflammatory conditions, it is a hallmark feature of Behçet's disease. 1. Behçet's Disease : This is a rare autoimmune disorder that causes inflammation in blood vessels throughout the body. Ocular involvement is very common, affecting up to 70% of patients. Iritis (anterior uveitis) is one of the most frequent eye problems seen in this condition, often being recurrent and severe. 2. SLE (Systemic Lupus Erythematosus) : While SLE can affect almost any part of the body, including the eyes, severe iritis is not a common manifestation. More frequent ocular problems in SLE include dry eye syndrome (keratoconjunctivitis sicca) and retinal disease. 3. Rheumatoid Arthritis (RA) : In adults with RA, the most common inflammatory eye condition is scleritis (inflammation of the white part of the eye), not iritis. Dry eye syndrome is also very common. Iritis is more typically associated with the juvenile form of arthritis (JIA). 4. Psoriatic Arthritis (PsA) : Iritis does occur in patients with psoriatic arthritis, with a prevalence of about 7-25%. However, the association and frequency are considered strongest and most characteristic in Behçet's disease.

Question 74. Which of the following drugs are used to distinguish a fixed, dilated pupil?

A. 4% Cocaine

B. Pilocarpine

C. Phenylephrine

D. Adrenaline

Correct answer: B

Pilocarpine A fixed dilated pupil can be caused by several conditions, including a third nerve palsy, pharmacological blockade (mydriasis), or Adie's tonic pupil. A pharmacological test using dilute pilocarpine is used to help differentiate the cause. Pilocarpine is a direct-acting cholinergic agonist that constricts the pupil. 1. Adie's tonic pupil : This is caused by denervation of the postganglionic parasympathetic supply to the iris sphincter. The denervated muscle becomes supersensitive to acetylcholine. A very dilute (e.g., 0.125%) pilocarpine solution, which would have no effect on a normal pupil, will cause marked constriction in an Adie's pupil, confirming the diagnosis. 2. Pharmacological blockade : If the pupil is dilated by an anticholinergic drug (like atropine), it will not constrict even to a standard strength (1%) pilocarpine solution. 3. Third nerve palsy : A pupil dilated due to a third nerve palsy will constrict in response to a standard strength (1%) pilocarpine solution.

Question 75. Regarding the Kayser-Fleischer ring, which of the following is true?

A. Disappears with Desferrioxamine

B. Starts first in superior and inferior cornea

C. Seen in all cases of hepatic involvement

D. Seen in all cases of brain involvement of Wilson's disease

Correct answer: B

Starts first in superior and inferior cornea The Kayser-Fleischer (KF) ring is the pathognomonic clinical sign of Wilson's disease, a disorder of copper metabolism. It consists of a golden-brown to greenish deposit of copper in Descemet's membrane at the periphery of the cornea (the limbus). 1. (B) is true : The deposition of copper typically starts in the superior and inferior aspects of the cornea first and then progresses to become circumferential. This is best visualized using a slit lamp. 2. (A) is false : The KF ring fades and can eventually disappear with effective copper chelation therapy, but the agent used is D-penicillamine or trientine, not desferrioxamine, which is an iron chelator. 3. (C) is false : The KF ring is not present in all patients with Wilson's disease, particularly in those who present with purely hepatic symptoms. 4. (D) is false : While the KF ring is present in over 95% of patients who have neurological or psychiatric symptoms of Wilson's disease, it is not seen in absolutely all cases.

Question 76. Identify the nerve from the list provided that does not play a role in moving the eyeball.

A. Optic Nerve

B. Oculomotor Nerve

C. Trochlear Nerve

D. Abducent Nerve

Correct answer: A

Optic Nerve The movements of the eyeball are controlled by the six extraocular muscles, which are innervated by three specific cranial nerves, known as the oculomotor nerves. 1. The oculomotor nerve (CN III) (B) innervates the superior rectus, inferior rectus, medial rectus, and inferior oblique muscles. 2. The trochlear nerve (CN IV) (C) innervates the superior oblique muscle. 3. The abducens nerve (CN VI) (D) innervates the lateral rectus muscle. These three nerves are purely motor (or mixed motor/parasympathetic in the case of CN III) and are responsible for all voluntary and reflex eye movements. In contrast, the optic nerve (CN II) (A) is a purely sensory nerve. It is responsible for transmitting visual information from the retina to the brain. It has no motor function and therefore does not cause any movement of the eyeball. MEDICINE

Question 77. From the options listed below, which one is not considered a standard treatment for COVID-19? 1. Remdesivir 2. Dexamethasone 3. Fluids 4. Antibiotics

A. 1 & 2

B. 1, 2 & 3

C. 1 & 3

D. None

Correct answer: D

None This question asks which of the listed interventions are not included in the treatment of COVID-19. 1. Remdesivir : An antiviral medication that has been authorized and used for the treatment of hospitalized patients with COVID-19 to shorten recovery time. 2. Dexamethasone : A corticosteroid that has been proven to reduce mortality in hospitalized patients with COVID-19 who require supplemental oxygen or mechanical ventilation. 3. Fluids : Intravenous or oral fluids are a cornerstone of supportive care for any critically ill patient, including those with COVID-19, to maintain hydration and organ perfusion. 4. Antibiotics : While antibiotics have no effect on the SARS-CoV-2 virus itself, they are frequently used in hospitalized COVID-19 patients to treat or prevent secondary bacterial pneumonia, which is a common complication. Since all four interventions have a role in the comprehensive management of patients with moderate to severe COVID-19, the correct answer is that none of them are excluded from the potential treatment plan.

Question 78. All of the following are true about Gout, except :

A. Occurs due to accumulation of urate crystals in joint

B. Can be precipitated by pyrazinamide

C. Birefringent crystals are present in joint

D. Occurs more in females

Correct answer: D

Occurs more in females This statement is the exception because it is false. Gout has a strong predilection for males, who are affected much more commonly than females, especially before the age of menopause. The incidence in women increases after menopause as the uricosuric effect of estrogen is lost. The other statements are all true. Gout is an inflammatory arthritis caused by the deposition of monosodium urate crystals in and around the joints (A), which occurs in the setting of hyperuricemia. Examination of synovial fluid from an affected joint under polarized light reveals needle-shaped, negatively birefringent crystals (C), which is the gold standard for diagnosis. Gouty attacks can be precipitated by certain medications that increase uric acid levels by decreasing its renal excretion, a classic example of which is the anti-tuberculosis drug pyrazinamide (B).

Question 79. What is the leading cause of Chronic Kidney Disease that also poses the most significant threat to life? Click Here to Buy book on Amazon page 681 INICET Examination Paper 87. What does the difference between the maximum and minimum values in a dataset represent?

A. Mean

B. Median

C. Range

D. Mode

Correct answer: C

Range In descriptive statistics, several measures are used to summarize a dataset. The range is the simplest measure of dispersion or variability. It is defined as the difference between the maximum (highest) and minimum (lowest) observed values in a dataset. It provides a quick and easy-to-calculate indication of the spread of the data. For example, if the test scores in a class are from 65 to 95, the range is 95 - 65 = 30. While it is simple, it is highly sensitive to outliers and does not provide information about the distribution of values between the two extremes. The mean (A) is the average, the median (B) is the middle value, and the mode (D) is the most frequent value; these are all measures of central tendency, not dispersion. 88. All of the following clinical features are seen in Zika fever except : (A) Guillain-Barre syndrome (B) Petechial rash (C) Fever with arthralgia (D) Conjunctivitis AAns (B) Petechial rash Zika virus infection is typically a mild febrile illness. The most common clinical features are a low-grade fever with arthralgia (joint pain) (C), a diffuse maculopapular rash, and non-purulent conjunctivitis (D). While the acute illness is usually mild, Zika is known for its severe neurological complications. It is a recognized trigger for the development of Guillain-Barré syndrome (GBS) (A), an acute autoimmune demyelinating polyneuropathy, in adults. The most

devastating complication is congenital Zika syndrome in infants born to mothers infected during pregnancy. The rash associated with Zika is typically maculopapular (composed of flat red spots and small raised bumps). A petechial rash (B), which consists of small, non-blanching spots caused by intradermal hemorrhage, is not a characteristic feature of Zika fever. Petechiae are more commonly associated with other viral infections like dengue fever or with meningococcemia. 89. When to use hand sanitizer? A. Before touching the patient B. After touching the patient C. When hands are soiled. D. After touching patient's surrounding. (A) A & B (B) B & C (C) A, B & D (D) C & A AAns (C) A, B & D The World Health Organization's "5 Moments for Hand Hygiene" outline the critical points during patient care when hand hygiene is required to prevent the transmission of healthcare-associated infections. Alcohol-based hand sanitizer is the preferred method for hand hygiene when hands are not visibly soiled. These moments include : 1. Moment : Before touching a patient (A), to protect the patient from harmful germs carried on your hands. 2. Moment : Before a clean or aseptic procedure. 3. Moment : After a body fluid exposure risk. 4. Moment : After touching a patient (B), to protect yourself and the healthcare environment from the patient's germs. 5. Moment : After touching the patient's surroundings (D), even if you haven't touched the patient directly. Crucially, hand sanitizer is not effective when hands are visibly dirty or soiled (C). In that situation, hands must be washed with soap and water. 90. Which discrete probability distribution describes the likelihood of a certain number of events occurring within a fixed interval of time or space? (A) Gaussian (B) Binomial (C) Poisson (D) Erlang AAns (C) Poisson The Poisson distribution is a discrete probability distribution that is used to model the number of events occurring within a specified, fixed interval of time or space. It is applicable when these events occur with a known constant mean rate and independently of the time since the last event. Classic examples include the number of phone calls received by a call center in one hour, the number of mutations in a given stretch of DNA, or the number of radioactive decay events in a second. The Binomial distribution (B) describes the number of successes in a fixed number of independent Bernoulli trials. The Gaussian (Normal) distribution (A) is a continuous probability distribution, not a discrete one. The Erlang distribution (D) is a continuous distribution related to waiting times. 91. Which device is used to indicate heat exposure in vaccines? (A) VVM (B) VMV (C) MMV (D) VMM AAns (A) VVM A Vaccine Vial Monitor (VVM) is a small, heat-sensitive label that is placed on a vaccine vial to provide a visual indication of its cumulative heat exposure over time. The VVM consists of a dark outer circle and a lighter inner square. The inner square is made of a heat-sensitive material that darkens gradually and irreversibly when exposed to heat. The rule for interpreting a VVM is : "If the inner square is the same color as or darker than the outer circle, do not use the vaccine." This simple tool allows healthcare workers to determine if a vaccine has been exposed to potentially damaging temperatures and should be discarded, ensuring that only potent vaccines are administered. It is a critical component of the cold chain management system for many vaccines. ENT 92. All of the following are

complications of Otitis Media, except : (A) Delta Sign (B) Griesinger Sign (C) Battle Sign (D) Bezold's Sign AAns (C) Battle Sign Otitis media can lead to several serious intracranial and extracranial complications. Griesinger's sign (B) is edema and tenderness over the mastoid process due to thrombosis of the mastoid emissary vein, a sign of sigmoid sinus thrombosis. Bezold's abscess (D) is a deep neck abscess that forms when pus from mastoiditis erodes through the mastoid tip and tracks down the sternocleidomastoid muscle. The "empty delta sign" (A) is a radiological sign seen on contrast-enhanced CT or MRI, representing dural sinus thrombosis (often the sigmoid or superior sagittal sinus). In contrast, Battle's sign (C) is a clinical sign of a basal skull fracture. It consists of ecchymosis (bruising) over the mastoid process that appears 24-48 hours after head trauma. It is related to trauma, not a complication of otitis media. 93. Name the structure marked as MT in the provided image. (A) Middle turbinate (B) Inferior turbinate (C) Superior turbinate (D) Nasal septum AAns (A) Middle turbinate The image is an endoscopic view of the inside of the nasal cavity. Several key landmarks are labeled. NS indicates the nasal septum, the midline wall separating the two nasal passages. IT indicates the inferior turbinate, which is the largest of the three turbinates and is located along the floor of the nasal cavity. The structure labeled MT is located superior to the inferior turbinate. This is the middle turbinate. The space underneath the middle turbinate is the middle meatus, which is a critically important area as it is the drainage site for the maxillary, frontal, and anterior ethmoid sinuses. The superior turbinate (C) is located higher and more posteriorly and is not typically visible on a routine anterior nasal endoscopy without special angulation. The structure labeled MT is clearly identifiable as the middle turbinate. 94. Sequence of Auditory Pathway? 1. Cochlear nucleus 2. Spiral ganglion 3. Auditary cortex 4. Inferior colliculus 5. Superior olivary nucleus 6. Lateral lemniscus 7. Medial geniculate body (A) 1234567 (B) 2156473 (C) 2134567 (D) 2176543 AAns (B) 2156473 The central auditory pathway follows a specific sequence from the ear to the brain. 1. The first-order neurons are in the spiral ganglion (2) in the cochlea. Their axons form the auditory nerve. 2. The auditory nerve synapses on the cochlear nucleus (1) in the brainstem. 3. From the cochlear nucleus, fibers ascend bilaterally, with many crossing over and synapsing in the superior olivary nucleus (5), which is crucial for sound localization. 4. Axons from these nuclei then ascend in a tract called the lateral lemniscus (6). 5. The fibers of the lateral lemniscus synapse in the inferior colliculus (4) of the midbrain. 6. From the inferior colliculus, neurons project to the medial geniculate body (7) of the thalamus, the main auditory relay station. 7. Finally, fibers from the medial geniculate body project to the primary auditory cortex (3) in the temporal lobe. The correct sequence is 2 → 1 → 5 → 6 → 4 → 7 → 3. 95. Which of the following is not an objective test? (A) Brainstem Evoked Response Audiometry (BERA) (B) Optical Coherence Tomography (OCT) (C) Impedance Audiometry (D) Pure Tone Audiometry AAns (D) Pure Tone Audiometry Audiological tests can be classified as objective or subjective (behavioral). Objective tests do not require a behavioral response from the patient; they measure a physiological response.

Brainstem Evoked Response Audiometry (BERA) or ABR (A), Impedance Audiometry (including tympanometry and acoustic reflex testing) (C), and otoacoustic emissions are all objective tests. Optical Coherence Tomography (OCT) (B) is an objective imaging test used in ophthalmology, not audiology. In contrast, Pure Tone Audiometry (PTA) is a subjective or behavioral test. It requires the patient to listen to tones of specific frequencies and intensities and provide a conscious response (e.g., by raising a hand or pressing a button) when they hear the tone. The results depend entirely on the patient's perception and cooperation, making it a subjective measure of hearing thresholds. MEDINK (D) Pulmonary TB AAns (A) Bronchiectasis The patient's long-standing history of a chronic productive cough with mucopurulent sputum is the classic symptom of bronchiectasis. Bronchiectasis is a chronic respiratory disease characterized by the permanent and abnormal dilation of the bronchi and bronchioles. This structural damage impairs the mucociliary clearance mechanism, leading to the pooling of secretions, chronic bacterial infection, and a persistent inflammatory cycle. Radiologically, the hallmark of bronchiectasis is bronchial wall thickening ("tram tracking") and airway dilation. On a CT scan, this can appear as dilated, thick-walled airways, a "signet ring" sign, or, in severe cases, the formation of clusters of cystic-like spaces, which is consistent with the finding described in the question. While cystic fibrosis (C) and post-infectious causes like TB (D) are major causes of bronchiectasis, the diagnosis describing the final pathological state is bronchiectasis itself. 115. What is the size of a pink IV cannula? (A) 20 G (B) 18 G (C) 22 G (D) 16 G AAns (A) 20 G Intravenous (IV) cannulas are universally color-coded to allow for rapid identification of their gauge size. The gauge number indicates the internal diameter of the cannula, with a smaller number corresponding to a larger diameter and a higher potential flow rate. The standard color code for a 20-gauge IV cannula is pink. This is a very common, general-purpose size used in adults for routine IV fluid administration, giving IV medications, and for blood transfusions when a larger gauge is not necessary. For reference, an 18-gauge cannula is green (B), a 22-gauge cannula is blue (C), and a 16-gauge cannula is gray (D). Remembering these color codes is an essential practical skill in clinical settings. 116. A farmer develops a painless foot lesion with multiple discharging sinuses. What is the most likely diagnosis?

Question 80. A 50-year-old alcoholic is brought to the hospital with bleeding esophageal varices and dies. At autopsy, his distended abdomen contains a large amount of serous fluid. What is the correct term for this fluid?

A. Exudate

B. Ascites

C. Hemorrhage

D. Lymphedema

Correct answer: B

Ascites The clinical history describes a patient with decompensated liver cirrhosis, evidenced by bleeding esophageal varices. A major complication of cirrhosis is the development of portal hypertension. The high pressure in the portal venous system, combined with low serum albumin levels (due to impaired liver synthesis), causes fluid to shift from the vascular space into the peritoneal cavity. The accumulation of this serous fluid within the peritoneal cavity is specifically termed ascites. This fluid is typically a transudate, characterized by a low protein content, as opposed to an exudate (A), which is protein-rich and associated with inflammation. Hemorrhage (C) refers to bleeding, and lymphedema (D) is the accumulation of lymphatic fluid in the interstitial tissues, usually in the limbs. The correct term for the intra-abdominal fluid in this context is ascites.

Question 81. A 20-year-old patient is rapidly gaining weight and has elevated TSH levels. What is the most likely diagnosis?

A. Hashimoto's thyroiditis

B. Graves' disease

C. Pituitary tumor

D. Hypothyroidism

Correct answer: D

Hypothyroidism The patient's symptoms of weight gain, combined with an elevated Thyroid-Stimulating Hormone (TSH) level, point directly to a diagnosis of primary hypothyroidism. In primary hypothyroidism, the thyroid gland itself is failing and cannot produce enough thyroid hormone (T4 and T3). The low levels of circulating thyroid hormone lead to a loss of negative feedback on the pituitary gland. In response, the pituitary secretes an increased amount of TSH in an attempt to stimulate the failing thyroid. The clinical symptoms of hypothyroidism, such as weight gain, fatigue, and cold intolerance, are due to the deficiency of thyroid hormone. Hashimoto's thyroiditis (A) is the most common cause of primary hypothyroidism, but "hypothyroidism" (D) is the overall diagnosis. Graves' disease (B) is a cause of hyperthyroidism with a suppressed TSH. A TSH-secreting pituitary tumor (C) would cause hyperthyroidism, not hypothyroidism.

Question 82. A woman presents with dark knuckles and anemia. What type of anemia is most likely?

A. Megaloblastic anemia

B. Iron deficiency anemia

C. Anemia of chronic disease

D. None of these

Correct answer: A

Megaloblastic anemia The combination of anemia and hyperpigmentation, particularly over the knuckles and other sun-exposed areas or in skin creases, is a classic, though not universally

present, clinical sign of megaloblastic anemia caused by Vitamin B12 deficiency. This hyperpigmentation is thought to be due to increased melanin synthesis, although the exact mechanism is not fully understood. Vitamin B12 deficiency leads to impaired DNA synthesis, affecting rapidly dividing cells in the bone marrow and resulting in the production of large, immature red blood cells (megaloblasts) and anemia. While iron deficiency anemia (B) and anemia of chronic disease (C) are common, they are not typically associated with knuckle hyperpigmentation. This specific skin finding, when present with anemia, should strongly raise the suspicion of Vitamin B12 deficiency.

Question 83. A patient has a gangrenous ulcer on the left toe and experiences early fatigue in the right lower limb while walking. What is the most appropriate investigation?

A. CT angiogram

B. MR angiogram

C. Duplex scan

D. Digital subtraction angiography

Correct answer: D

Digital subtraction angiography The patient's symptoms are highly indicative of severe, multilevel peripheral arterial disease (PAD). The gangrenous ulcer on the left toe represents critical limb ischemia, while the fatigue (claudication) in the right lower limb indicates significant arterial stenosis on that side as well. While a duplex scan (C) is an excellent initial non-invasive test, and CT or MR angiography (A, B) provide detailed anatomical maps, the gold standard for both diagnosis and guiding intervention is Digital Subtraction Angiography (DSA). DSA is an invasive procedure where a catheter is inserted into the arterial system and contrast dye is injected. It provides the highest-resolution images of the vascular lumen, allowing for precise localization of stenoses and occlusions, and detailed assessment of collateral circulation. Crucially, it also allows for percutaneous intervention (like angioplasty or stenting) to be performed during the same procedure.

Question 84. A patient has had fever, headache, neck stiffness, photophobia, and an erythematous chest rash for 4 days, with no recent travel or tick bite history. Which cerebrospinal fluid (CSF) findings would most likely be seen in this case?

A. Elevated protein levels

B. Normal glucose levels

C. Lymphocytosis

D. All of the above

Correct answer: D

All of the above The patient's clinical presentation of fever, headache, neck stiffness, and photophobia is a classic meningeal syndrome. The presence of a rash and the likely subacute

onset point towards a viral or aseptic cause rather than a typical bacterial cause. The characteristic cerebrospinal fluid (CSF) profile for aseptic (viral) meningitis includes several key findings. There is typically a pleocytosis (increased white blood cell count), which is predominantly lymphocytic (C). The protein level is usually mildly to moderately elevated (A) due to inflammation and disruption of the blood-brain barrier. Crucially, the glucose level is typically normal (B), as viruses do not consume glucose in the CSF. This is a key feature that distinguishes viral from bacterial meningitis, where the glucose is usually low. Since all three of these CSF findings are characteristic of viral meningitis, the correct answer is all of the above.

Question 85. A 68-year-old man with a recent syncopal episode, congestive heart failure, and a grade III/IV harsh systolic murmur is found on echocardiography to have marked ventricular septal thickening and systolic anterior motion of the mitral valve. Which of the following findings is most likely to be present in this patient?

A. Radiation of the murmur to the neck

B. Decrease of the murmur with handgrip

C. Delayed carotid upstroke

D. Reduced left ventricular ejection fraction

Correct answer: B

Decrease of the murmur with handgrip The patient's presentation and echocardiographic findings are diagnostic of Hypertrophic Obstructive Cardiomyopathy (HOCM). The harsh systolic murmur in HOCM is caused by the dynamic outflow tract obstruction created by the thickened septum and the systolic anterior motion (SAM) of the mitral valve. The intensity of this murmur is unique in that it changes with maneuvers that alter preload and afterload. Maneuvers that decrease preload or afterload (like standing or Valsalva) make the obstruction worse and increase the murmur's intensity. Conversely, maneuvers that increase preload (squatting) or increase afterload (like a sustained handgrip) will decrease the outflow gradient and therefore decrease the intensity of the murmur. Delayed carotid upstroke (C) and radiation to the neck (A) are characteristic of aortic stenosis. The ejection fraction in HOCM is typically preserved or hyperdynamic, not reduced (D).

Question 86. What are the admission criteria for COVID-19?

A. Multiple comorbidities

B. Chest discomfort

C. Dyspnea

D. All the above

Correct answer: D

All the above The decision to admit a patient with COVID-19 to the hospital is based on an assessment of the severity of their illness and their risk for deterioration. While mild cases can be managed at home, certain signs and symptoms warrant hospital admission for monitoring

and treatment. The most important indication is evidence of respiratory compromise, such as dyspnea (shortness of breath) (C) or a low oxygen saturation. The presence of chest discomfort or pain (B) is also a significant symptom that requires evaluation and admission. Additionally, patients with multiple comorbidities (A) (such as diabetes, heart disease, chronic lung disease, or immunosuppression) are at a much higher risk for developing severe disease, and a lower threshold for admission is often applied to this group, even with seemingly mild symptoms. Therefore, all of the factors listed are valid criteria that would contribute to the decision to admit a patient with COVID-19.

Question 87. Which of the following is not a part of high- quality CPR?

A. Chest compressions 100-120/min

B. Allow chest recoil

C. Chest wall depression of 5-6 cm

D. Respiratory rate of 20-25/min

Correct answer: D

Respiratory rate of 20-25/min High-quality cardiopulmonary resuscitation (CPR) is critical for improving outcomes in cardiac arrest. The key components, as defined by international guidelines (e.g., American Heart Association), include : Pushing hard and fast : Compressing the chest at a rate of 100 to 120 compressions per minute (A) to an adequate depth of at least 2 inches (5-6 cm) in adults (C). Allowing for full chest recoil between compressions (B) to permit the heart to fill with blood. Minimizing interruptions in chest compressions. When providing rescue breaths with an unprotected airway, the correct compression-to-ventilation ratio is 30 :2. If an advanced airway is in place, breaths are given at a rate of 1 breath every 6 seconds, which equates to a respiratory rate of 10 breaths per minute. A respiratory rate of 20-25/min (D) is too high and would constitute hyperventilation, which is detrimental as it increases intrathoracic pressure and decreases venous return.

Question 88. A female develops pallor and cyanosis when exposed to cold water. All of the following conditions can cause this except which one?

A. Hyperthyroidism

B. Migraine

C. Sumatriptan use

D. Smoking

Correct answer: A

Hyperthyroidism The patient's symptoms of episodic, cold-induced digital color changes (pallor followed by cyanosis) describe Raynaud's phenomenon. This is a condition of exaggerated vasospasm of the digital arteries. It can be primary (Raynaud's disease) or secondary to various conditions. Many factors are known to precipitate or are associated with Raynaud's. Smoking (D) is a major vasoconstrictor and a well-known exacerbating factor. Certain medications, such

as sumatriptan (C), which is a serotonin agonist used for migraines, can cause vasospasm and are associated with Raynaud's. There is also a known association between migraine headaches (B) and Raynaud's phenomenon, likely due to a shared underlying predisposition to vasospasm. In contrast, hyperthyroidism (A) is a state of hypermetabolism characterized by heat intolerance and peripheral vasodilation, not vasospasm. Hypothyroidism, not hyperthyroidism, can sometimes be associated with secondary Raynaud's phenomenon.

Question 89. A 42-year-old male has had a cough with mucopurulent discharge for 2 years, and a coronal lung section shows cyst-like spaces in the right middle zone. What is the most likely diagnosis?

A. Bronchiectasis

B. Hydatid cyst

C. Cystic Fibrosis Click Here to Buy book on Amazon MEDINK 80. A patient develops fever, prostration, malaise, dysentery, and dehydration. The illness is likely due to a diarrheagenic strain of Escherichia coli (E. coli), and no antibiotics were given. Which type of virulent E. coli best fits this presentation?

D. Enteropathogenic E. coli (EPEC)

Correct answer: C

Enteroinvasive E. coli (EIEC) Escherichia coli has several diarrheagenic strains, each producing distinct clinical syndromes. Enteroinvasive E. coli (EIEC) invades and destroys colonic epithelial cells, producing an illness similar to shigellosis. It causes fever, malaise, prostration, abdominal cramps, and dysentery (blood and mucus in stool). Because it invades the intestinal mucosa, it produces inflammatory diarrhea with systemic symptoms and dehydration — matching this clinical presentation. In contrast: 1. EAEC causes persistent watery diarrhea, mainly in children and travelers, without prominent dysentery. 2. EHEC (e.g., O157:H7) causes bloody diarrhea but typically has little or no fever and may lead to hemolytic uremic syndrome (HUS). Antibiotics are avoided due to HUS risk. 3. EPEC causes watery diarrhea, mainly in infants, without invasive dysentery. Since this patient has fever, systemic toxicity, dysentery, and dehydration, the presentation is most consistent with Enteroinvasive E. coli (EIEC). 81. A patient presents with pneumonia, and culture shows Gram-positive branching rods with molar-tooth colonies on chocolate agar under strict anaerobic conditions. The organism is also catalase- and oxidase-positive. What is the most likely causative agent? (A) Actinomyces (B) H. influenza (C) Pseudomonas (D) E. coli AAns (A) Actinomyces This question describes the key laboratory features of the genus Actinomyces. Actinomyces species are Gram-positive, filamentous, branching rods that are part of the normal oral flora. They are fastidious and grow best under strict anaerobic conditions. When cultured, they characteristically form colonies that are rough, white, and raised, resembling the surface of a molar tooth. The patient's presentation with pneumonia suggests an aspiration event, which is the typical route for pulmonary

actinomycosis. While the question states the organism is catalase and oxidase positive, this is variable among species and may be an error in the question stem, as A. israelii is typically catalase-negative. However, the combination of Gram-positive branching rods, anaerobic growth, and molar tooth colonies is highly specific for Actinomyces. H. influenzae (B), Pseudomonas (C), and E. coli (D) are all Gram-negative organisms. 82. A chest X-ray shows cavitary lesions. The organism grows slowly on buffered charcoal yeast extract (BCYE) agar and produces aerial hyphae. A Gram-stained image of the cultured organism is provided. What is the causative agent of this disease? (A) Nocardia asteroides (B) Histoplasma capsulatum (C) Legionella pneumophila (D) Mycobacterium tuberculosis AAns (A) Nocardia asteroides This question provides a classic constellation of findings for pulmonary nocardiosis. The chest radiograph showing cavitary lesions indicates a necrotizing pneumonia. The key microbiological clues are the growth on Buffered Charcoal Yeast Extract (BCYE) agar, which is a special medium used for isolating fastidious organisms like Legionella and Nocardia. The Gram stain image shows Gram-positive, fine, branching, filamentous rods, which is the characteristic morphology of Nocardia. These filaments often fragment into rod-like or coccoid forms. Furthermore, Nocardia species are weakly acid-fast (using a modified stain) and form chalky, white-to-orange aerial hyphae on culture media, consistent with the description. Legionella (C) is a Gram-negative rod. Histoplasma (B) is a fungus. Mycobacterium (D) is strongly acid-fast and has a different appearance. Therefore, the etiology is Nocardia asteroides. 83. The Gram-stained smear of urethral exudate from a male (shown in the photo) is diagnostic for which disease? (A) Chancroid (B) Gonorrhea (C) Lymphogranuloma venereum (D) Nongonococcal urethritis AAns (B) Gonorrhea The image provided is a Gram stain of a urethral smear. It shows multiple polymorphonuclear leukocytes (neutrophils), and critically, within the cytoplasm of these neutrophils, there are numerous small, kidney-bean-shaped, Gram-negative (pink) cocci arranged in pairs (diplococci). The presence of these intracellular Gram-negative diplococci is the pathognomonic and diagnostic microscopic finding for gonorrhea, an infection caused by the bacterium Neisseria gonorrhoeae. This finding has very high specificity (>99%) for diagnosing gonococcal urethritis in a symptomatic male. Chancroid (A) is caused by Haemophilus ducreyi (Gram-negative coccobacilli). Lymphogranuloma venereum (C) is caused by Chlamydia trachomatis, an obligate intracellular bacterium that cannot be seen on a Gram stain. Nongonococcal urethritis (D) is a diagnosis of exclusion when gonorrhea is ruled out. 84. What are the features of chancroid? 1. School of fish on Gram staining 2. Painful ulcer 3. Bleeds on touch 4. Groove sign (A) C & D (B) A,B & D (C) A B & C (D) A,C & D AAns (C) A, B & C. Chancroid, a sexually transmitted infection caused by the bacterium Haemophilus ducreyi, has several distinct features : 1. School of fish on Gram staining (A) : This is the classic microscopic finding. When a sample from the ulcer is Gram-stained, the gram-negative coccobacilli arrange themselves in parallel chains, which is described as a "school of fish" or "railroad track" appearance. 2. Painful ulcer (B) : Unlike the painless chancre of primary syphilis, the genital

ulcer of chancroid is typically soft, tender, and very painful. 3. Bleeds on touch (C) : The base of the chancroid ulcer is friable, meaning it is delicate and bleeds easily upon contact or scraping. The Groove sign (D) is not a feature of chancroid. It is characteristic of lymphogranuloma venereum (LGV), where enlarged inguinal and femoral lymph nodes are separated by the inguinal ligament, creating a visible groove. PSM 85. What is the most appropriate method for reviewing previous research studies? (A) Meta analysis (B) Chi-Square test (C) Cross-sectional study (D) Case control study AAns (A) Meta analysis To synthesize and study the findings from a collection of previously conducted research studies on a specific topic, the most rigorous and powerful method is a meta-analysis. A meta-analysis is a quantitative, formal, epidemiological study design used to systematically assess the results of previous research to derive conclusions about that body of research. It goes beyond a simple literature review by using statistical methods to combine the effect estimates from individual studies, resulting in a single, more precise, and powerful summary estimate. This allows for a comprehensive and objective evaluation of the existing evidence. A chi-square test (B) is a statistical test used within a single study. Cross-sectional (C) and case-control (D) studies are designs for conducting primary research, not for synthesizing the results of previous studies. 86. What is the most suitable option for mass chemoprophylaxis against anemia in a population? (A) Ferrous Sulphate (B) Ferrous Fumarate + B12 + Folic Acid + Vitamin C (C) Intravenous Iron (D) Ferrous Ascorbate AAns (A) Ferrous Sulphate For mass chemoprophylaxis of anemia in a population, the ideal preparation should be effective, safe, inexpensive, widely available, and suitable for large-scale public health distribution. Ferrous sulphate fulfills these criteria and is the most commonly recommended iron preparation in national anemia control programs. Ferrous sulphate contains a high proportion of elemental iron, is cost-effective, and has well-established efficacy in preventing and treating iron deficiency anemia. It is included in government initiatives such as the Anemia Mukt Bharat strategy under the National Health Mission in India. The tablet form allows easy distribution in schools, antenatal clinics, and community health programs. Combination preparations containing vitamin B12, folic acid, and vitamin C are more expensive and unnecessary for routine mass prophylaxis unless specific deficiencies are documented. Intravenous iron is reserved for severe anemia or malabsorption and is not practical for community-level prophylaxis. Therefore, for large-scale public health prevention of anemia, ferrous sulphate is the most suitable option.

Question 90. What is the size of a pink IV cannula?

A. 20 G

B. 18 G

C. 22 G

D. 16 G

Correct answer: A

20 G Intravenous (IV) cannulas are universally color-coded to allow for rapid identification of their gauge size. The gauge number indicates the internal diameter of the cannula, with a smaller number corresponding to a larger diameter and a higher potential flow rate. The standard color code for a 20-gauge IV cannula is pink. This is a very common, general-purpose size used in adults for routine IV fluid administration, giving IV medications, and for blood transfusions when a larger gauge is not necessary. For reference, an 18-gauge cannula is green (B), a 22-gauge cannula is blue (C), and a 16-gauge cannula is gray (D). Remembering these color codes is an essential practical skill in clinical settings.

Question 91. What is the first and specific marker for myocardial infarction (MI)?

A. LDH

B. Troponin

C. CK (Creatine Kinase)

D. None of the above

Correct answer: B

Troponin Cardiac troponins (specifically troponin T and troponin I) are regulatory proteins that are components of the contractile apparatus of cardiac muscle. They are highly specific to the myocardium. When myocardial cells are damaged and undergo necrosis during a myocardial infarction (MI), these proteins are released into the bloodstream. The measurement of serum cardiac troponin levels is the current gold standard and the most sensitive and specific biochemical marker for the diagnosis of MI. Troponins begin to rise in the blood within 2-4 hours of the onset of injury, peak at 12-24 hours, and can remain elevated for 7-14 days. While Creatine Kinase (CK), especially the CK-MB isoenzyme, was previously used, it is less specific than troponin as it is also found in skeletal muscle. LDH (A) is even less specific and is no longer used for diagnosing MI.

Question 92. Arrange the steps that must be completed before administering an injection in the correct sequence. 1. Locate injection site 2. Prepare syringe with medication 3. Wash hands 4. Inject

A. 1234

B. 4132

C. 3214

D. 4321

Correct answer: C

3214 Administering an injection safely requires following a standardized procedure to ensure patient safety and prevent infection. The logical and correct sequence of events is as follows : 1. Wash hands (3) : This is the first and most critical step in any clinical procedure to prevent the transmission of microorganisms. 2. Prepare syringe with medication (2) : After hand hygiene, the medication should be drawn up into the syringe using an aseptic technique. The

needle should be changed if necessary. 3. Locate injection site (1) : After preparing the medication, the patient should be correctly positioned, the appropriate anatomical site identified, and the skin cleansed with an alcohol swab. 4. Inject (4) : Finally, the injection is administered using the correct technique for the specified route (e.g., intramuscular, subcutaneous). Following this sequence (3 → 2 → 1 → 4) ensures that the procedure is performed safely and efficiently. SURGERY

Question 93. A road-traffic-accident (RTA) patient with polytrauma has unstable vitals, is intubated due to a low Glasgow Coma Scale (GCS), shows no eye opening, no verbal response, no motor response to pain, and CT scan reveals brain edema. What is the most likely cause?

A. Posterior reversible encephalopathy syndrome

B. Diffuse axonal injury

C. Post-concussion syndrome

D. CO2 retention due to respiratory depression by morphine

Correct answer: B

Diffuse axonal injury This is a duplicate of a previous question. The patient has suffered a severe traumatic brain injury (TBI) from an RTA, resulting in a deep coma with a GCS score of 3 (E1, V1, M1). The CT scan finding of brain edema without a focal mass lesion like a hematoma, in the context of a high-impact trauma and severe neurological deficit, is highly suggestive of diffuse axonal injury (DAI). DAI is caused by shearing forces from acceleration-deceleration, which lead to widespread microscopic damage to axons throughout the brain. This widespread disruption of neuronal pathways results in immediate and profound coma. The subsequent development of cytotoxic and vasogenic brain edema is a common consequence of this severe primary injury. Post-concussion syndrome (C) follows a mild TBI. PRES (A) has a different etiology and imaging appearance.

Question 94. Which of the following statements about a pilonidal sinus is incorrect?

A. It is more common in men.

B. Hair follicles are seen in the wall of sinus.

C. Mostly congenital.

D. Treatment of choice is surgical excision of sinus tract.

Correct answer: C

Mostly congenital. This statement is incorrect. For many years, pilonidal sinus disease was thought to be a congenital condition arising from a remnant of the neural tube. However, the modern and widely accepted understanding is that it is an acquired condition. The process is believed to begin with the stretching and blockage of hair follicles in the natal cleft. Loose hairs are then driven into these dilated follicles by friction and pressure, creating a foreign body reaction that leads to the formation of a sinus tract and recurrent inflammation or abscess. The

other statements are correct. Pilonidal sinus is significantly more common in men (A), particularly in hirsute individuals. The sinus tracts characteristically contain nests of hair, but hair follicles are not seen in the wall of the sinus (B), which supports the acquired theory (hair is driven in from the outside). The definitive treatment is surgical excision of the sinus tract (D).

Question 95. According to the European Hernia Society (EHS) classification, what defines an M3 hernia?

A. Infra umbilical

B. Suprapubic

C. Lumbar

D. Umbilical

Correct answer: D

Umbilical The European Hernia Society (EHS) classification system is a standardized method for classifying primary and incisional ventral hernias. The classification is based on the location and size of the hernia defect. For midline hernias, the letter 'M' is used. The location is further specified by a number corresponding to a specific zone : 1. M1 : Subxiphoid 2. M2 : Epigastric 3. M3 : Umbilical 4. M4 : Infraumbilical 5. M5 : Suprapubic The width of the defect is then classified as W1 (<2 cm), W2 (2-4 cm), or W3 (>4 cm). Therefore, an M3 hernia specifically refers to a hernia located in the umbilical region.

Question 96. What is the most common retroperitoneal tumor?

A. Liposarcoma

B. Rhabdomyosarcoma

C. Synovial sarcoma

D. Neurofibrosarcoma

Correct answer: A

Liposarcoma Primary retroperitoneal tumors are rare, and the vast majority are malignant soft tissue sarcomas. The single most common histological type of primary retroperitoneal sarcoma in adults is liposarcoma. These tumors arise from adipose tissue within the retroperitoneum and can grow to an enormous size before they cause symptoms. They account for approximately one-third of all retroperitoneal sarcomas. The second most common type is leiomyosarcoma, which arises from smooth muscle. While other sarcomas like rhabdomyosarcoma (B), synovial sarcoma (C), and neurofibrosarcoma (D) (now more commonly called malignant peripheral nerve sheath tumor) can occur in the retroperitoneum, they are all significantly less common than liposarcoma.

Question 97. A 40-year-old male with varicose veins presents with eczema and lipodermatosclerosis. According to the CEAP classification, this falls under which category?

A. C3

B. C4

C. C5

D. C2

Correct answer: B

C4 The CEAP (Clinical, Etiological, Anatomical, Pathophysiological) classification is the standard system for describing chronic venous disorders. The "C" component describes the clinical signs on a scale from 0 to 6. 1. C0 : No visible or palpable signs of venous disease. 2. C1 : Telangiectasias or reticular veins. 3. C2 : Varicose veins. 4. C3 : Edema. 5. C4 : Changes in the skin and subcutaneous tissue secondary to chronic venous disease. This class is further subdivided : iii. C4a : Pigmentation or eczema. iv. C4b : Lipodermatosclerosis or atrophie blanche. v. C4c : Corona phlebectatica. 6. C5 : Healed venous ulcer. 7. C6 : Active venous ulcer. Since the patient has both eczema and lipodermatosclerosis, he falls under the C4 clinical category.

Question 98. Which of the following is not a component of the qSOFA score?

A. BP

B. RR

C. Heart rate

D. Mental status

Correct answer: C

Heart rate The quick Sequential Organ Failure Assessment (qSOFA) score is a simple bedside tool used to identify patients with suspected infection who are at a high risk of poor outcomes (i.e., sepsis). It consists of three clinical criteria, with one point awarded for each : 1. Respiratory Rate (RR) : A high respiratory rate of ≥ 22 breaths per minute. 2. Mental Status : An altered mental status, typically assessed with a Glasgow Coma Scale (GCS) score of < 15. 3. Blood Pressure (BP) : A low systolic blood pressure of ≤ 100 mmHg. A score of 2 or more suggests a high risk of sepsis and warrants further investigation and management. Heart rate is not a component of the qSOFA score, although tachycardia is a common sign of sepsis and is included in the more comprehensive SIRS criteria and the full SOFA score.

Question 99. A 13-year-old girl presents with a left-sided neck swelling that has grown slowly since childhood and feels hard on examination. What is the most likely diagnosis?

A. Neural tumor

B. Chemodectoma

C. Lipoma

D. Cystic hygroma

Correct answer: A

Neural tumor In a young patient presenting with a slow-growing, hard, deep-seated neck mass, a benign neural tumor should be a primary consideration. Specifically, a schwannoma or a neurofibroma, which are tumors arising from the nerve sheaths of peripheral nerves, fit this description well. These tumors can originate from various nerves in the neck, such as the vagus nerve or branches of the cervical plexus. They are typically firm, mobile, and grow very slowly over many years. A cystic hygroma (D), a lymphatic malformation, is typically soft, cystic, and present in infancy. A lipoma (C) is a benign tumor of fat cells and is characteristically soft and doughy, not hard. A chemodectoma (B), or carotid body tumor, is a paraganglioma that is typically found in middle-aged adults, is pulsatile, and is classically mobile side-to-side but not vertically (Fontaine's sign). Therefore, a neural tumor is the most likely diagnosis for a hard, slow-growing mass in this age group.

Question 100. Regarding the boundaries of the laparoscopic anatomy of an inguinal hernia, which of the following statements is false?

A. Medial boundary of triangle of Doom is vas deferens

B. Lateral boundary of triangle of pain is Iliopubic tract

C. Myopectineal orifice is bounded by internal oblique & transverse abdominis superiorly

D. Myopectineal orifice is bounded by Iliopubic tract inferiorly

Correct answer: D

Myopectineal orifice is bounded by Iliopubic tract inferiorly In laparoscopic inguinal anatomy, understanding the Myopectineal Orifice of Fruchaud is vital for successful hernia repair. The statement in (D) is false because the inferior boundary of this orifice is the pectineal ligament (Cooper’s ligament) and the superior pubic ramus, not the iliopubic tract. The iliopubic tract actually serves as a key landmark for the Triangle of Pain, forming its lateral and superior border. This triangle is clinically significant because it contains the lateral femoral cutaneous and genitofemoral nerves; placing surgical tacks here can lead to chronic nerve entrapment. Conversely, the Triangle of Doom is defined medially by the vas deferens and laterally by the spermatic vessels. Surgeons must avoid this zone to prevent life-threatening injury to the external iliac artery and vein. Finally, the superior boundary of the Myopectineal Orifice consists of the arching fibers of the internal oblique and transversus abdominis muscles. Mastering these boundaries allows surgeons to safely navigate the "Circle of Death" and ensure mesh coverage over all potential hernia sites.

Question 101. A patient has had severe abdominal pain for 2 hours, blood pressure 90/60, pulse 112/min with an irregular rhythm, repeated vomiting, a soft abdomen, and absent bowel sounds. What is the most likely diagnosis?

A. Peptic perforation

B. Ruptured aortic aneurysm

C. Acute mesenteric ischemia

D. Severe acute pancreatitis

Correct answer: C

Acute mesenteric ischemia This clinical presentation is a classic picture of acute mesenteric ischemia (AMI). The most pathognomonic feature described is the significant disparity between the patient's severe, excruciating abdominal pain and the relatively benign findings on physical examination (a soft, often non-tender abdomen). This "pain out of proportion to physical findings" is the hallmark of AMI. The patient is also in shock (hypotension and tachycardia) due to bowel ischemia and third-spacing of fluid. The presence of an irregular pulse strongly suggests atrial fibrillation, which is the most common cause of superior mesenteric artery embolism, the leading cause of AMI. The absent bowel sounds indicate an adynamic ileus secondary to the bowel infarction. A peptic perforation (A) would cause peritonitis and a rigid abdomen. Severe pancreatitis (D) and a ruptured aneurysm (B) would typically be associated with significant abdominal tenderness and guarding on examination.

Question 102. A patient involved in a road traffic accident presents with hyper-resonance, hypotension, and absent breath sounds on the right side. What is the next step in the investigation?

A. Needle in 5th ICS

B. Wide bore needle followed by intercostal tube drainage in 5th ICS

C. Aspirate the collection

D. No intervention needed

Correct answer: B

Wide bore needle followed by intercostal tube drainage in 5th ICS The clinical triad of unilateral absent breath sounds, hyper-resonance to percussion, and hypotension in a trauma patient is diagnostic of a tension pneumothorax. This is a life-threatening emergency that causes obstructive shock and requires immediate intervention without waiting for radiological confirmation. The first and most critical step is to decompress the chest by inserting a wide-bore needle into the pleural space to release the trapped air, converting the tension pneumothorax into a simple one. The current ATLS guidelines recommend the 5th intercostal space (ICS) at the anterior axillary line as the preferred site. This emergency needle decompression is a temporizing measure and must be immediately followed by the definitive treatment, which is the insertion of an intercostal drain (chest tube), also typically in the 5th ICS. Option (B) correctly includes both the immediate life-saving decompression and the necessary subsequent definitive management.

Question 103. A 45-year-old female has a 4.5 × 3 cm irregular mass in the upper outer quadrant of the right breast, not fixed to the pectoralis major, with no skin changes, and a 2 × 1.5 cm palpable lymph node in the right axilla. The opposite breast is normal. What is the most appropriate diagnostic investigation to confirm

the diagnosis? a. Mammography b. PET scan c. Biopsy of breast mass d. Ultrasound-guided biopsy of the enlarged axillary lymph node

A. a, b, c & d

B. a & c

C. a, b & c

D. a, c & d

Correct answer: D

a, c & d The patient has a clinically suspicious breast mass and a palpable axillary lymph node, which is highly concerning for locally advanced breast cancer. The "triple test" or "triple assessment" is the standard of care to confirm the diagnosis. This includes clinical examination, imaging, and tissue sampling. Mammography (a) (and often an ultrasound) is the essential initial imaging modality to characterize the mass and look for other lesions. A core needle biopsy of the breast mass (c) is absolutely mandatory to obtain a definitive histological diagnosis, which will also provide information on the tumor type, grade, and receptor status (ER, PR, HER2). Additionally, because there is a clinically suspicious axillary lymph node, an ultrasound-guided biopsy (d) (either FNA or core biopsy) of that node is crucial to confirm the presence of metastasis. This accurately stages the axilla (N-stage) and is critical for planning treatment. A PET scan (b) is a staging tool used to look for distant metastases after the primary diagnosis is confirmed; it is not part of the initial diagnostic confirmation process.

Question 104. In the Strasberg classification of biliary injury, a posterior sectoral duct injury falls under which class?

A. Type B

B. Type C

C. Type D

D. Type E

Correct answer: B

Type C The Strasberg classification is a widely used system to categorize iatrogenic bile duct injuries that occur during cholecystectomy. 1. Type A : Leak from the cystic duct stump or a small duct in the gallbladder fossa. 2. Type B : Occlusion of a part of the biliary tree, most commonly an aberrant right hepatic duct. 3. Type C : A transected (but not ligated) duct that is leaking bile. This most commonly involves a transected aberrant right hepatic duct or a posterior sectoral duct. 4. Type D : A lateral or partial injury to a major bile duct, such as the common bile duct, with bile leakage. 5. Type E : A circumferential injury or transection of the main bile duct, further subdivided based on the level of the injury. Therefore, an injury involving the transection and subsequent leak from a posterior sectoral duct is classified as a Strasberg Type C injury.

Question 105. A 40-year-old female undergoes cholecystectomy and later develops

postoperative abdominal pain. Which test is used to detect a bile leak?

A. ERCP

B. MRCP

C. HIDA

D. CECT

Correct answer: C

HIDA When a post-cholecystectomy bile leak is suspected, the most sensitive and specific functional imaging study to identify the leak is a HIDA scan (Hepatobiliary Iminodiacetic Acid scan), also known as cholescintigraphy. This is a nuclear medicine test where a radioactive tracer (e.g., technetium-99m labeled mebrofenin) is injected intravenously. The tracer is taken up by the hepatocytes and excreted into the biliary system, mimicking the flow of bile. The flow of the tracer is imaged over time with a gamma camera. In a patient with a bile leak, the scan will show the tracer flowing normally through the bile ducts but will also demonstrate the abnormal extravasation of the tracer from the biliary tree into the peritoneal cavity, confirming the presence, and often the location, of the leak. While MRCP (B) shows anatomy and ERCP (A) is therapeutic, HIDA is the best test to functionally demonstrate an active leak.

Question 106. What is the Tillaux sign in mesenteric cysts? Click Here to Buy book on Amazon page 679 INICET Examination Paper 73. A patient with meningitis has had a fever for 4 days, an erythematous chest rash, no history of travel or tick bite, and CSF findings showing high protein, normal glucose, and lymphocytosis. Which organism is the likely cause?

A. S. pneumoniae

B. Meningococci

C. West Nile virus

D. Echo Virus

Correct answer: D

Echo Virus The CSF findings show high protein, normal glucose, and lymphocytosis, which are characteristic of viral (aseptic) meningitis. In viral meningitis: 1. CSF protein → mildly to moderately elevated 2. CSF glucose → normal 3. Predominant cells → lymphocytes This pattern rules out bacterial causes such as Streptococcus pneumoniae and Neisseria meningitidis, which typically show very high protein, low glucose, and neutrophilic predominance. The presence of fever for 4 days and an erythematous chest rash supports a viral etiology. Echovirus, a member of the enterovirus group, is a common cause of viral meningitis and is often associated with a maculopapular rash. It frequently affects children and adults and does not require travel or tick exposure. West Nile virus may cause meningitis but is typically associated with mosquito exposure and can show additional neurological features. Thus, the clinical picture and CSF findings are most consistent with Echo virus infection. 74. Which structure is disrupted by Vibrio

cholerae? (A) Hemidesmosome (B) Gap junctions (C) Zona occludens (D) Zona adherens AAns (C) Zona occludens The massive, watery diarrhea characteristic of cholera is caused primarily by the action of the cholera toxin, which leads to a profound secretory state in the intestinal epithelial cells. However, the integrity of the intestinal barrier is also compromised. The zona occludens, also known as the tight junction, is the most apical intercellular junction that seals the space between adjacent epithelial cells, regulating the paracellular pathway. Vibrio cholerae produces several toxins in addition to the main cholera toxin. One of these is the zonula occludens toxin (Zot), which directly acts on and disrupts the structure of the tight junctions. This disruption increases the permeability of the paracellular pathway, leading to the leakage of fluid and electrolytes from the tissues into the intestinal lumen, which contributes significantly to the voluminous diarrhea. Hemidesmosomes (A) and zona adherens (D) are anchoring junctions, while gap junctions (B) are for cell-to-cell communication. 75. Galactomannan in the serum is found in which of the following conditions? (A) Invasive aspergillosis (B) Candidiasis (C) Mucormycosis (D) Candida AAns (A) Invasive aspergillosis Galactomannan is a polysaccharide that is a major component of the cell wall of fungi in the genus Aspergillus. During invasive growth, the fungus releases this antigen into the host's circulation. Therefore, the detection of galactomannan antigen in the serum or bronchoalveolar lavage (BAL) fluid is a highly specific and widely used biomarker for the diagnosis of invasive aspergillosis. This is particularly useful in high-risk, immunocompromised patients, such as those with neutropenia or who have undergone hematopoietic stem cell transplantation, as it allows for an early diagnosis before the disease becomes clinically apparent. The cell walls of Candida species (B, D) are primarily composed of beta-glucan and mannan, not galactomannan. The cell walls of the fungi causing mucormycosis (C) also do not contain galactomannan. 76. Identify the organism in the given image. (A) Ascaris lumbricoides (B) Echinococcus granulosus (C) Fasciola hepatica (D) Taenia solium AAns (A) Ascaris lumbricoides The image shows two large, cylindrical, cream-colored nematodes (roundworms). One is larger and relatively straight (the female), while the other is smaller and displays a characteristic ventral curve at its posterior end (the male). This morphology is unmistakable for adult specimens of Ascaris lumbricoides, the giant human roundworm. It is the largest and one of the most common intestinal nematodes infecting humans, with adult females reaching lengths of up to 35 cm. The other options are morphologically distinct parasites. Echinococcus granulosus (B) is a small tapeworm found in canids; humans are infected with the larval hydatid cyst stage. Fasciola hepatica (C) is a leaf-shaped flatworm (a fluke). Taenia solium (D) is a long, segmented tapeworm. The large size and classic roundworm appearance in the image are diagnostic for Ascaris. 77. Identify the condition in the given image. (A) Actinomyces israelii (B) Blastomyces dermatitidis (C) Clostridium perfringens (D) Eumycetoma AAns (D) Eumycetoma The clinical photograph displays a chronically infected, grossly swollen and deformed foot, a condition known as mycetoma or Madura foot. The image shows the characteristic clinical triad of mycetoma :

massive tumefaction (swelling), the formation of multiple nodules and abscesses, and the presence of numerous draining sinus tracts on the skin surface. These sinuses typically discharge purulent fluid containing "grains," which are macroscopic colonies of the causative organism. Mycetoma is classified based on its etiology. When caused by true fungi, it is called eumycetoma. When caused by filamentous bacteria (actinomycetes), it is called actinomycetoma. Actinomyces israelii (A) causes actinomycosis, which typically affects the cervicofacial region. Blastomyces (B) and Clostridium (C) cause different types of infections. The presentation is classic for mycetoma, and eumycetoma is a specific type of this condition. 78. Identify the organism depicted in the given image. (A) Leptospira (B) Rickettsia mooseri (C) Spirillum minus (D) Streptobacillus AAns (A) Leptospira The diagram illustrates the classic zoonotic transmission cycle of leptospirosis, the disease caused by spirochetes of the genus Leptospira. The diagram correctly shows the key epidemiological features of this infection. Rodents serve as the primary reservoir hosts, harboring the leptospires in their renal tubules and chronically shedding them in their urine. This contaminates the environment, particularly water and moist soil, where the organisms can survive for extended periods. Humans and other animals become infected not typically by direct contact, but indirectly through exposure of broken skin or mucous membranes to this contaminated environmental water or soil. This mode of transmission is classic for leptospirosis. In contrast, Rickettsia species (B) are transmitted by arthropods like fleas, and Spirillum minus (C) and Streptobacillus (D) are causative agents of rat-bite fever, transmitted by a direct bite. 79. In a fully and adequately immunized child against diphtheria, a throat swab shows Corynebacterium diphtheriae–like organisms on Albert staining. On further laboratory testing, these organisms may show which of the following characteristics? (A) It can grow on Potassium tellurite medium (B) It would show a positive Elek's gel precipitation test (C) It can be pathogenic to experimental guinea pigs (D) It can produce cytotoxicity in tissue cultures AAns (A) It can grow on Potassium tellurite medium The diphtheria vaccine induces immunity against the diphtheria toxin, not against the bacterium Corynebacterium diphtheriae itself. Therefore, an adequately immunized child can still be colonized with and carry the organism without developing the disease. The organisms seen on the Albert stain would be confirmed as C. diphtheriae by their ability to grow on a selective medium like potassium tellurite agar (A), where they produce characteristic gray-black colonies. However, the key to pathogenicity is toxin production. Since the child is immunized and healthy, the colonizing strain is almost certainly a non-toxigenic strain of C. diphtheriae. A non-toxigenic strain lacks the tox gene and therefore cannot produce the diphtheria toxin. Consequently, it would yield a negative Elek's gel precipitation test (B), would not be pathogenic to guinea pigs (C), and would not produce cytotoxicity in tissue cultures (D), as all of these tests are assays for the presence of the active toxin. MEDINK (A) RA (Rheumatoid Arthritis) (B) Ankylosing spondylitis (C) Reiter's disease (D) Fluorosis AAns (B) Ankylosing spondylitis The sagittal CT scan of the spine shows extensive calcification and ossification of the

spinal ligaments, particularly the anterior longitudinal ligament, and fusion of the facet joints, leading to the bridging of adjacent vertebral bodies. This gives the spine a rigid, fused appearance that is classically described as a "bamboo spine." This radiographic finding is the pathognomonic sign of advanced ankylosing spondylitis (AS). AS is a chronic, inflammatory autoimmune disease that primarily affects the axial skeleton, including the sacroiliac joints and the spine. The progressive inflammation leads to fibrosis and ossification, causing the characteristic stiffness, loss of mobility, and eventual fusion of the spine. The patient's symptoms of increasing stiffness and difficulty with forward bending are also classic for this condition. The other conditions listed do not produce this specific bamboo spine appearance. 145. Which of the following investigations can be used in osteoporosis? 1. DEXA 2. Bone Scan 3. Quantitative CT 4. Chemical Analysis Select the answer using the following key- (A) 1,2 (B) 1,2,3 (C) 1,3,4 (D) 1,2,3,4 AAns (C) 1,3,4 Osteoporosis is characterized by reduced bone mineral density (BMD) and increased fracture risk. The investigations used aim to measure bone density and evaluate metabolic causes. 1. DEXA (Dual-energy X-ray absorptiometry) is the gold standard for diagnosing osteoporosis. It measures bone mineral density at the hip and spine and provides a T-score for assessment. 2. Quantitative CT (QCT) is another method that measures volumetric bone density and can assess trabecular bone separately. Though less commonly used due to higher radiation exposure and cost, it is a valid diagnostic tool. 3. Chemical analysis refers to biochemical investigations such as serum calcium, phosphate, alkaline phosphatase, vitamin D, and parathyroid hormone levels. These tests help identify secondary causes of osteoporosis. 4. Bone scan (nuclear medicine scan) is not used to diagnose osteoporosis. It detects areas of increased bone turnover, such as metastasis, infection, or fractures, but does not measure bone density. Thus, the correct combination is 1, 3, and 4 (Option C). 146. A 10-year-old boy presents with pain around the left knee. X-ray shows a lesion in the distal femur extending to the terminal end, and the corresponding pathological image is provided. What is the most likely diagnosis?

Question 107. Persistent dribbling of urine in a child who otherwise urinates normally is most likely due to which condition?

A. Ectopic ureter since birth

B. Ureterocele

C. ARPKD

D. Cystocele

Correct answer: A

Ectopic ureter since birth The clinical history of continuous, day-and-night urinary dribbling in a female child who also has a normal pattern of voiding (i.e., she can hold urine and void voluntarily) is the classic and pathognomonic presentation of an ectopic ureter. In this congenital anomaly, the ureter from the upper pole of a duplicated renal system or a single

system does not insert correctly into the bladder trigone. Instead, it inserts distally to the urethral sphincter mechanism, typically into the urethra, vagina, or vestibule. Because the opening is outside the control of the sphincter, urine from the kidney it drains will leak continuously, causing constant wetness, while the normally draining kidney and bladder function correctly, allowing for normal voiding patterns. A ureterocele (B) may cause obstruction or reflux but not this specific pattern of incontinence.

Question 108. A patient with nephrotic syndrome is currently taking steroids. Which statement regarding the vaccines that can be administered is true?

A. Vaccination as per schedule

B. Pneumococcal vaccine has to be given prior to treatment

C. Only killed vaccines can be given

D. OPV should not be given to siblings

Correct answer: C

Only killed vaccines can be given A patient with nephrotic syndrome who is receiving high-dose steroids is considered immunocompromised. Corticosteroids suppress cell-mediated immunity, increasing the risk of infection and reducing the body's ability to handle live attenuated vaccines safely. In such patients, live vaccines are contraindicated during immunosuppressive therapy because they may cause vaccine-derived infection. Live vaccines include OPV, MMR, varicella, and BCG. These should be deferred until steroid therapy is stopped and immune function has recovered (usually after at least 1 month of stopping high-dose steroids). However, inactivated (killed) vaccines are safe and can be administered, although their immune response may be slightly reduced. Vaccines such as inactivated influenza vaccine and pneumococcal vaccine are recommended because nephrotic patients are at increased risk of infections. Vaccination strictly "as per schedule" is not correct during active immunosuppression. Pneumococcal vaccine ideally should be given before steroid therapy but can still be given later if missed. Thus, during steroid therapy in nephrotic syndrome, only killed vaccines should be given.

Question 109. Congenital pyloric stenosis presents with which of the following?

A. Hypochloremic, hypokalemic metabolic alkalosis

B. Abdominal mass

C. Bilious vomiting

D. A & B Both

Correct answer: D

A & B Both Hypertrophic pyloric stenosis is a condition seen typically in infants between 2–8 weeks of age. It occurs due to hypertrophy of the pyloric muscle, leading to gastric outlet obstruction. Projectile, non-bilious vomiting is the hallmark feature because the obstruction is proximal to the duodenum; therefore, bile does not mix with gastric contents. Hence, option (C)

bilious vomiting is incorrect. Due to repeated vomiting of gastric contents (which contain hydrochloric acid), there is loss of hydrogen and chloride ions. This results in hypochloremic, hypokalemic metabolic alkalosis, making option (A) correct. Persistent vomiting also leads to dehydration. On abdominal examination, a firm, olive-shaped mass may be palpated in the right upper quadrant or epigastrium. This palpable “pyloric olive” represents the hypertrophied pylorus, making option (B) correct. Thus, congenital pyloric stenosis presents with metabolic alkalosis and an abdominal mass, so the correct answer is A and B (Option D).

Question 110. A child has a bed-wetting habit, and organic causes have been excluded. What is the appropriate management?

A. Pharmacotherapy

B. Psychotherapy

C. Bed alarm

D. Acupuncture

Correct answer: C

Bed alarm The condition described is primary nocturnal enuresis, which is bed-wetting in a child older than 5 years who has never achieved a consistent period of nighttime dryness, and in whom organic causes have been excluded. The first-line management involves conservative measures and behavioral therapy. The most effective and recommended behavioral therapy with the highest long-term success rate is the enuresis alarm, or bed alarm. This device consists of a moisture sensor placed in the child's underwear that is connected to an alarm. When the child begins to urinate, the sensor triggers the alarm, which wakes the child. Over time, this conditions the child to recognize the sensation of a full bladder and to wake up to void before the alarm goes off. Pharmacotherapy (A), such as with desmopressin or imipramine, is considered a second-line option for short-term control but has a high relapse rate when stopped. ORTHOPEDIC

Question 111. If a doctor is inserting screws into the vertebrae, where will these screws be placed?

A. Pedicle

B. Lamina

C. Spine

D. Facet joints

Correct answer: A

Pedicle In modern spinal fusion and instrumentation surgery, the most common and biomechanically robust method for achieving fixation to the vertebrae is through the use of pedicle screws. The pedicle is a strong, cylindrical pillar of bone that connects the posterior elements (lamina, facets) of a vertebra to the vertebral body. Placing a screw down the central axis of the pedicle and into the vertebral body allows for a rigid, three-column purchase on the

vertebra. This provides a very strong anchor point to which rods can be attached to stabilize the spine, correct deformities, or facilitate fusion. While other fixation methods exist (e.g., laminar hooks or screws, facet screws), pedicle screw instrumentation is the workhorse of contemporary spinal surgery due to its superior strength and versatility. "Spine" (C) is too general.

Question 112. Which of the following investigations can be used in osteoporosis? 1. DEXA 2. Bone Scan 3. Quantitative CT 4. Chemical Analysis Select the answer using the following key-

A. 1,2

B. 1,2,3

C. 1,3,4

D. 1,2,3,4

Correct answer: C

1,3,4 Osteoporosis is characterized by reduced bone mineral density (BMD) and increased fracture risk. The investigations used aim to measure bone density and evaluate metabolic causes. 1. DEXA (Dual-energy X-ray absorptiometry) is the gold standard for diagnosing osteoporosis. It measures bone mineral density at the hip and spine and provides a T-score for assessment. 2. Quantitative CT (QCT) is another method that measures volumetric bone density and can assess trabecular bone separately. Though less commonly used due to higher radiation exposure and cost, it is a valid diagnostic tool. 3. Chemical analysis refers to biochemical investigations such as serum calcium, phosphate, alkaline phosphatase, vitamin D, and parathyroid hormone levels. These tests help identify secondary causes of osteoporosis. 4. Bone scan (nuclear medicine scan) is not used to diagnose osteoporosis. It detects areas of increased bone turnover, such as metastasis, infection, or fractures, but does not measure bone density. Thus, the correct combination is 1, 3, and 4 (Option C).

Question 113. The middle radioulnar joint is which type of joint?

A. Primary cartilaginous

B. Secondary cartilaginous

C. Fibrous joint

D. Plain synovial

Correct answer: C

Fibrous joint The forearm contains three joints between the radius and the ulna. The superior (proximal) and inferior (distal) radioulnar joints are both pivot-type synovial joints that allow for pronation and supination. The middle radioulnar joint, however, is not a true articulating joint. It is the connection between the shafts of the radius and ulna, which are joined together by a strong, broad, flat ligamentous sheet called the interosseous membrane. This type of articulation, where two bones are held together by a ligament or a sheet of fibrous tissue, is classified as a syndesmosis, which is a type of fibrous joint. This joint allows for very limited

movement but is crucial for transferring forces from the radius to the ulna and for providing a surface for muscle attachment. A primary cartilaginous joint (A) is a synchondrosis, and a secondary cartilaginous joint (B) is a symphysis.

Question 114. If all parts of the sternum and the medial end of the clavicle are ossified, what is the estimated age?

A. 18-25 years

B. >25 years

C. 14-15 years

D. < 15 years

Correct answer: B

>25 years This question uses key skeletal maturation milestones for age estimation. The sternum ossifies from several centers. The fusion of the manubrium with the body (manubriosternal joint) occurs late in life, but the fusion of the four sternebrae of the body is typically complete by 25 years of age. The xiphoid process also fuses with the body later. The most critical landmark provided is the medial clavicular epiphysis. This is one of the last epiphyses in the entire body to fuse. The fusion process begins around age 18-22 and is generally complete by 25 to 31 years of age. Therefore, if both the sternum and the medial clavicle are observed to be fully ossified and fused, it is a strong indicator that the individual is older than 25 years. This milestone is particularly useful in forensic anthropology for determining if an individual has reached adulthood.

Question 115. All of the following are true about vaginal breech delivery except :

A. Breech identified for the first time at delivery is contraindicated for normal labor

B. For breech delivery, continuous fetal heart rate monitoring is done for the mother

C. Breech delivery is done in a hospital where emergency cesarean section is available NODIA MEDINK INICET Examination Paper Bicarbonate is also significantly reabsorbed in the PCT (about 80–90%). Its concentration generally falls as it is reclaimed efficiently. In contrast, chloride initially shows a relative increase in concentration in the early PCT. This occurs because water and bicarbonate are reabsorbed faster than chloride, leaving chloride behind and increasing its tubular concentration temporarily before it is later reabsorbed. Thus, the substance that does not show an increase in concentration in the PCT is amino acid, making option

D. B and C Both 14.

Correct answer: B

Steroids The patient has severe, extensive plaque psoriasis. Systemic therapies are required for this extent of disease. Methotrexate (A), cyclosporine (D), and phototherapy with Narrowband UVB (C) are all standard and effective treatments for severe psoriasis. Systemic steroids (e.g., oral prednisone), however, should not be used for the chronic management of plaque psoriasis.

While they can produce a rapid initial improvement, their withdrawal is notoriously associated with a severe, and sometimes life-threatening, rebound flare of the psoriasis. This can manifest as a severe pustular or erythrodermic psoriasis. Due to this high risk of rebound and the significant long-term side effects, systemic steroids are relatively contraindicated for treating plaque psoriasis, although they may be used in very specific, acute situations under expert supervision.

Question 116. A pregnant woman experiences nighttime cramps. What should the nurse advise her to do?

A. Plantar flexion with knee flexion

B. Plantar flexion with knee extension

C. Dorsiflexion with knee flexion

D. Dorsiflexion with knee extension

Correct answer: D

Dorsiflexion with knee extension Leg cramps, particularly in the calf muscles (gastrocnemius), are a common and painful complaint during pregnancy. The cramp is a sustained, involuntary contraction of the muscle. To relieve the cramp, the muscle must be passively stretched. The gastrocnemius muscle crosses both the knee and the ankle joint; it acts to flex the knee and plantarflex the foot. Therefore, to achieve the maximum stretch of this muscle, one must perform the opposite actions. This involves keeping the knee in full extension and forcefully dorsiflexing the foot (pulling the toes up towards the head). This maneuver elongates the gastrocnemius muscle, which helps to break the muscle spasm and relieve the cramp. Plantar flexion (A, B) would shorten the muscle and worsen the cramp.

Question 117. A midwife is examining a pregnant woman and notices an umbilical cord prolapse. What should be the next step in management?

A. Gently push the cord back inside the uterus.

B. Immediately transfer the patient for delivery.

C. Perform a per vaginal (PV) examination to assess the situation.

D. Place the patient in the Trendelenburg position.

Correct answer: D

Place the patient in the Trendelenburg position. Overt umbilical cord prolapse is an obstetric emergency where the umbilical cord descends ahead of the fetal presenting part after the membranes have ruptured. The immediate and critical risk is compression of the cord between the fetus and the maternal pelvis, which can cut off the fetal blood supply, leading to severe hypoxia and death. The first-line management is to immediately relieve the pressure on the cord. This is done by placing the mother in a position that uses gravity to move the fetus away from the pelvis, such as the steep Trendelenburg position (head down) or the knee-chest position. Simultaneously, the person who diagnosed the prolapse should insert two fingers into

the vagina to manually elevate the fetal presenting part off the cord. Pushing the cord back in (A) is contraindicated. While immediate delivery (B) is the definitive treatment (usually by emergency C-section), relieving the pressure is the first step.

Question 118. What is the minimum cervical dilation at which a partograph should be initiated?

A. 2cm

B. 4cm

C. 6cm

D. 8cm

Correct answer: B

4cm A partograph is a graphical tool used to monitor the progress of labor and identify any abnormalities in a timely manner. Plotting on the partograph should begin when the woman enters the active phase of the first stage of labor. According to the World Health Organization (WHO), which developed the most widely used partograph, the active phase of labor is considered to begin when the cervix is dilated to 4 cm and there are regular, painful uterine contractions. Once the woman reaches 4 cm dilation, the cervical dilation is plotted on the partograph against time, with an alert line and an action line to help identify prolonged labor. Starting the partograph before the active phase (e.g., at 2 cm) is not recommended as the rate of cervical dilation during the latent phase is slow and unpredictable. (Note : More recent definitions define active labor as starting at 6 cm, but the 4 cm rule for initiating the partograph is still the standard teaching).

Question 119. A woman is advised to undergo a Pap smear and asks what it is. How would you explain it to her?

A. It's screening for cervical cancer

B. It's screening for cancer of the female genital tract

C. It's diagnostic for cervical cancer

D. It's diagnostic for trichomonas

Correct answer: A

It's screening for cervical cancer The Papanicolaou test, or Pap smear, is a cornerstone of public health and preventive medicine. Its primary purpose is to screen for cervical cancer and its precancerous lesions. The test involves collecting a sample of cells from the cervix, which are then examined under a microscope to detect any cytological abnormalities (dysplasia or carcinoma in situ) that could, if left untreated, progress to invasive cervical cancer. It is a screening test, not a diagnostic test. If the Pap smear is abnormal, a diagnostic procedure such as a colposcopy and biopsy is required to confirm the diagnosis (C is incorrect). While it can incidentally detect infections like Trichomonas (D), that is not its primary purpose. It does not screen for all cancers of the female genital tract (B), only for cervical cancer.

Question 120. HPV causes cervical carcinoma due to which of the following?

A. E1, E2

B. E2, E6

C. L1, E6

D. E2,E4

Correct answer: B

E2, E6 Cervical carcinoma caused by high-risk Human Papillomavirus (HPV) is primarily driven by the viral oncoproteins E6 and E7. However, their activity is linked to the function of the E2 protein. Here's the mechanism : 1. E6 and E7 are the main culprits : The E6 protein targets and promotes the degradation of the host's p53 tumor suppressor protein (the "guardian of the genome"). The E7 protein inactivates the retinoblastoma (Rb) tumor suppressor protein. The loss of these two key proteins leads to uncontrolled cell proliferation and prevents damaged cells from undergoing apoptosis (programmed cell death). 2. E2 is the regulator : In a normal, non-cancerous HPV infection, the E2 protein acts as a repressor, keeping the expression of E6 and E7 in check. 3. The cancerous switch : For cancer to develop, the circular HPV DNA usually integrates into the host cell's chromosome. This integration process often breaks the viral genome within the E2 gene, disrupting its function. With E2 inactivated, there are no "brakes," leading to massive over expression of E6 and E7, which drives the cell towards malignancy. Therefore, the interplay between the disruption of E2 and the oncogenic action of E6 is central to HPV-induced cancer. DERMATOLOGY

Question 121. In an elderly man with psoriasis involving 50% of his body surface area, which of the following treatments cannot be used? Click Here to Buy book on Amazon page 696 Answer 9.

A. Long thoracic nerve The image provides an anterolateral view of the chest wall. The arrow is pointing to a nerve that is descending along the lateral surface of the thoracic cage, superficial to the serratus anterior muscle. This is the characteristic course of the long thoracic nerve. The long thoracic nerve originates from the roots of the brachial plexus (C5, C6, and C7) and provides the sole motor innervation to the serratus anterior muscle. This muscle is responsible for protracting the scapula and holding it against the thoracic wall. Injury to the long thoracic nerve results in paralysis of the serratus anterior, leading to the classic clinical sign of a "winged scapula." The phrenic nerve

B. and transverse cervical

C. nerves are sensory nerves of the cervical plexus supplying the skin. What is the maximum level till which the lung reaches the liver?

D. descends more medially on the anterior surface of the anterior scalene muscle. The supraclavicular

Correct answer: B

UGIE + Esophageal manometry Progressive dysphagia to both solids and liquids is characteristic of an esophageal motility disorder, such as achalasia cardia. The barium swallow finding (not shown, but implied to be suggestive) would likely show a dilated esophagus with a "bird's beak" narrowing at the gastroesophageal junction. The essential workup to confirm the diagnosis includes two key investigations. First, an Upper GI Endoscopy (UGIE) is mandatory to visualize the esophagus and GEJ directly, primarily to rule out a malignancy (pseudoachalasia) that can mimic the symptoms and radiographic appearance of achalasia. Second, the gold standard for diagnosing esophageal motility disorders is esophageal manometry. This test measures the pressures and coordination of muscle contractions in the esophagus and will definitively confirm the diagnosis of achalasia by demonstrating aperistalsis (absent contractions) in the esophageal body and incomplete relaxation of the lower esophageal sphincter.

Question 122. What is the investigation of choice for diagnosing allergic contact dermatitis?

A. IgE

B. Radioallergosorbent test (RAST)

C. Patch Test

D. ROAT Test

Correct answer: C

Patch Test Allergic contact dermatitis (ACD) is a classic example of a Type IV (delayed-type) hypersensitivity reaction. It is T-cell mediated and does not involve IgE antibodies. Therefore, tests for Type I hypersensitivity, such as measuring total or specific IgE (A) or the Radioallergosorbent test (RAST) (B), are not relevant for diagnosing ACD. The gold standard and investigation of choice for identifying the causative allergen in ACD is the patch test. This test involves applying small amounts of suspected allergens onto the skin, usually on the back, under occlusive patches. The patches are left in place for 48 hours and then removed. The skin is then read at 48 hours and again at 72 or 96 hours. A positive reaction, which appears as a localized area of eczema (erythema, papules, vesicles), indicates that the patient is allergic to that specific substance. ANAESTHESIA page 691 INICET Examination Paper

Question 123. You see an unconscious man, what will you do?

A. Check carotid pulse, start CPR, call for help

B. Call for help, check carotid pulse, give CPR

C. Go to a hospital emergency

D. Observe the patient

Correct answer: B

Call for help, check carotid pulse, give CPR This question assesses the basic life support (BLS) algorithm for an unresponsive adult. The correct sequence of actions for a single rescuer is : 1.

Check for safety of the scene. 2. Check for responsiveness (tap and shout). 3. If unresponsive, immediately shout for nearby help and activate the emergency response system (e.g., call the local emergency number). If you are alone, you can do this with a mobile phone on speaker. 4. Simultaneously, check for breathing and a carotid pulse for no more than 10 seconds. 5. If there is no pulse or no normal breathing, immediately begin high-quality CPR, starting with chest compressions. Option (B) follows this correct sequence : activating help first, then assessing the patient, and then initiating CPR. Option (A) incorrectly prioritizes starting CPR before calling for help, which would delay the arrival of advanced medical care and a defibrillator.

Question 124. Match the dilution of adrenaline with the correct route of administration (ROA) : Dilution ROA 1. 1 :1000 a. Intracardiac 2. 1 :10,000 b. Intramuscular 3. 1 :100,000 c. Local Anesthesia

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

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

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

D. None of these

Correct answer: A

1-B, 2-A, 3-C Different dilutions of adrenaline (epinephrine) are used for specific clinical applications and routes of administration to ensure safety and efficacy. 1. 1 : 1,000 (1 mg/mL) is the standard concentration for intramuscular (IM) or subcutaneous injection, most commonly used for treating anaphylaxis. (1-B) 2. 1 : 10,000 (0.1 mg/mL) is the more dilute preparation used for intravenous (IV) or intracardiac (IC) administration, primarily during cardiac arrest resuscitation (ACLS protocol). (2-A) 3. 1 : 100,000 or 1 : 200,000 (0.01 mg/mL) is a very dilute concentration that is combined with local anesthetics (e.g., lidocaine). The adrenaline acts as a vasoconstrictor, which prolongs the duration of the anesthetic block and reduces systemic absorption and bleeding. (3-C) The correct matching sequence is therefore 1-B, 2-A, and 3-C.

Question 125. What is the gauge size of the orange cannula?

A. 14G

B. 20G

C. 22G

D. 18G

Correct answer: A

14G Peripheral intravenous (IV) cannulas are color-coded to provide a quick and reliable way to identify their size (gauge). The gauge number is inversely proportional to the cannula's diameter, so a smaller gauge number indicates a larger bore and a higher potential fluid flow rate. The standard color code for a 14-gauge IV cannula is orange. This is a very large-bore cannula that allows for extremely rapid infusion of fluids or blood products. It is typically reserved for major trauma situations, rapid sequence induction in anesthesia, or major

surgeries where massive and rapid fluid resuscitation is anticipated. For reference, a 20G cannula is pink (B), a 22G cannula is blue (C), and an 18G cannula is green (D). RADIOLOGY

Question 126. eFAST consists of findings in which areas? A. Thorax B. Pelvis C. Retroperitoneum D. Skull

A. Only A

B. A,B,C

C. B,C,D

D. ALL

Correct answer: B

A,B,C The FAST (Focused Assessment with Sonography for Trauma) exam is a rapid point-of-care ultrasound protocol to detect free fluid (hemoperitoneum) or pericardial effusion in trauma patients. The eFAST (Extended FAST) exam incorporates additional views to assess for intrathoracic injuries. The eFAST exam includes the four standard abdominal views of the FAST exam (hepatorenal, splenorenal, suprapubic/pelvic, and subxiphoid), plus views of the thorax to look for pneumothorax and hemothorax. The abdominal views also allow for some visualization of the pelvis and retroperitoneum (e.g., around the kidneys). The skull (D) is not part of the eFAST exam; a head CT is used for intracranial injuries. Therefore, the eFAST scan assesses the thorax, abdomen (including the pelvis), and retroperitoneum.

Question 127. Which X-ray view is used for the frontal sinus?

A. Water's view

B. Caldwell Luc view

C. Granger's view

D. Campwell view

Correct answer: B

Caldwell Luc view The Caldwell view is a specific radiographic projection used to visualize the paranasal sinuses. It is an occipito-frontal view taken with the patient's forehead and nose against the image receptor and the X-ray beam angled approximately 15 degrees caudally. This specific angulation projects the dense petrous ridges of the temporal bone downwards, below the orbits, providing a clear, unobstructed view of the frontal sinuses. It also provides a good view of the ethmoid sinuses. In contrast, the Water's view (A) (occipito-mental view) is angled to provide the best view of the maxillary sinuses. The term "Caldwell-Luc view" is slightly confused; the Caldwell view is the X-ray, while the Caldwell-Luc operation is a surgical procedure on the maxillary sinus. Granger's and Campwell views are not standard sinus views.

Question 128. A 25-year-old female has progressive dysphagia to both solids and liquids, and a barium swallow has been performed. Which investigations are needed to confirm the diagnosis? NODIA MEDINK INICET Examination Paper 3. Abduction is

mainly performed by gluteus medius and minimus. 4. Adduction is primarily done by adductor muscle group. 5. Flexion and medial rotation are opposite actions of gluteus maximus. Therefore, the action of the muscle attached at the marked area is extension and lateral rotation of the hip joint. Given structure is not found in which of the following

A. Epididymis

B. Bronchi

C. Oviduct (Fallopian tube)

D. Ependyma 5.

Correct answer: A

Breech identified for the first time at delivery is contraindicated for normal labor In modern obstetric practice, planned vaginal breech delivery can be considered under strict selection criteria, provided certain safety conditions are met. (B) Statement is true — continuous fetal heart rate monitoring is recommended during breech labor to detect early fetal distress. (C) Statement is true — vaginal breech delivery should be conducted only in a hospital with facilities for emergency cesarean section, as rapid intervention may be required. (D) Statement is true — breech delivery should be managed by an experienced obstetrician, especially during breech extraction and delivery of the after coming head. (A) Statement is false — if breech presentation is identified for the first time at delivery (e.g., advanced labor with no contra indications), vaginal delivery is not automatically contraindicated. Management depends on clinical circumstances, fetal size, type of breech, and labor progress. Therefore, since statement (A) is incorrect, it is the correct “except” answer.

Question 129. What is the most common CT scan lung image finding in a COVID-19 patient?

A. Consolidation

B. Opacities

C. Effusion

D. Cystic Lesions

Correct answer: B

Opacities The most common and characteristic finding of COVID-19 pneumonia on a chest CT scan is the presence of ground-glass opacities (GGOs). "Opacities" is a general term that encompasses GGOs. GGOs are areas of hazy, increased lung density that do not obscure the underlying bronchial and vascular markings. In COVID-19, these opacities are typically bilateral, have a peripheral and subpleural distribution, and are most prominent in the lower lobes. They often have a rounded or geographic shape. While consolidation (A) (denser opacification that obscures vessels) can also be seen, often in combination with GGOs (a "mixed" pattern), pure GGOs are the earliest and most frequent finding. Pleural effusion (C) and cystic lesions (D) are

considered atypical or uncommon findings in COVID-19 pneumonia.

Question 130. What is the most common lung finding on chest X-ray (CXR) of COVID-19?

A. Diffuse alveolar damage

B. Pulmonary infarction

C. Fibrin thrombi

D. Endothelial injury

Correct answer: A

Diffuse alveolar damage (DAD). The most common findings on a chest X-ray of a patient with COVID-19 pneumonia are bilateral ground-glass opacities and consolidation, often located in the periphery of the lungs. These radiological signs are the direct macroscopic result of an underlying microscopic injury : Diffuse Alveolar Damage. DAD is the pathological process where the lung's tiny air sacs (alveoli) and blood vessels are injured, leading to inflammation and fluid leakage. This damage is what creates the hazy, opaque appearance on the X-ray film. The other options are not primary radiological findings. Endothelial injury (D) and fibrin thrombi (C) are microscopic processes that are invisible on an X-ray. Pulmonary infarction (B) is a possible complication from blood clots, but it is not the most common, characteristic pattern seen in COVID-19 pneumonia. PSYCHIATRY

Question 131. A 5-year-old child presents with selective mutism. What is the most likely diagnosis?

A. Childhood anxiety

B. Childhood fear

C. Childhood Depression

D. Childhood Psychosis

Correct answer: A

Childhood anxiety Selective mutism is an anxiety disorder characterized by a child's consistent failure to speak in specific social situations where there is an expectation for speaking (e.g., at school), despite speaking normally in other situations (e.g., at home). The child's inability to speak is not due to a language disorder or physical inability but is driven by severe anxiety. Selective mutism is considered to be a manifestation of social anxiety or social phobia in children. Therefore, the most probable underlying or associated diagnosis is a childhood anxiety disorder. The mutism is a behavioral response to the overwhelming anxiety experienced in certain social settings. It is not typically a feature of childhood depression (C) or psychosis (D). While fear (B) is related, anxiety is the broader and more accurate diagnostic category for the underlying psychopathology.

Question 132. Subcortical dementia seen in? A. Parkinson's disease B. Wilson's

disease C. Huntington's disease D. Pick's disease

A. ABC only

B. A & B only

C. A & C only

D. ACD only

Correct answer: A

ABC only Dementias can be broadly classified as cortical or subcortical, based on the primary site of pathology. Subcortical dementias are characterized by prominent deficits in executive function, psychomotor slowing, and mood changes, with memory impairment being less severe initially. The pathology primarily involves structures deep within the brain, such as the basal ganglia, thalamus, and brainstem nuclei. Parkinson's disease (A), Wilson's disease (B), and Huntington's disease (C) are all classic examples of conditions that primarily affect subcortical structures and can lead to a subcortical dementia syndrome. In contrast, Pick's disease (D) (a type of frontotemporal dementia) and Alzheimer's disease are classic examples of cortical dementias, where the pathology predominantly affects the cerebral cortex, leading to prominent early memory loss (amnesia), language deficits (aphasia), and visuospatial problems (agnosia).

Question 133. A male patient lost his job a week ago and has since become irritable and sad. Thoughts about his job and future worsen his mood. He is more irritable at home but still occasionally goes out with friends and enjoys movies, although his symptoms return once he is back home. What is the most likely diagnosis?

A. Moderate depressive disorder

B. Adjustment disorder

C. Mixed anxiety with depression

D. Generalized anxiety disorder

Correct answer: B

Adjustment disorder The key features of this case are the development of emotional symptoms (sad mood, irritability) that are a direct and clear reaction to an identifiable psychosocial stressor (losing his job). The symptoms are causing significant distress and some impairment in functioning (irritability at home). However, the patient does not meet the full criteria for a major depressive episode. A crucial distinguishing feature is that he is still able to experience pleasure and enjoyment ("mood reactivity"), as seen when he goes out with friends. This makes a moderate depressive disorder (A) less likely, as anhedonia (loss of pleasure) is a core symptom. The symptoms are best explained as a maladaptive response to the stressor, which is the definition of an adjustment disorder with depressed mood. The onset is within three months of the stressor, and the distress is out of proportion to what would be expected.

Question 134. A 40-year-old man says he feels his feet are dirty even though he

knows this isn’t true. This causes him distress, leading him to wash them repeatedly. This represents a disorder of which aspect of thought?

A. Possession

B. Flow

C. Form

D. Content

Correct answer: D

Content The patient is describing an obsession, which is a key feature of Obsessive-Compulsive Disorder (OCD). An obsession is a recurrent and persistent thought, urge, or image that is experienced as intrusive and unwanted and causes marked anxiety or distress. The patient's thought that his feet are dirty is the obsession. The key aspect here is what the patient is thinking about. This relates to the content of thought. Disorders of thought content include delusions, overvalued ideas, and obsessions. The patient recognizes that the thought is his own (not a disorder of possession, A) and that it is irrational ("knows that it's not true"), which is characteristic of an obsession. Disorders of thought flow (B) relate to the speed of thoughts (e.g., flight of ideas), and disorders of thought form (C) relate to the logical connection between thoughts (e.g., loosening of associations).

Question 135. How will you differentiate delirium from dementia in Alzheimer's disease?

A. Disorientation and agitation

B. Visual hallucinations and impairment of memory

C. Acute onset and level of consciousness

D. Agitation and irritation

Correct answer: C

Acute onset and level of consciousness Delirium and dementia can present with overlapping symptoms like confusion and memory impairment, and delirium is often superimposed on a baseline dementia. However, there are key features that help to differentiate them. The most crucial distinguishing feature is the onset and course. Dementia, like Alzheimer's disease, has an insidious onset and a progressive, chronic course. Delirium, on the other hand, is characterized by an acute onset (developing over hours to days) and a fluctuating course. The second cardinal feature that distinguishes delirium is a disturbance in the level of consciousness, awareness, and attention. Patients with delirium have a clouded sensorium and are inattentive, whereas in dementia, the level of consciousness is typically preserved until the very late stages. While symptoms like agitation (A, D) and hallucinations (B) are common in delirium, they can also occur in dementia, making them less reliable differentiating factors than the acute onset and altered level of consciousness.

Question 136. A patient with severe depression was treated with a tricyclic

antidepressant (TCA) and showed improvement after 4 weeks. At the time of discharge, what is the most important concern?

A. Suicidal tendencies related to TCA overdose

B. Therapeutic drug monitoring of TCA

C. ECG monitoring for arrhythmias

D. To prescribe modafinil to counteract sedation due to TCA

Correct answer: A

Suicidal tendencies related to TCA overdose A critical period in the treatment of severe depression is when the patient begins to respond to medication. As their energy and motivation start to return, but before their mood and suicidal ideation have fully resolved, the risk of a suicide attempt can paradoxically increase. Tricyclic antidepressants (TCAs) are highly lethal in overdose, primarily due to their cardiotoxic effects (arrhythmias). An overdose of as little as a one-week supply of TCAs can be fatal. Therefore, the most important concern when discharging a patient who is improving from severe depression on a TCA is the risk that they might use their prescribed medication to attempt suicide. This necessitates careful assessment of suicidal ideation and often involves dispensing only a limited supply of the medication at a time. While ECG monitoring (C) and therapeutic drug monitoring (B) are important aspects of TCA management, the immediate risk of intentional overdose is the paramount safety concern at discharge.

Question 137. All of the following are good prognostic factors in schizophrenia except?

A. Late age of onset

B. Associated with depression

C. Insidious onset of symptoms

D. Positive symptoms

Correct answer: C

Insidious onset of symptoms Certain clinical features at the time of diagnosis of schizophrenia are associated with a better or worse long-term prognosis. Good prognostic factors include a late age of onset (A), an acute or abrupt onset of symptoms, the presence of obvious precipitating factors, good premorbid functioning, a family history of mood disorders, and a clinical picture dominated by positive symptoms (D) (like hallucinations and delusions) rather than negative symptoms. The presence of significant mood symptoms, such as depression (B), during the psychotic episode is also associated with a better outcome. In contrast, an insidious onset (C), where symptoms develop gradually and subtly over a long period, is a well-established poor prognostic factor. It is often associated with a clinical picture dominated by negative symptoms, poor premorbid adjustment, and a more chronic, deteriorating course. ********** page 698 Answer → filling of ventricles → 1st heart sound → "t" wave. In the

diagram, a simple muscle twitch with a corresponding time trace below is recorded from a frog’s gastrocnemius muscle. What is the minimum frequency required to produce tetanus in this muscle? (A) 10 per sec (B) 15 per sec (C) 17 per sec (D) 15 per sec 17. (C) 17 per sec A frog’s gastrocnemius muscle is a skeletal muscle with a relatively long contraction time compared to mammalian fast-twitch muscles. To produce complete tetanus, the next stimulus must be delivered before the muscle has time to relax from the previous twitch. From the time-trace of a simple muscle twitch: 1. Latent period ≈ 0.01 sec 2. Contraction period ≈ 0.04 sec 3. Relaxation period ≈ 0.05 sec 4. Total duration of one twitch ≈ 0.1 sec For tetanus to occur, the frequency of stimulation must be high enough that stimuli are delivered at intervals shorter than the relaxation phase. Since one twitch lasts about 0.1 sec, the minimum frequency required is: Frequency . . – sec sec to per ond 0 06 0 07 1 15 17 . = To ensure complete fusion (smooth tetanus), a slightly higher frequency than the theoretical minimum is required. Hence, the closest correct option is : 17 per second (Option C). In the following diagram, the areas marked with A and D indicate which of the following conditions? (A) Chronic Respiratory Acidosis & Metabolic Acidosis (B) Metabolic Alkalosis & Metabolic Acidosis (C) Acute Respiratory Acidosis & Chronic Respiratory Acidosis (D) Acute Respiratory Acidosis & Metabolic Acidosis 18. (A) Chronic Respiratory Acidosis & Metabolic Acidosis The diagram shown is a Davenport diagram, which is used to interpret acid–base disorders. It plots arterial pH on the X-axis and plasma bicarbonate (HCO_3^-) concentration on the Y-axis, with curved lines representing different levels of PCO_2. The central “normal” zone represents normal pH (~7.4), bicarbonate (~24 mEq/L), and PCO_2 (~40 mmHg). Area A is located in the upper left region of the graph. Here, the pH is low (acidemia), but bicarbonate is elevated. This pattern indicates chronic respiratory acidosis. In this condition, there is prolonged CO_2 retention (elevated PCO_2), and the kidneys compensate over time by increasing bicarbonate reabsorption, leading to a higher HCO_3^- level. Area D is located in the lower left region. Both pH and bicarbonate are low, indicating metabolic acidosis. In metabolic acidosis, there is a primary decrease in bicarbonate due to acid accumulation or bicarbonate loss. Respiratory compensation may reduce PCO_2, but bicarbonate remains low. Thus, region A represents chronic respiratory acidosis, and region D represents metabolic acidosis. In membrane receptors, the transmembrane region is made up of which type of amino acids? (A) Hydrophobic (B) Hydrophilic (C) Charged (D) None 19. (A) Hydrophobic Transmembrane proteins, including membrane receptors, must span the lipid bilayer of the cell membrane. The core of the lipid bilayer is composed of the fatty acid tails of phospholipids, creating a highly nonpolar, oily environment. To be stably embedded within this environment, the segment of the protein that passes through the membrane must be composed of amino acids with nonpolar, hydrophobic side chains. These amino acids (such as leucine, isoleucine, valine, and phenylalanine) interact favorably with the lipid tails, anchoring the protein in the membrane. Typically, this transmembrane domain is arranged in an alpha-helical structure. In contrast, the extracellular and intracellular domains of the receptor,

which are exposed to the aqueous environments outside and inside the cell, are primarily composed of hydrophilic (B) and charged (C) amino acids. High anion gap acidosis is seen in all except : (A) Diabetic ketoacidosis (DKA) (B) Lactic acidosis (C) Renal aciduria (D) Respiratory disorders 20. (D) Respiratory disorders A high anion gap metabolic acidosis is caused by the accumulation of unmeasured organic acids in the blood. In diabetic ketoacidosis (A), the acids are acetoacetate and beta-hydroxybutyrate. In lactic acidosis (B), the acid is lactate. Certain types of renal failure (uremia) can also lead to the accumulation of acids like sulfates and phosphates, causing a high anion gap. The term "renal aciduria" (C) is ambiguous but likely refers to this or a renal tubular acidosis that can sometimes be associated with a high anion gap. In contrast, respiratory disorders (D) cause respiratory acidosis or alkalosis, not metabolic acidosis. Respiratory acidosis is caused by the retention of CO_2 . While this lowers the pH, it does not involve the addition of an unmeasured anion and therefore does not cause a high anion gap. It is a distinct acid-base disturbance with a different underlying pathophysiology. The macula densa is located in : (A) Proximal Convoluted Tubule (PCT) (B) Bowman's Capsule (C) Distal Convoluted Tubule (DCT) (D) Glomerular Capillaries 21. (C) Distal Convoluted Tubule (DCT)