INI-CET May 2024 Question Paper

163 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. The spinal sensory nucleus of the trigeminal nerve sends its second-order neurons to transmit which type of sensation?

A. Touch

B. Pain

C. Vibration

D. Proprioception

Correct answer: B

Pain The sensory nucleus of the trigeminal nerve in the brainstem is divided into three parts. The principal (or chief) sensory nucleus processes discriminative touch and pressure. The mesencephalic nucleus handles proprioception from the muscles of mastication. The spinal sensory nucleus is primarily responsible for processing protopathic sensations, which include pain and temperature, as well as crude touch from the ipsilateral side of the face. First-order neurons from the trigeminal ganglion synapse in the spinal nucleus. The second-order neurons then decussate (cross the midline) and ascend in the ventral two-dimensionality tract to the contralateral thalamus (VPM nucleus). From there, third-order neurons project to the somatosensory cortex. Fine touch (Option A) is primarily handled by the principal nucleus, while vibration (Option C) and proprioception (Option D) are carried by other pathways.

Question 2. The substantia nigra has functional connections with which component of the basal ganglia?

A. Striatum

B. Pallidum

C. Subthalamic nucleus

D. Thalamus

Correct answer: A

Striatum The substantia nigra, located in the midbrain, is a crucial component of the basal ganglia motor circuitry. It is most famously and extensively connected to the striatum (which consists of the caudate nucleus and the putamen). This connection forms the nigrostriatal pathway, where dopaminergic neurons from the substantia nigra pars compacta (SNc) project to the striatum to modulate its activity. This pathway is essential for the initiation and smooth

execution of voluntary movements, and its degeneration is the primary pathology in Parkinson's disease. While the substantia nigra pars reticulata receives input from the striatum and projects to the thalamus (Option D), its most prominent functional connection is its dopaminergic input to the striatum. The pallidum (Option B) and subthalamic nucleus (Option C) are other key nodes within the basal ganglia circuit but are not the primary connection site for the substantia nigra.

Question 3. Which structure is NOT present in the floor of the inferior horn of the lateral ventricle?

A. Hippocampus

B. Tail of the caudate nucleus

C. Fimbria

D. Collateral eminence

Correct answer: B

Tail of the caudate nucleus The inferior (temporal) horn of the lateral ventricle extends into the temporal lobe. Its floor is a complex surface formed by several structures. These include the hippocampus (Option A), a key structure for memory formation, which creates a prominent bulge in the floor. The fimbria of the hippocampus (Option C), a band of efferent fibers, runs along its medial edge. The most lateral part of the floor is the collateral eminence (Option D), a ridge formed by the underlying collateral sulcus. In contrast, the tail of the caudate nucleus is a component of the roof of the inferior horn. It arches over the thalamus and follows the curve of the lateral ventricle, terminating anteriorly at the amygdala. Therefore, it is not found in the floor of the inferior horn.

Question 4. Which of the following statements accurately describes the anatomy of the breast?

A. The superior medial quadrant has more tissue

B. There are 10 lobules present

C. The axillary tail of Spence crosses the anterior axillary fold

D. The nipple is located at the level of the fourth intercostal space in most women

Correct answer: C

The axillary tail of Spence crosses the anterior axillary fold The axillary tail of Spence is a superolateral extension of breast tissue from the upper outer quadrant of the breast into the axilla. It passes through an opening in the deep fascia known as the foramen of Langer. As it extends toward the axilla, it runs along and effectively crosses the region of the anterior axillary fold, which is formed by the lower border of the pectoralis major muscle. Clinically, this is important because breast tissue in the axillary tail can develop lumps or malignancy and may be mistaken for axillary lymph nodes. 1. Option (A) is incorrect because the upper outer quadrant, not the superior medial quadrant, contains the greatest amount of glandular tissue

and is the most common site of breast carcinoma. 2. Option (B) is incorrect since the breast typically contains 15–20 lobes, each drained by a lactiferous duct. 3. Option (D) states that the nipple lies at the fourth intercostal space; although often used as a landmark, its position varies with age and body habitus. Therefore, the most accurate anatomical statement is option (C).

Question 5. Which step in thyroid surgery is least likely to cause hoarseness of voice?

A. Ligation of superior thyroid artery

B. Division of strap muscles

C. Removal of tubercle of Zuckerkandl

D. Dissection of Beahrs triangle

Correct answer: B

Division of strap muscles Post-thyroidectomy hoarseness is typically caused by injury to the laryngeal nerves. Ligation of the superior thyroid artery (Option A) risks injury to the external branch of the superior laryngeal nerve, which affects voice pitch. The recurrent laryngeal nerve (RLN) is at high risk during dissection near the tubercle of Zuckerkandl (Option C) and within Beahrs triangle (the space between the common carotid artery, inferior thyroid artery, and RLN) (Option D). Injury to the RLN causes significant hoarseness. In contrast, the division of the strap muscles (sternohyoid and sternothyroid) (Option B) is performed to gain surgical access to the thyroid gland. These muscles are innervated by the ansa cervicalis and their division does not directly endanger the laryngeal nerves responsible for vocal cord function. Therefore, this step is the least likely to cause voice changes.

Question 6. Lower lip paralysis following a parotidectomy is most likely caused by damage to which structure?

A. Mandibular branch of the facial nerve

B. Buccal branch of the facial nerve

C. Temporal branch of the facial nerve

D. Cervical branch of the facial nerve

Correct answer: A

Mandibular branch of the facial nerve Parotidectomy involves dissection around the facial nerve (CN VII), which passes through the parotid gland. The facial nerve gives off several branches to supply the muscles of facial expression. Weakness or paralysis of the lower lip, specifically the inability to depress the corner of the mouth (resulting in an asymmetric smile), is a classic sign of injury to the marginal mandibular branch of the facial nerve. This branch innervates the depressor anguli oris and depressor labii inferioris muscles. The buccal branch (Option B) innervates the buccinator and muscles of the upper lip. The temporal branch (Option C) innervates the frontalis and orbicularis oculi. The cervical branch (Option D) innervates the platysma muscle.

Question 7. The ischial spine corresponds to which level?

A. S3-S5

B. Tip of the coccyx

C. L4

D. S2

Correct answer: D

S2 The ischial spine is a prominent bony landmark on the posterior border of the ischium. It serves as an important landmark in obstetrics for assessing fetal head descent (station 0) and in anesthesiology for administering a pudendal nerve block. In relation to the vertebral column, its horizontal plane corresponds approximately to the level of the second sacral vertebra (S2). The iliac crest is at the level of L4 (Option C), and the tip of the coccyx (Option B) represents the most inferior part of the vertebral column. The S3-S5 levels (Option A) are inferior to the ischial spine. Therefore, the S2 vertebral level is the correct corresponding landmark. PHYSIOLOGY

Question 8. Which statement about cardiac muscle depolarization is incorrect?

A. Large refractory period

B. Tetany

C. All or none law

D. Length-Tension relationship

Correct answer: B

Tetany Cardiac muscle possesses several unique physiological properties. It adheres to the all or none law (Option C), meaning a stimulus above threshold causes the entire muscle fiber to contract maximally. It also exhibits a length-tension relationship (Option D), known as the Frank-Starling mechanism, where increased initial fiber length (preload) results in a more forceful contraction. A critical feature of the cardiac action potential is its long plateau phase due to calcium influx, which results in a large refractory period (Option A). This long refractory period is essential as it prevents the summation of individual muscle twitches. Consequently, cardiac muscle cannot undergo a sustained contraction, or tetany (Option B). Tetanus is a characteristic of skeletal muscle but is physiologically impossible in cardiac muscle, ensuring the heart functions as a pump with distinct relaxation (filling) phases.

Question 9. A decrease in GFR associated with which of the following?

A. Increased renal blood flow (RBF)

B. Increased glomerular hydrostatic pressure

C. Decreased Bowman's oncotic pressure

D. Increased glomerular oncotic pressure

Correct answer: D

Increased glomerular oncotic pressure The Glomerular Filtration Rate (GFR) is determined by

the balance of hydrostatic and oncotic pressures across the glomerular capillary wall (Starling forces). GFR is favored by glomerular hydrostatic pressure, and opposed by Bowman's space hydrostatic pressure and glomerular oncotic pressure. A decrease in GFR would be caused by factors that either reduce the forces favoring filtration or increase the forces opposing it. Increased RBF (A) and increased glomerular hydrostatic pressure (B) would both increase GFR. Decreased Bowman's oncotic pressure (C) is typically negligible and a decrease would slightly increase GFR. However, an increased glomerular oncotic pressure (D) directly opposes filtration. This occurs, for example, in dehydration or conditions with high plasma protein concentration, increasing the oncotic "pull" that holds fluid within the capillaries and thereby decreasing the GFR.

Question 10. Erythropoietin is secreted by which of the following? 1. Liver 2. Kidney 3. Muscle 4. Heart

A. 1,2

B. 2,3

C. 1,2,3

D. Only B

Correct answer: A

1,2 Erythropoietin (EPO) is the primary hormone that stimulates the production of red blood cells (erythropoiesis) in the bone marrow. The main site of EPO production in adults is the kidney (2). Specifically, it is synthesized by peritubular interstitial cells in the renal cortex in response to tissue hypoxia. A smaller amount of EPO, approximately 10-15% of the total, is produced by hepatocytes in the liver (1). During fetal life, the liver is the primary site of EPO production. Muscle (3) and the heart (4) do not produce significant amounts of erythropoietin. Therefore, both the kidney and the liver are sites of EPO secretion, making option A the correct choice.

Question 11. Which features are characteristically seen in upper motor neuron (UMN) lesions?

A. Atrophy

B. Fasciculations

C. DTR increased

D. Rigidity

Correct answer: C

DTR increased Upper motor neuron (UMN) lesions affect the neural pathway above the anterior horn cell of the spinal cord or motor nuclei of cranial nerves. The resulting clinical signs are distinct from lower motor neuron (LMN) lesions. Key features of a UMN lesion include spasticity (velocity-dependent increase in muscle tone), weakness, and hyperreflexia, meaning deep tendon reflexes (DTR) are increased or exaggerated (C). Pathological reflexes like the Babinski

sign may also be present. In contrast, atrophy (A) (specifically, severe or neurogenic atrophy), fasciculations (B) (visible muscle twitches), and flaccid paralysis are characteristic of LMN lesions. Rigidity (D), a lead-pipe or cogwheel resistance to passive movement, is a hallmark of extrapyramidal disorders like Parkinson's disease, not typically a UMN sign.

Question 12. Which hormone has the smallest influence on fetal growth during pregnancy?

A. Insulin

B. Thyroid hormone

C. Growth hormone

D. Cortisol

Correct answer: C

Growth hormone Fetal growth is a complex process regulated by a different set of hormones compared to postnatal growth. Insulin (A) is a crucial fetal growth factor, particularly in the third trimester, promoting somatic growth and fat deposition. Thyroid hormone (B) is essential for normal development of the fetal central nervous system and skeleton. Cortisol (D) plays a vital role in the maturation of fetal organs, especially the lungs (surfactant production). In stark contrast, pituitary Growth Hormone (GH) (C) plays a minimal to insignificant role in fetal somatic growth. Children born with congenital GH deficiency or GH receptor defects have a normal birth weight and length. The major postnatal growth-regulating axis (GHRH-GH-IGF-1) becomes critical only after birth. Therefore, growth hormone has the least significant role during fetal life.

Question 13. Select the correct sequence of events in the CAMP signaling pathway:

A. CAMP PKA → Adenyl cyclase

B. Adenyl cyclase → CAMP → PKA

C. CAMP Adenyl cyclase → PKA

D. Adenyl cyclase → PKA CAMP

Correct answer: B

Adenyl cyclase → CAMP → PKA The cyclic AMP (cAMP) signaling pathway is a common second messenger system initiated by the binding of a ligand (like epinephrine) to a G-protein coupled receptor (GPCR). This binding activates the G protein, which in turn activates the membrane-bound enzyme adenylyl cyclase. Adenylyl cyclase then catalyzes the conversion of ATP into cyclic AMP (cAMP). The increase in intracellular cAMP concentration activates Protein Kinase A (PKA). Activated PKA then phosphorylates various downstream target proteins, leading to a cellular response. Therefore, the correct sequence of events is the activation of adenylyl cyclase, which produces cAMP, which in turn activates PKA. This corresponds to option B. BIOCHEMISTRY

Question 14. Match each of the following disorders with its appropriate clinical feature or laboratory finding. 1. Cori's disease

A. Branched struc- ture in liver bi- opsy 2. McArdle's disease

B. Accumulation of glycogen in lyso- some 3. Pompe's disease

C. Exercise intoler- ance 4. Von Gierke's dis- ease

D. Hypoglycemia with lactic aci- dosis

Correct answer: D

1-A, 2-C, 3-B, 4-D This question requires matching glycogen storage diseases (GSDs) to their key features. Cori's disease (Type III GSD) is due to a deficiency of the debranching enzyme, leading to the accumulation of abnormally short, branched glycogen, which would show a branched structure in a liver biopsy (1-A). McArdle's disease (Type V GSD) is a deficiency of muscle glycogen phosphorylase, preventing glycogen breakdown in muscle during exertion, classically causing exercise intolerance, cramps, and myoglobinuria (2-C). Pompe's disease (Type II GSD) is a deficiency of lysosomal acid alpha-glucosidase, leading to the accumulation of glycogen within lysosomes in various tissues, especially cardiac and skeletal muscle (3-B). Von Gierke's disease (Type I GSD) is a deficiency of glucose-6-phosphatase, impairing both gluconeogenesis and glycogenolysis, resulting in severe fasting hypoglycemia with lactic acidosis and hepatomegaly (4-D). page 81 INICET Examination Paper

Question 15. Congenital lactic acidosis results from a defect in which enzyme?

A. Transketolase

B. Branched-chain ketoacid dehydrogenase

C. Isocitrate dehydrogenase

D. Pyruvate dehydrogenase

Correct answer: D

Pyruvate dehydrogenase Lactic acidosis occurs when lactate production exceeds its clearance. A major cause of congenital lactic acidosis is a deficiency in the pyruvate dehydrogenase (PDH) complex. This crucial mitochondrial enzyme complex converts pyruvate, the end product of glycolysis, into acetyl-CoA for entry into the Krebs cycle. When the PDH complex is deficient, pyruvate cannot be efficiently metabolized aerobically. Instead, it is shunted into the anaerobic pathway and converted to lactate by lactate dehydrogenase, leading to a significant accumulation of lactic acid in the blood. Branched-chain ketoacid dehydrogenase deficiency (B) causes Maple Syrup Urine Disease. Transketolase (A) is a pentose phosphate pathway enzyme. Isocitrate dehydrogenase (C) is a Krebs cycle enzyme whose deficiency would impair the cycle but not be the primary cause of congenital lactic acidosis.

Question 16. Which of the following is not produced during the breakdown of heme?

A. Ferrous ion

B. Aminolevulinic acid

C. Biliverdin

D. Carbon monoxide

Correct answer: B

Aminolevulinic acid Heme catabolism is the breakdown pathway for heme, primarily from senescent red blood cells. The first and rate-limiting step is catalyzed by the enzyme heme oxygenase. This enzyme opens the porphyrin ring to produce three products: biliverdin (C), a linear tetrapyrrole; ferrous iron (Fe2+) (A), which is recycled; and carbon monoxide (CO) (D), a signaling molecule that is eventually exhaled. Biliverdin is then converted to bilirubin. In contrast, aminolevulinic acid (ALA) is a key intermediate in the synthesis of heme, not a product of its breakdown. The synthesis of heme begins with the condensation of glycine and succinyl-CoA to form ALA, catalyzed by ALA synthase. Therefore, ALA is a precursor to heme, not a catabolic product.

Question 17. Which gene defect causes familial hypercholesterolemia?

A. Apo E

B. Apo CII

C. LDL receptor

D. Apo B48

Correct answer: C

LDL receptor Familial hypercholesterolemia (FH) is an autosomal dominant genetic disorder characterized by very high levels of low-density lipoprotein (LDL) cholesterol in the blood, leading to premature atherosclerotic cardiovascular disease. The most common cause of FH, accounting for over 90% of cases, is a loss-of-function mutation in the gene encoding the LDL receptor. These receptors are located on the surface of cells, primarily hepatocytes, and are responsible for clearing LDL from the circulation. A defect in the LDL receptor leads to impaired uptake of LDL, causing its accumulation in the plasma. Mutations in ApoB-100 (the ligand for the LDL receptor) can also cause a similar phenotype, but LDL receptor defects are the primary cause. Defects in Apo E (A), Apo CII (B), and Apo B48 (D) are associated with other types of dyslipidemias.

Question 18. A male patient with hyperpigmentation and Tanner stage 5 who presents with hypertension and signs of precocious puberty is described. What underlying defect is most likely responsible for this presentation?

A. 21-Beta hydroxylase deficiency

B. 11-Beta hydroxylase deficiency

C. 17-Beta hydroxylase deficiency

D. 17-Alpha hydroxylase deficiency

Correct answer: B

11-Beta hydroxylase deficiency This clinical triad—precocious puberty (virilization),

hypertension, and hyperpigmentation—is the classic presentation of 11-Beta hydroxylase deficiency, a form of congenital adrenal hyperplasia (CAH). The enzyme deficiency blocks the conversion of 11-deoxycortisol to cortisol and deoxycorticosterone (DOC) to corticosterone. The lack of cortisol leads to a loss of negative feedback on the pituitary, causing overproduction of ACTH. High ACTH levels lead to adrenal hyperplasia and shunting of steroid precursors toward androgen synthesis, causing precocious puberty. The accumulation of DOC, a potent mineralocorticoid, causes sodium and water retention, leading to hypertension. High ACTH also stimulates melanocytes, causing hyperpigmentation. 21-hydroxylase deficiency (A) causes virilization but with hypotension. 17-alpha hydroxylase deficiency (D) causes hypertension but prevents sex steroid synthesis, leading to sexual infantilism.

Question 19. Interpret the following arterial blood gas (ABG) values: pH=7.5, pCO 2 =50 mm Hg, HCO 3- =30 mEq/L

A. Metabolic acidosis

B. Metabolic alkalosis

C. Respiratory acidosis

D. Respiratory alkalosis

Correct answer: B

Metabolic alkalosis To interpret an ABG, we follow a systematic approach. First, check the pH. A pH of 7.5 is above the normal range (7.35-7.45), indicating alkalosis. Second, determine if the primary cause is respiratory or metabolic. The pCO 2 is 50 mm Hg, which is higher than the normal range (35-45 mm Hg). An elevated pCO 2 causes acidosis, which is opposite to the patient's alkalotic state, so the primary problem is not respiratory. The HCO 3- is 30 mEq/L, which is higher than the normal range (22-26 mEq/L). An elevated HCO 3- causes alkalosis. Therefore, the primary disorder is metabolic alkalosis. The elevated pCO 2 represents a respiratory compensation, where the body hypoventilates to retain CO 2 (an acid) to counteract the metabolic alkalosis.

Question 20. Which of the following is not involved in post- transcriptional modification?

A. Methylation

B. Endonuclease cleavage

C. 5' capping

D. Glycosylation

Correct answer: D

Glycosylation Post-transcriptional modification refers to the processes that a primary RNA transcript (pre-mRNA) undergoes to become a mature messenger RNA (mRNA) before it can be translated into a protein. Key modifications include the addition of a 5' cap (a modified guanine nucleotide) (C), splicing to remove introns which involves endonuclease cleavage (B), and the

addition of a poly-A tail to the 3' end. RNA molecules themselves can also undergo chemical modifications like methylation (A). In contrast, glycosylation (D) is a post-translational modification. It is the process of adding carbohydrate chains (glycans) to proteins or lipids, which occurs in the endoplasmic reticulum and Golgi apparatus after the protein has been synthesized (translated) from the mRNA template. Therefore, glycosylation is not a post-transcriptional modification.

Question 21. Which deficiency is linked to impaired sexual maturation and hypogonadism?

A. Selenium

B. Zinc (Zn)

C. Copper (Cu)

D. Iron

Correct answer: B

Zinc (Zn) Zinc (Zn) is an essential trace mineral that functions as a cofactor for hundreds of enzymes and is crucial for numerous physiological processes, including immune function, wound healing, and protein synthesis. A key role of zinc is in the function of the reproductive system and normal growth and development. Zinc deficiency is classically associated with growth retardation, impaired immune response, skin lesions (acrodermatitis enteropathica), and hypogonadism, which leads to delayed or failed sexual maturation. This is because zinc is necessary for the synthesis and action of gonadotropins and testosterone. Deficiencies in selenium (A), copper (C), and iron (D) cause other distinct clinical syndromes but are not primarily characterized by hypogonadism and defective sexual maturation.

Question 22. Which type of mutation leads to restoration of the wild-type phenotype when the mutant gene is suppressed?

A. Frameshift mutation of coding gene

B. Addition of another normal gene

C. Deletion of mutant gene

D. Mutation of tRNA

Correct answer: D

Mutation of tRNA This question describes a suppressor mutation, where a second mutation at a different site reverses the effect of the first mutation, restoring the wild-type phenotype. One classic example of this is a nonsense suppressor, which involves a mutation of a tRNA gene. For instance, if a primary mutation changes a codon for an amino acid into a premature stop codon (a nonsense mutation), it causes truncated protein synthesis. A second mutation in the anticodon of a tRNA molecule can allow that tRNA to recognize the stop codon and insert an amino acid instead, allowing translation to continue and producing a full-length (and often functional) protein. A frameshift mutation (A) is not typically reversed this way. Adding a normal

gene (B) is complementation, not suppression. Deleting the mutant gene (C) would not restore the function.

Question 23. Which diagnostic tool is preferred for metabolic disease screening in children?

A. Tandem mass spectrometry

B. Complete blood count

C. Urinalysis

D. Genetic testing

Correct answer: A

Tandem mass spectrometry Newborn screening for inborn errors of metabolism has been revolutionized by the use of tandem mass spectrometry (MS/MS). This powerful analytical technique allows for the rapid, simultaneous, and quantitative detection of dozens of different metabolites (like amino acids and acylcarnitines) from a single dried blood spot collected from a heel prick. This enables screening for a wide array of metabolic disorders, including amino acidopathies (e.g., PKU), organic acidemias, and fatty acid oxidation defects, from one sample. While urinalysis (C) and complete blood count (B) are common tests, they are not comprehensive screening tools for metabolic diseases. Genetic testing (D) is typically used as a confirmatory test after an abnormal screening result from MS/MS, rather than as the initial screening tool itself due to cost and complexity.

Question 24. Fluorescent in situ hybridization (FISH) can identify all of the following except which one?

A. Translocation

B. Amplification

C. Deletion

D. Point mutation

Correct answer: D

Point mutation Fluorescent in situ hybridization (FISH) is a cytogenetic technique that uses fluorescently labeled DNA probes to visualize specific DNA sequences on chromosomes. It is highly effective for detecting large-scale chromosomal abnormalities. It can identify translocations (A), where a piece of one chromosome breaks off and attaches to another (e.g., using fusion or break-apart probes). It can detect gene amplification (B), seen as multiple copies of a fluorescent signal for a specific gene. It can also identify deletions (C) of chromosomal regions, indicated by the absence of a fluorescent signal where one is expected. However, FISH is not sensitive enough to detect very small-scale changes like point mutations (D), which involve a change in a single DNA base pair. Detecting point mutations requires DNA sequencing or allele-specific PCR techniques.

Question 25. In folate deficiency, which of the following statements is FALSE?

A. Low homocysteine & high methylmalonic acid

B. Hemolytic anemia is a feature

C. B12 supplementation is recommended along with folate

D. Purine and pyrimidine synthesis are affected

Correct answer: A

Low homocysteine & high methylmalonic acid The metabolism of folate and vitamin B12 are interconnected, and a deficiency in either can lead to megaloblastic anemia by impairing purine and pyrimidine synthesis (D). Both vitamins are required for the conversion of homocysteine to methionine, so a deficiency in either leads to elevated homocysteine. However, only vitamin B12 is needed for the conversion of methylmalonyl-CoA to succinyl-CoA. Therefore, an elevated methylmalonic acid (MMA) level is specific to B12 deficiency; in folate deficiency, MMA levels are normal. Statement (A) is false because folate deficiency causes high homocysteine and normal MMA. The anemia is megaloblastic (due to ineffective erythropoiesis), not hemolytic (B is also false, but A is metabolically definitive). Clinically, it is often wise to supplement with B12 alongside folate (C) until a B12 deficiency is ruled out. PATHOLOGY

Question 26. Which of the following serves as an intranuclear immunohistochemical marker for neuroendocrine tumors?

A. Synaptophysin

B. Chromogranin

C. INSM1

D. NCAM1/CD56

Correct answer: C

INSM1 Immunohistochemistry is crucial for diagnosing neuroendocrine tumors (NETs). Synaptophysin (A) and Chromogranin A (B) are the two most common and classic markers for NETs, but they are both cytoplasmic proteins. NCAM1/CD56 (D) is a cell surface marker also expressed by many NETs. In contrast, Insulinoma-associated protein 1 (INSM1) is a zinc-finger transcription factor that is expressed early in neuroendocrine differentiation. As a transcription factor, INSM1 is located in the nucleus. It has emerged as a highly sensitive and specific intranuclear marker for neuroendocrine tumors across various sites, including the lung, pancreas, and gastrointestinal tract, and is particularly useful in poorly differentiated cases where cytoplasmic markers may be weak or absent.

Question 27. A patient presents with a neck mass causing tracheal and esophageal compression, and histology shows cell nests with pink extracellular amyloid. What is the tumor’s cell of origin?

A. Parafollicular C cells

B. Askanazy cells

C. Hurthle cells

D. Follicular cells

Correct answer: A

Parafollicular C cells The histopathological description of "cell nests and pink extracellular amyloid stroma" is the pathognomonic finding for Medullary Thyroid Carcinoma (MTC). The amyloid material consists of deposited calcitonin precursor proteins. MTC is a neuroendocrine tumor that arises from the parafollicular C cells of the thyroid gland. These cells are responsible for producing the hormone calcitonin. Follicular cells (D) give rise to papillary and follicular thyroid carcinomas. Hurthle cells or Askanazy cells (B, C) are eosinophilic, mitochondrion-rich follicular cells that form Hürthle cell adenomas and carcinomas. The presence of amyloid is the key feature pointing specifically to a tumor of C-cell origin.

Question 28. Which of the following is not one of the diagnostic criteria for Kawasaki disease?

A. Purulent conjunctivitis

B. Rash

C. Edema

D. Strawberry tongue

Correct answer: A

Purulent conjunctivitis Kawasaki disease is an acute febrile vasculitis of childhood. The diagnosis is based on the presence of fever for at least five days plus at least four of the five principal clinical criteria. These criteria are: 1. Changes in extremities, such as erythema or edema of hands and feet. 2. Polymorphous rash. 3. Bilateral bulbar conjunctival injection, which is characteristically non-purulent (non-exudative). 4. Changes in the lips and oral cavity, such as erythema, cracked lips, or a strawberry tongue. 5. Cervical lymphadenopathy. Purulent conjunctivitis (conjunctivitis with pus discharge) is characteristic of bacterial infections and is an exclusion criterion for Kawasaki disease, not a diagnostic one. Therefore, it is the incorrect option.

Question 29. Which of the following are not considered markers of gastrointestinal stromal tumors (GIST)?

A. PDGFRB

B. SDH

C. NRG-1

D. KIT

Correct answer: C

NRG-1 Gastrointestinal Stromal Tumors (GISTs) are the most common mesenchymal tumors of the GI tract. The vast majority (around 80%) are driven by gain-of-function mutations in the KIT proto-oncogene (D), a receptor tyrosine kinase. A smaller subset has mutations in a related

receptor, PDGFRA. Wild-type GISTs (those without KIT or PDGFRA mutations) can have mutations in other genes, including the succinate dehydrogenase (SDH) complex genes (B). PDGFRB (A) mutations are rare but have been described in GIST. In contrast, NRG1 (Neuregulin 1) fusions are oncogenic drivers found in other solid tumors, particularly lung adenocarcinoma, but they are not characteristic markers or drivers of GISTs.

Question 30. All of the following are growth-promoting proto-oncogenes except?

A. FGF

B. PDGF

C. TGF alpha

D. TGF beta NODIA page 83 INICET Examination Paper

Correct answer: D

TGF beta Proto-oncogenes are normal genes that, when mutated or overexpressed, can contribute to cancer formation. Many code for growth factors or their receptors. Fibroblast Growth Factor (FGF, A), Platelet-Derived Growth Factor (PDGF, B), and Transforming Growth Factor-alpha (TGF-alpha, C) are all potent growth factors whose genes function as proto-oncogenes; their overexpression can drive cell proliferation. In contrast, Transforming Growth Factor-beta (TGF-beta) has a complex, context-dependent role but is primarily considered a tumor suppressor. It inhibits the proliferation of many cell types, including epithelial cells, and promotes apoptosis. Loss-of-function mutations in the TGF-beta signaling pathway are common in many cancers, allowing cells to escape its growth-inhibitory effects. Therefore, TGF-beta is not a growth-promoting proto-oncogene.

Question 31. In a trauma patient with an unknown blood type who is unstable and needs an immediate transfusion, which blood type should be given?

A. A+

B. AB+

C. O+

D. O-

Correct answer: D

O- In an emergency trauma situation where a patient is hemodynamically unstable and requires immediate blood transfusion before blood typing and cross-matching can be completed, the universal donor blood type is used. This is O-negative (O-) blood. Group O red blood cells lack both A and B antigens, so they will not be attacked by the recipient's anti-A or anti-B antibodies. The Rh-negative designation means they also lack the RhD antigen, preventing an immune reaction in an Rh-negative recipient. While O-positive (C) blood can be given to Rh-positive recipients, it can cause sensitization in Rh-negative recipients, especially females of childbearing age. A+ (A) and AB+ (B) blood types have A and/or B antigens and cannot be given universally. Therefore, O-negative is the safest universal red blood cell product for

emergency transfusion.

Question 32. Which of the following statements is/are incorrect about Hodgkin's lymphoma?

A. Nodular sclerosis is most common and involves the mediastinum.

B. Waldeyer's ring is involved.

C. CD15, CD30 positivity in Reed-Sternberg (RS) cells.

D. RS cells are B-cell derived.

Correct answer: B

Waldeyer's ring is involved. Evaluating the statements about classical Hodgkin's lymphoma (HL) : A) Nodular sclerosis is indeed the most common subtype of classical HL and frequently presents with a mass in the anterior mediastinum. This is correct. C) The neoplastic Reed-Sternberg (RS) cells in classical HL are characterized by their immunophenotype, which is typically positive for CD15 and CD30. This is correct. D) Despite their unusual appearance and loss of many B-cell markers, molecular studies have confirmed that RS cells are derived from germinal center B-lymphocytes. This is correct. B) Involvement of Waldeyer's ring (the ring of lymphoid tissue in the pharynx, including the tonsils) and other extranodal sites is rare in Hodgkin's lymphoma. It is a much more common site of involvement for Non-Hodgkin's Lymphoma. Therefore, this statement is incorrect.

Question 33. Which of the following is not a feature of G6PD deficiency?

A. Males and females are equally affected

B. Oxidative stress

C. Absence of NADPH

D. Presence of Heinz bodies

Correct answer: A

Males and females are equally affected Glucose-6-Phosphate Dehydrogenase (G6PD) deficiency is an X-linked recessive disorder. Because it is X-linked, it primarily affects males who are hemizygous for the mutant allele. Females are usually asymptomatic carriers, although they can be affected due to lyonization (random X-chromosome inactivation). Therefore, the statement that males and females are equally affected is false. The G6PD enzyme is critical for producing NADPH (C) in red blood cells. NADPH is required to keep glutathione in its reduced state, which protects the cell from oxidative stress (B). In G6PD deficiency, exposure to oxidative stressors (like certain drugs or infections) leads to hemoglobin denaturation and precipitation within red blood cells, forming Heinz bodies (D), which ultimately causes hemolytic anemia.

Question 34. Which of the following is/are associated with an anaphylactic reaction?

A. Persistent abdominal cramps

B. Hypertension

C. Urticaria & Swollen lips

D. Both A & C

Correct answer: D

Both A & C Anaphylaxis is a severe, life-threatening, systemic Type I hypersensitivity reaction. It is caused by the widespread release of inflammatory mediators (like histamine) from mast cells and basophils. These mediators cause vasodilation and increased vascular permeability, leading to characteristic signs. Skin and mucosal involvement, such as urticaria (hives) and angioedema (swollen lips), is very common (C). Gastrointestinal symptoms like persistent abdominal cramps, nausea, and vomiting can also occur due to smooth muscle contraction and mucosal edema (A). A key cardiovascular sign is hypotension (low blood pressure) due to vasodilation and fluid leakage from the capillaries, not hypertension (B). Therefore, both persistent abdominal cramps and urticaria/swollen lips are associated with anaphylaxis.

Question 35. Which neurotransmitter is released by the SA node when blood pressure rises?

A. Acetylcholine

B. Dopamine

C. Epinephrine

D. Norepinephrine

Correct answer: A

Acetylcholine This question describes the baroreceptor reflex. When blood pressure increases, baroreceptors in the aortic arch and carotid sinus increase their firing rate. These signals travel to the cardiovascular control center in the medulla oblongata. The medulla responds by increasing parasympathetic (vagal) outflow to the heart and decreasing sympathetic outflow. The parasympathetic nerve fibers, part of the vagus nerve, innervate the sinoatrial (SA) node and atrioventricular (AV) node. At the SA node, these nerve endings release the neurotransmitter acetylcholine (ACh). ACh binds to muscarinic (M2) receptors on the pacemaker cells, which increases potassium permeability, hyperpolarizes the cell, and decreases the rate of spontaneous depolarization, thereby slowing the heart rate to help lower blood pressure. Epinephrine (C) and norepinephrine (D) are sympathetic neurotransmitters that would increase heart rate.

Question 36. A 30-year-old woman who recently lost her newborn is experiencing breast engorgement from milk production, putting her at risk for milk stasis and a possible breast abscess. Which medication can be used to prevent this?

A. Mifepristone

B. Cabergoline

C. Chlorpromazine

D. Metoclopramide

Correct answer: B

Cabergoline Lactation (breast milk production) is primarily stimulated by the hormone prolactin, which is released from the anterior pituitary gland. Prolactin secretion itself is tonically inhibited by dopamine from the hypothalamus. To suppress lactation, a dopamine agonist can be administered. Cabergoline is a potent, long-acting D2 dopamine receptor agonist that effectively suppresses prolactin secretion from the pituitary gland, thereby inhibiting milk production and relieving symptoms of engorgement. It is the drug of choice for the suppression of postpartum lactation. Metoclopramide (D) is a dopamine antagonist and can actually increase prolactin levels, causing galactorrhea. Chlorpromazine (C) is also a dopamine antagonist. Mifepristone (A) is a progesterone and glucocorticoid receptor antagonist used for medical termination of pregnancy.

Question 37. Which antidiabetic medication is linked to a higher risk of urinary tract infections?

A. Dapagliflozin

B. Sitagliptin

C. Pioglitazone

D. Metformin

Correct answer: A

Dapagliflozin Dapagliflozin belongs to the class of drugs known as sodium-glucose cotransporter 2 (SGLT2) inhibitors. These drugs work by blocking the reabsorption of glucose in the proximal convoluted tubules of the kidney, thereby promoting the excretion of glucose in the urine (glucosuria). While this mechanism effectively lowers blood glucose levels, the resulting high concentration of sugar in the urine creates a favorable environment for bacterial growth. This significantly increases the risk of genitourinary infections, including urinary tract infections (UTIs) and genital mycotic infections (yeast infections). Sitagliptin (B), a DPP-4 inhibitor, pioglitazone (C), a thiazolidinedione, and metformin (D) do not work by this mechanism and are not associated with a similar increased risk of UTIs.

Question 38. Which medication will not help slow the progression of kidney involvement in a 55-year- old patient with hyperglycemia and confirmed type 2 diabetes?

A. SGLT2 inhibitors

B. Finerenone

C. Hydrochlorothiazide

D. Angiotensin receptor blockers (ARBs)

Correct answer: C

Hydrochlorothiazide Managing diabetic nephropathy involves both glycemic and blood pressure

control. Angiotensin receptor blockers (ARBs) (D) and ACE inhibitors are first-line agents as they reduce intraglomerular pressure and albuminuria, providing specific renal protection beyond their blood pressure-lowering effects. More recently, SGLT2 inhibitors (A) have shown significant renal benefits, slowing the progression of diabetic kidney disease. Finerenone (B) is a newer non-steroidal mineralocorticoid receptor antagonist that has also demonstrated a reduction in the risk of CKD progression in patients with type 2 diabetes. In contrast, hydrochlorothiazide (C), a thiazide diuretic, is used to control blood pressure but does not offer the specific intrarenal protective effects seen with ARBs, SGLT2 inhibitors, or finerenone. It is not considered a primary agent for delaying the progression of diabetic kidney disease.

Question 39. Which antidiabetic medication is known to cause unexplained diarrhea as a side effect?

A. Pioglitazone

B. Sitagliptin

C. Glimepiride

D. Metformin

Correct answer: D

Metformin Metformin is a first-line biguanide oral hypoglycemic agent for type 2 diabetes. Its most frequently reported adverse effects are gastrointestinal in nature. Diarrhea is a very common side effect, often occurring at the initiation of therapy or with dose increases. Other common GI symptoms include nausea, abdominal discomfort, and a metallic taste. The mechanism is thought to involve effects on gut motility and absorption. These side effects are often transient and can be minimized by starting with a low dose and titrating slowly or by using an extended-release formulation. Pioglitazone (A) is associated with fluid retention and weight gain. Sitagliptin (B) is generally well-tolerated. Glimepiride (C), a sulfonylurea, carries a significant risk of hypoglycemia and weight gain.

Question 40. Which antibiotic can be safely prescribed for a 45-year-old patient with enterococcal endocarditis who has a known penicillin allergy causing rash and swelling?

A. Aztreonam

B. Vancomycin

C. Ceftriaxone

D. Piperacillin

Correct answer: B

Vancomycin Enterococcal endocarditis requires bactericidal therapy, often with a cell wall active agent. In a patient with a significant penicillin allergy, beta-lactam antibiotics are approached with caution. Piperacillin (D) is a penicillin derivative and is contraindicated. Ceftriaxone (C), a cephalosporin, has a low but present risk of cross-reactivity. Aztreonam (A) is

a monobactam with no cross-reactivity with penicillins, but it lacks activity against Gram-positive organisms like Enterococcus. Therefore, the safest and most effective alternative is Vancomycin, a glycopeptide antibiotic. It has a different mechanism of action (inhibiting cell wall synthesis by binding to D-Ala-D-Ala precursors) and has no structural similarity to beta-lactams, eliminating the risk of cross-allergenicity. It is a standard choice for serious Gram-positive infections in penicillin-allergic patients.

Question 41. Which of the following diuretics is correctly matched with its site of action? 1. Osmotic diuretics

A. Collecting ducts 2. Carbonic anhydrase in- hibitors

B. Proximal tubules 3. hiazides

C. Loop of Henle 4. Aldosterone antago- nists

D. Distal tu- bules

Correct answer: B

2 This question assesses knowledge of the primary sites of action for different classes of diuretics within the nephron. Let's analyze the pairs: 1 Osmotic diuretics (e.g., mannitol) act primarily on the proximal tubule and the descending limb of the loop of Henle, areas freely permeable to water. 2 Carbonic anhydrase inhibitors (e.g., acetazolamide) act on the proximal tubule, where they inhibit bicarbonate reabsorption. This is a correct match. 3 Thiazide diuretics (e.g., hydrochlorothiazide) act on the early part of the distal convoluted tubule. 4 Aldosterone antagonists (e.g., spironolactone) are potassium-sparing diuretics that act on the principal cells in the late distal tubule and the collecting duct. Therefore, the only correctly matched pair is number 2. FORENSIC MEDICINE

Question 42. Which of the following substances are antidotes for cyanide poisoning? 1. Amyl nitrite 2. Sodium nitrate 3. Sodium thiosulphate 4. Benzyl thiocyanate

A. 1,2,3

B. 1,2,3,4

C. 1,2

D. 1,3,4

Correct answer: A

1,2,3 The standard treatment for cyanide poisoning involves a multi-step approach using a specific kit of antidotes. The strategy is to convert hemoglobin to methemoglobin, which has a higher affinity for cyanide than cytochrome oxidase does. This is achieved by administering nitrites, such as inhaled amyl nitrite (1) followed by intravenous sodium nitrite (2). This sequesters the cyanide as cyanmethemoglobin. The second step is to enhance the body's natural detoxification pathway by providing a sulfur donor. Intravenous sodium thiosulfate (3) is administered, which allows the enzyme rhodanese to convert the cyanide from cyanmethemoglobin into the much less toxic thiocyanate, which is then excreted in the urine.

Benzyl thiocyanate (4) is not part of this standard antidote regimen.

Question 43. Match the following sexual paraphilias: a. Eonism 1. Sexual gratification by rubbing private parts against another person b. Necrophilia 2. Pain associated with sexual pleasure (Sa- dism) c. Frotteurism 3. Sexual gratification by intercourse with a dead body d. Algolagnia 4. Sexual pleasure derived from wearing clothes of the opposite sex NODIA page 85 INICET Examination Paper

A. A3 B2 C1 D4

B. A2 B3 C4 D1

C. A4 B3 C1 D2

D. A1 B4 C2 D3

Correct answer: C

A4 B3 C1 D2 This question requires matching terms for specific paraphilias with their definitions. 1. Eonism (also known as transvestic disorder) refers to deriving sexual pleasure from wearing the clothes of the opposite sex (a -> 4). 2. Necrophilia is a paraphilia involving sexual attraction or acts with corpses (b -> 3). 3. Frotteurism is the act of deriving sexual gratification by touching or rubbing one's genitals against a non-consenting person, typically in a crowded place (c -> 1). 4. Algolagnia is a broad term for deriving sexual pleasure from experiencing or inflicting pain. It encompasses both sadism (inflicting pain) and masochism (receiving pain) (d -> 2). Therefore, the correct sequence of matches is a-4, b-3, c-1, d-2.

Question 44. Which of the following is not associated with Korsakoff psychosis?

A. Confabulation

B. Polyneuropathy

C. Amnesia

D. Psychosis

Correct answer: B

Polyneuropathy Korsakoff psychosis is a chronic neuropsychiatric syndrome caused by thiamine (vitamin B1) deficiency, most commonly seen in chronic alcohol use. It primarily affects memory and cognition. The core features of Korsakoff psychosis include: Amnesia – especially severe anterograde amnesia, meaning inability to form new memories. Confabulation – patients fabricate stories to fill gaps in memory, without intent to deceive. Disorientation and cognitive impairment – sometimes loosely referred to as “psychosis” in exam contexts due to behavioral disturbances. Polyneuropathy, however, is not a defining feature of Korsakoff psychosis. Although chronic alcoholics may develop peripheral neuropathy due to nutritional deficiencies, this is a separate complication and not part of the core clinical features of Korsakoff syndrome itself. Therefore, the option not associated with Korsakoff psychosis is (B) Polyneuropathy.

Question 45. The World Medical Association’s 1970 Declaration of Oslo refers to

which statement?

A. Therapeutic abortion

B. Torture, degradation, or cruel treatment of prisoners

C. Ethical aspects for medical research

D. Hunger

Correct answer: A

Therapeutic abortion The World Medical Association (WMA) issues various declarations and statements on medical ethics. The Declaration of Oslo, first adopted in 1970 and subsequently amended, specifically addresses the issue of therapeutic abortion. It provides guidance to physicians regarding their ethical duties and personal convictions when faced with a request for the termination of a pregnancy. It affirms the physician's right to conscientious objection while also emphasizing the duty to ensure the patient receives adequate medical care. The WMA's statement on torture and treatment of prisoners (B) is the Declaration of Tokyo. The primary document on ethical aspects of medical research (C) is the Declaration of Helsinki. The WMA has also issued declarations on hunger (D), but the Declaration of Oslo is specific to therapeutic abortion.

Question 46. What is the proper sequence of examinations during a fetal autopsy to distinguish a live birth from a stillbirth?

A. Abdomen > Head > Thorax

B. Thorax > Head > Abdomen

C. Head Abdomen > Thorax

D. Head > Thorax > Abdomen

Correct answer: D

Head > Thorax > Abdomen In a medicolegal autopsy to determine live birth versus stillbirth, a specific sequence of dissection is followed to preserve key evidence. The head is examined first to look for signs of birth trauma, such as caput succedaneum or cephalhematoma, which indicate the fetus was alive during delivery. Next, the thorax is opened to perform the hydrostatic test on the lungs. This test determines if the lungs float in water, which is a crucial sign that the infant breathed after birth. The abdominal organs are examined last. Opening the abdomen first (A, B, C) could introduce air artifacts into the thoracic cavity or damage the diaphragm, potentially compromising the results of the hydrostatic test, which is the most critical piece of evidence for establishing live birth. Therefore, the correct sequence is Head > Thorax > Abdomen.

Question 47. A 40-year-old woman ingested a white rodenticide powder and now has a potassium level of 2.5 mEq/L, an irregular pulse, muscle paralysis, and an ECG showing multiple ventricular ectopics. What poison is most likely responsible?

A. Aluminum phosphide

B. Zinc phosphide

C. Warfarin toxicity

D. Barium carbonate

Correct answer: D

Barium carbonate The clinical presentation is highly suggestive of barium poisoning. Barium carbonate is a component of some rodenticides. Barium ions are potent toxins that block potassium channels, leading to a rapid and severe influx of potassium into cells from the extracellular fluid. This causes profound hypokalemia, as seen in the patient (K+ of 2.5 mEq/L). The severe hypokalemia is responsible for the characteristic symptoms of barium poisoning, including muscle weakness progressing to paralysis and significant cardiac arrhythmias, such as ventricular ectopics, due to altered membrane excitability. Phosphide-based rodenticides (A, B) cause a different toxicity profile related to phosphine gas production. Warfarin toxicity (C) causes coagulopathy and bleeding, not acute hypokalemia and paralysis. MICROBIOLOGY

Question 48. Assertion

A. : Myocarditis is seen as a complication in faucial diphtheria. Reason (R) : It is due to bacteremia.

B. Assertion is true, reason is true, and reason is not the correct explanation of the assertion.

C. Assertion is true, reason is false.

D. Assertion is false, reason is true.

Correct answer: C

Assertion is true, reason is false. The assertion is true: Myocarditis is a well-known and serious complication of faucial diphtheria, caused by Corynebacterium diphtheriae. However, the reason is false. Diphtheria is primarily a toxin-mediated disease. The bacterium itself typically remains localized in the pharynx and does not cause a significant bacteremia (widespread presence of bacteria in the blood). The systemic complications, including myocarditis, polyneuropathy, and renal damage, are caused by the powerful diphtheria exotoxin produced by the bacteria at the local site of infection. This toxin is absorbed into the bloodstream and travels to distant organs like the heart, where it inhibits protein synthesis and causes cellular damage. Therefore, while myocarditis is a true complication, it is caused by toxemia, not bacteremia.

Question 49. FISH can detect all except

A. Amplification

B. Deletion

C. Translocation

D. Point mutation

Correct answer: D

Point mutation Fluorescent in situ hybridization (FISH) is a cytogenetic technique that uses

fluorescently labeled DNA probes to visualize specific DNA sequences on chromosomes. It is highly effective for detecting large-scale chromosomal abnormalities. It can identify gene amplification (A), seen as multiple copies of a fluorescent signal for a specific gene. It can also identify deletions (B) of chromosomal regions, indicated by the absence of a fluorescent signal where one is expected. It can identify translocations (C), where a piece of one chromosome breaks off and attaches to another (e.g., using fusion or break-apart probes). However, FISH is not sensitive enough to detect very small-scale changes like point mutations (D), which involve a change in a single DNA base pair. Detecting point mutations requires DNA sequencing or allele-specific PCR techniques.

Question 50. Match each blood product with its corresponding shelf life: a. Single donor platelet 1. 24 hours b. Packed red blood cells 2. 5 days c. Cryoprecipitate/fresh frozen plasma 3. 42 days d. Granulocyte concentrate 4. 1 year

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

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

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

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

Correct answer: A

a-2, b-3, c-4, d-1 The shelf life of blood products varies based on the component and storage conditions. 1. Single donor platelets (apheresis platelets) are stored at room temperature with continuous agitation to maintain viability and function, and have a short shelf life of 5 to 7 days (a -> 2). 2. Packed red blood cells stored with additive solutions like ADSOL have a shelf life of 42 days when refrigerated (b -> 3). 3. Cryoprecipitate and Fresh Frozen Plasma (FFP) are stored frozen at -18°C or colder and have a long shelf life of 1 year (c -> 4). 4. Granulocyte concentrates are highly labile, stored at room temperature without agitation, and must be transfused as soon as possible, with a maximum shelf life of just 24 hours (d -> 1). The correct matching is therefore a-2, b-3, c-4, d-1.

Question 51. Which of the following is used in the treatment of Hemophilia B?

A. Fresh frozen plasma

B. Cryoprecipitate

C. Factor VIII

D. Cryo-poor plasma

Correct answer: A

Fresh frozen plasma Hemophilia B, also known as Christmas disease, is an X-linked recessive bleeding disorder caused by a deficiency of coagulation Factor IX. The mainstay of treatment is replacement of the deficient factor. While recombinant or purified Factor IX concentrates are the ideal treatment, Fresh Frozen Plasma (FFP) can be used as it contains all the coagulation factors, including Factor IX. Cryoprecipitate (B) is rich in Factor VIII, fibrinogen, and von

Willebrand factor, making it the treatment for Hemophilia A, but it contains very little Factor IX. Factor VIII concentrate (C) is specifically for Hemophilia A. Cryo-poor plasma (D) is the plasma remaining after cryoprecipitate has been removed, so it is deficient in the very factors found in cryoprecipitate and is not used for hemophilia.

Question 52. Which disorder is characterized by recurrent infections with catalase-positive organisms?

A. X-linked hypogammaglobulinemia

B. Chronic granulomatous disease (CGD)

C. Severe combined immunodeficiency (SCID)

D. Chediak-Higashi syndrome

Correct answer: B

Chronic granulomatous disease (CGD) Chronic Granulomatous Disease (CGD) is a primary immunodeficiency caused by defects in the NADPH oxidase enzyme complex in phagocytes (neutrophils, macrophages). This defect impairs the phagocyte's ability to produce reactive oxygen species (the "respiratory burst") needed to kill ingested microorganisms. As a result, patients with CGD are highly susceptible to recurrent, severe infections. A key feature is that they can handle catalase-negative organisms (which produce their own hydrogen peroxide that the phagocyte can use), but they cannot kill catalase-positive organisms (e.g., Staphylococcus aureus, Serratia, Aspergillus) because these organisms break down any hydrogen peroxide. X-linked hypogammaglobulinemia (A) affects antibody production. SCID (C) affects both B and T cells. Chediak-Higashi (D) involves defective phagolysosome fusion.

Question 53. A patient treated with antibiotics for fever and sore throat develops eosinophilia and has WBC casts in the urine. What is the most likely diagnosis?

A. Chronic glomerulonephritis (CGN)

B. Chronic pyelonephritis (CPN)

C. Lupus nephritis

D. Interstitial nephritis

Correct answer: D

Interstitial nephritis This clinical scenario points towards Acute Interstitial Nephritis (AIN), a condition characterized by inflammation of the renal interstitium and tubules. The classic triad of AIN is fever, rash, and eosinophilia, although not all features are always present. A key diagnostic finding in the urinalysis is the presence of white blood cell (WBC) casts, which indicates inflammation within the renal tubules. AIN is most commonly a hypersensitivity reaction to drugs, particularly antibiotics (like penicillins and cephalosporins), NSAIDs, and proton pump inhibitors. The recent history of an infection treated with antibiotics, followed by renal signs and eosinophilia, makes drug-induced AIN the most likely diagnosis. Glomerulonephritis (A, C) would typically present with RBC casts and significant proteinuria.

Pyelonephritis (B) is a bacterial infection of the kidney, which can cause WBC casts but is less associated with eosinophilia.

Question 54. Which of the following organisms shows parthenogenesis?

A. Ancylostoma

B. Trichuris

C. Strongyloides

D. Ascaris

Correct answer: C

Strongyloides Parthenogenesis is a form of reproduction in which an ovum can develop into a new individual without fertilization by a male gamete. Among the given intestinal nematodes, Strongyloides stercoralis is unique in its ability to undergo a free-living cycle as well as a parasitic cycle that involves parthenogenesis. In the parasitic cycle within the human host, only females are present in the small intestine. These parasitic females produce eggs via parthenogenesis. The larvae that hatch can either pass in the feces to start a free-living cycle or develop into infective filariform larvae within the gut, leading to autoinfection. Ascaris (D), Ancylostoma (A), and Trichuris (B) all reproduce sexually within the definitive human host, requiring both male and female worms.

Question 55. What is the best investigation for malaria speciation identification?

A. Thick smear

B. Thin smear with acridine orange

C. Thin smear with Giemsa

D. Quantitative Buffy Coat (QBC)

Correct answer: C

Thin smear with Giemsa The gold standard for the diagnosis of malaria involves microscopic examination of blood smears. Two types of smears are prepared. The thick smear is used for screening and detection, as it concentrates a larger volume of blood, making it easier to find parasites, especially in low-density infections. However, the red blood cells are lysed, distorting parasite morphology. The thin smear is used for species identification and quantification of parasitemia. In a thin smear, the red blood cells remain intact, allowing for clear visualization of the parasite's morphology (e.g., ring size, presence of Schüffner's dots, gametocyte shape), which is essential for distinguishing between Plasmodium species like P. falciparum and P. vivax. Giemsa stain is the preferred stain for both smears. QBC (D) and fluorescent stains (B) are sensitive screening tools but are inferior to the Giemsa-stained thin smear for speciation.

Question 56. A woman presents with a yellowish discharge, and staining reveals gram-negative diplococci. What is the most likely causative organism?

A. Neisseria gonorrhoeae

B. Streptococcus

C. Enterococcus

D. Both a & b

Correct answer: A

Neisseria gonorrhoeae The description of a yellowish, purulent discharge (cervicitis or urethritis) combined with the microscopic finding of Gram-negative diplococci is the classic presentation of gonorrhea, an infection caused by Neisseria gonorrhoeae. The characteristic appearance shows kidney-bean-shaped pairs of Gram-negative cocci, often located within the cytoplasm of neutrophils. Streptococcus species (B) are Gram-positive cocci, typically arranged in chains. Enterococcus species (C) are also Gram-positive cocci, appearing in pairs or short chains. Therefore, the combination of clinical symptoms and the specific Gram stain morphology is diagnostic for Neisseria gonorrhoeae.

Question 57. Assertion: Plasmodium falciparum doesn't show the schizont stage in the peripheral blood. Reason: This is due to cytoadherence to the cerebral endothelial cells.

A. Assertion is true, reason is true, and reason is the correct explanation of the assertion.

B. Assertion is true, reason is true, and reason is not the correct explanation of the assertion.

C. Assertion is true, reason is false.

D. Assertion is false, reason is true.

Correct answer: A

Assertion is true, reason is true, and reason is the correct explanation of the assertion. The assertion is true. In a typical Plasmodium falciparum infection, only early ring-stage trophozoites and gametocytes are seen in the peripheral blood smear. The more mature stages, including late trophozoites and schizonts, are sequestered in the microvasculature of deep organs and are not typically seen in circulation. The reason is also true and correctly explains the assertion. P. falciparum-infected red blood cells express a protein (PfEMP1) on their surface that mediates cytoadherence to endothelial receptors (like ICAM-1) in capillaries of organs like the brain, placenta, and lungs. This sequestration of mature forms in the deep vasculature is a key pathogenic mechanism of falciparum malaria, leading to microcirculatory obstruction and complications like cerebral malaria. It is also the reason why these stages are absent from peripheral blood smears.

Question 58. Match the following viruses with their corresponding nucleic acid type: 1. Rotavirus A. ssRNA 2. SARS-CoV-2 B. dsRNA 3. Parvovirus C. dsDNA 4. Human papillomavirus (HPV) D. ssDNA

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

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

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

D. 1-D, 2-A, 3-B, 4-C NODIA page 87 INICET Examination Paper

Correct answer: B

1-B, 2-A, 3-D, 4-C This question requires knowledge of the genomic composition of different viruses. 1. Rotavirus, a member of the Reoviridae family, is unique for having a segmented double-stranded RNA (dsRNA) genome (1 - B). 2. SARS-CoV-2, a coronavirus, has a non-segmented, positive-sense single-stranded RNA (ssRNA) genome (2 - A). 3. Parvovirus B19, from the Parvoviridae family, is one of the smallest viruses and possesses a single-stranded DNA (ssDNA) genome (3 - D). 4. Human papillomavirus (HPV), from the Papillomaviridae family, has a circular double-stranded DNA (dsDNA) genome (4 - C). Therefore, the correct set of matches is 1-B, 2-A, 3-D, 4-C.

Question 59. A patient presents with fever and retro-orbital pain suggestive of dengue fever. Which test should be performed next to confirm the diagnosis?

A. NS1 antigen test

B. Viral culture

C. PCR

D. IgM ELISA

Correct answer: A

NS1 antigen test The choice of diagnostic test for dengue fever depends on the timing of the illness. The patient presents with acute symptoms of fever and retro-orbital pain, indicating the early, viremic phase of the infection (typically the first 5-7 days). During this period, the dengue virus and its components are present in the blood. The NS1 (Non-Structural Protein 1) antigen test is an excellent diagnostic tool during this acute phase. It is a rapid immunoassay that detects the NS1 protein, which is secreted into the blood during viral replication. It has high sensitivity and specificity in the first week of illness. PCR (C) can also detect viral RNA during this phase but is more complex and expensive. IgM antibodies (D) typically become detectable later, around day 5-7 of the illness and onwards. Viral culture (B) is slow and not practical for routine diagnosis.

Question 60. In ABO blood grouping, which of the following statements is FALSE?

A. IgM is the most common antibody in ABO

B. ABO antibodies are natural and present since birth

C. ABO antigens are carbohydrate antigens

D. Antibodies are present only if the antigen is absent

Correct answer: B

ABO antibodies are natural and present since birth Let's evaluate the statements about the ABO blood group system. A. The naturally occurring anti-A and anti-B antibodies ("isohemagglutinins") are predominantly of the IgM class. This is true. C. The A and B antigens are oligosaccharide chains attached to proteins or lipids on the red blood cell surface. They are

carbohydrate antigens. This is true. D. This describes Landsteiner's law : if an ABO antigen is present on an individual's red blood cells, the corresponding antibody will be absent from their plasma, and vice versa. This is true. B. ABO antibodies are often called "natural" because they arise without prior exposure to foreign red blood cells. However, they are not present at birth. An infant's initial antibodies are maternal IgG. The infant's own production of anti-A or anti-B IgM antibodies begins at around 3-6 months of age, likely stimulated by exposure to similar carbohydrate antigens on gut bacteria. Therefore, the statement that they are present since birth is false.

Question 61. What is the preferred treatment for Enterococcus in a patient who has a penicillin allergy?

A. Vancomycin

B. Streptomycin

C. Cephalosporin

D. Rifampicin

Correct answer: A

Vancomycin Enterococci are intrinsically resistant to many antibiotics, including cephalosporins (C). The standard treatment for serious enterococcal infections (like endocarditis) is a cell wall active agent, typically a penicillin like ampicillin or penicillin G, often in combination with an aminoglycoside like gentamicin or streptomycin (B) for synergy. In a patient with a significant penicillin allergy, beta-lactams are avoided. The alternative drug of choice for serious enterococcal infections in penicillin-allergic patients is vancomycin, a glycopeptide antibiotic that also inhibits cell wall synthesis but has no cross-allergenicity with penicillins. It is often combined with an aminoglycoside for bactericidal effect. Rifampicin (D) is not a primary agent for enterococcal infections.

Question 62. Which of the following does NOT have a polysaccharide capsule?

A. Haemophilus influenzae type B (HIB)

B. Pneumococcus

C. Hepatitis B virus (HBV)

D. Neisseria meningitidis

Correct answer: C

Hepatitis B virus (HBV) A polysaccharide capsule is a major virulence factor for many pathogenic bacteria, as it helps them evade phagocytosis. Haemophilus influenzae type b (Hib) (A), Streptococcus pneumoniae (Pneumococcus) (B), and Neisseria meningitidis (D) are all classic examples of encapsulated bacteria. Their polysaccharide capsules are the targets for the conjugate vaccines developed to protect against the invasive diseases they cause (meningitis, pneumonia, epiglottitis). In contrast, Hepatitis B virus (HBV) (C) is a virus, not a bacterium. Viruses have a protein capsid and, in the case of HBV, a lipid envelope containing surface

antigens (HBsAg). They do not possess a polysaccharide capsule.

Question 63. What is the best method for sterilizing disposable pipettes?

A. Microwave

B. Ethanol

C. Autoclave

D. Hot air oven

Correct answer: C

Autoclave Sterilization is the process of completely eliminating all forms of microbial life, including spores. The choice of method depends on the material. Disposable plastic pipettes are heat-sensitive and would melt or deform in a hot air oven (D), which uses dry heat (160-180°C). While some plastics are microwavable (A), a standard microwave does not provide sterilizing conditions. Ethanol (B) is a disinfectant, not a sterilant, as it is not sporicidal. The most appropriate method for sterilizing heat-sensitive plastics like disposable pipettes is typically ethylene oxide gas or gamma irradiation by the manufacturer. However, among the given common laboratory options, the autoclave (C) is the most effective. It uses pressurized steam at 121°C. While many plastics cannot be autoclaved, autoclavable plastics (like polypropylene) are common in labs. Assuming the pipettes are autoclavable plastic, this is the best option for achieving sterility. PSM

Question 64. Which of the following is NOT a polysaccharide vaccine?

A. Hepatitis B vaccine

B. Pneumococcal vaccine

C. Meningococcal vaccine

D. Haemophilus influenzae type B (HIB) vaccine

Correct answer: A

Hepatitis B vaccine Vaccines are classified based on the type of antigen they contain. The pneumococcal vaccine (B), meningococcal vaccine (C), and Haemophilus influenzae type b (Hib) vaccine (D) are all based on the polysaccharide capsules of these bacteria. They are available as either pure polysaccharide vaccines (for older individuals) or, more commonly, as conjugate vaccines where the polysaccharide is linked to a protein carrier to enhance immunogenicity, especially in infants. In contrast, the Hepatitis B vaccine (A) is a subunit vaccine produced by recombinant DNA technology. It contains a single viral protein, the Hepatitis B surface antigen (HBsAg), not a polysaccharide. Therefore, the Hepatitis B vaccine is a protein-based vaccine, not a polysaccharide vaccine.

Question 65. Patients who need urgent, life-saving treatment are placed under which triage color category?

A. Red

B. Yellow

C. Green

D. Black

Correct answer: A

Red Triage is the process of prioritizing patients based on the severity of their condition, especially in mass casualty incidents or busy emergency departments. A color-coded system is commonly used. 1. Red (Priority 1) : Indicates patients with immediate, life-threatening injuries (e.g., airway obstruction, severe bleeding, shock) who have a high chance of survival if they receive immediate medical intervention. 2. Yellow (Priority 2) : For patients with serious injuries that are not immediately life-threatening but require urgent care (e.g., major fractures, open wounds). 3. Green (Priority 3) : The "walking wounded"; patients with minor injuries who can wait for treatment (e.g., minor cuts, sprains). 4. Black (Priority 0) : For patients who are deceased or have injuries so severe that they are unlikely to survive even with medical care. Therefore, patients requiring immediate life-threatening care are tagged as Red.

Question 66. What is the most reliable indicator of some dehydration?

A. Sunken eyes

B. Lethargy

C. Thirst

D. Delayed skin pinch

Correct answer: C

Thirst In the assessment of dehydration, especially according to WHO/IMNCI guidelines, thirst is considered the most reliable and early indicator of some dehydration. It reflects the body’s physiological response to fluid deficit. When plasma osmolality rises or intravascular volume falls, osmoreceptors in the hypothalamus stimulate the thirst center, prompting the child or patient to drink eagerly. Other signs like sunken eyes and delayed skin pinch can help in assessment but are less reliable individually. Sunken eyes may normally be present in malnourished children, and skin turgor can vary with age and nutritional status. Lethargy is usually a sign of more severe dehydration rather than some dehydration. Therefore, among the given options, thirst is the most consistent and reliable clinical indicator of some dehydration.

Question 67. Which of the following statements about the rotavirus vaccine is incorrect?

A. Oral vaccine

B. Cannot be given after 6 months of age Click Here to Buy book on Amazon MEDINK

C. Live vaccine

D. Available as monovalent and pentavalent

Correct answer: B

Cannot be given after 6 months of age Let's examine the statements about the rotavirus

vaccine. A. It is an oral vaccine, administered as liquid drops. This is correct. C. It is a live-attenuated vaccine, containing weakened forms of the rotavirus. This is correct. D. It is available in different formulations, including a monovalent (one strain) version and a pentavalent (five strains) version. This is correct. B. There are specific age restrictions for the rotavirus vaccine series due to a small, potential risk of intussusception. The first dose should not be given after 15 weeks of age, and the series should not be completed after 8 months (32 weeks) of age. The statement that it cannot be given after 6 months is not strictly accurate, as the final cut-off is 8 months. This makes it the incorrect statement among the choices.

Question 68. A 5-year-old child has the following anthropometric findings: • Weight-for-age < -3.2 SD • Height-for-age < -2.5 SD • Weight-for-height < -1.7 SD What is the most likely diagnosis?

A. Acute malnutrition

B. Chronic malnutrition

C. Acute on chronic malnutrition

D. Moderate acute malnutrition

Correct answer: B

Chronic malnutrition Interpretation of anthropometric indices: 1. Weight-for-age < –3.2 SD indicates severe underweight, but this index alone does not distinguish between acute and chronic malnutrition. 2. Height-for-age < –2.5 SD indicates stunting, which reflects long-standing nutritional deficiency. Stunting is the hallmark of chronic malnutrition and develops over time due to prolonged inadequate nutrition or recurrent infections. 3. Weight-for-height < –1.7 SD is not below –2 SD, so the child does not meet criteria for wasting. Wasting (weight-for-height < –2 SD) indicates acute malnutrition. Since this child's weight-for-height is relatively preserved, there is no significant acute component. Because the child has significant stunting (low height-for-age) without evidence of wasting, the pattern is consistent with long-term nutritional deficiency rather than recent weight loss. Therefore, the most likely diagnosis is chronic malnutrition (stunting).

Question 69. Which anti-leprosy medication is known to cause skin hyperpigmentation?

A. Clofazimine

B. Rifampicin

C. Dapsone

D. Ofloxacin

Correct answer: A

Clofazimine Clofazimine is a phenazine dye used as a component of multidrug therapy (MDT) for multibacillary leprosy, primarily for its anti-inflammatory properties in preventing and managing lepra reactions. A very common and characteristic side effect of clofazimine is skin

discoloration. It can cause a reddish-brown to blackish hyperpigmentation, which is most prominent in sun-exposed areas and within the leprous lesions themselves. The sclera, sweat, and urine can also be discolored. Rifampicin (B) can cause reddish-orange discoloration of body fluids but not skin hyperpigmentation. Dapsone (C) can cause a rash or, rarely, a severe hypersensitivity syndrome. Ofloxacin (D) is a fluoroquinolone with a different side effect profile.

Question 70. Choose the correct option regarding graft survival.

A. CD4 and CD8 both play a role in graft rejection

B. CD8 only plays a role in graft rejection

C. CD4 only plays a role in graft rejection

D. None of the above

Correct answer: A

CD4 and CD8 both play a role in graft rejection Allograft rejection is a complex cell-mediated immune response orchestrated primarily by T lymphocytes that recognize foreign MHC molecules on the donor graft. Both major subsets of T cells are critically involved. CD4+ helper T cells play a central role by recognizing foreign MHC class II molecules on antigen-presenting cells from the graft. Once activated, they orchestrate the rejection process by producing cytokines that activate macrophages and help activate other immune cells. CD8+ cytotoxic T lymphocytes (CTLs) recognize foreign MHC class I molecules expressed on all nucleated cells of the graft. Upon activation, these CTLs directly kill the graft cells, leading to tissue destruction. Therefore, both CD4+ and CD8+ T cells play distinct but essential and cooperative roles in the process of graft rejection.

Question 71. On the fifth day of dengue hemorrhagic fever, which diagnostic test is most appropriate?

A. IgM ELISA

B. NS1 Antigen

C. RT-PCR

D. Viral culture

Correct answer: A

IgM ELISA The choice of diagnostic test for dengue infection is highly dependent on the timing of the illness. In the early febrile phase (days 1-5), the virus is circulating, making tests that detect the virus or its components, like the NS1 antigen test (B) or RT-PCR (C), most useful. However, as the illness progresses beyond day 5, the viral load and NS1 antigen levels decline rapidly and may become undetectable. Concurrently, the host immune response begins, with the production of antibodies. IgM antibodies are the first to appear, typically becoming detectable around day 4-5 of the illness and remaining elevated for several months. Therefore, on Day 5, while NS1 may still be positive, the most reliable diagnostic test to confirm a recent infection is an IgM ELISA. ENT

Question 72. Which of the following signs is not typically seen in allergic rhinitis?

A. Allergic shiners

B. Allergic salute

C. Otto veraguth folds

D. Denis morgan lines

Correct answer: C

Otto veraguth folds Allergic rhinitis is associated with several characteristic physical signs resulting from chronic nasal congestion and itching. Allergic shiners (A) are dark circles under the eyes caused by venous congestion. The allergic salute (B) is the habit of rubbing the nose upward to relieve itching, which can lead to a transverse nasal crease. Dennie-Morgan lines (D) are extra skin folds or creases below the lower eyelids, associated with allergic conditions. In contrast, Otto-Veraguth folds (C) are a clinical sign characterized by an oblique fold in the medial part of the upper eyelid. This sign is not associated with allergic rhinitis but is considered a classic, though non-specific, sign of depression (melancholic fold).

Question 73. A 13-year-old boy has had right-sided nasal blockage and repeated nosebleeds for six months. What is the most probable diagnosis?

A. JNA

B. Allergic rhinitis

C. Coagulation disorder

D. Antrochoanal polyp

Correct answer: A

JNA The clinical triad of unilateral nasal obstruction, recurrent and often severe epistaxis (nosebleeds), in an adolescent male is the classic presentation of a Juvenile Nasopharyngeal Angiofibroma (JNA). JNA is a benign but locally aggressive and highly vascular tumor that originates in the sphenopalatine foramen and typically extends into the nasal cavity and nasopharynx. While an antrochoanal polyp (D) can cause unilateral obstruction, it does not typically cause recurrent, severe bleeding. Allergic rhinitis (B) causes bilateral symptoms of congestion and rhinorrhea, not significant epistaxis. A coagulation disorder (C) would likely cause bleeding from other sites as well and would not present with a mass causing obstruction. The patient's age, sex, and specific combination of symptoms are highly suggestive of JNA.

Question 74. Which intervention should not be performed in an 8-year-old boy with bilateral sensorineural hearing loss?

A. Preferential sitting in the classroom

B. Adenoidectomy with grommet insertion

C. Hearing aid

D. Cochlear implant

Correct answer: B

Adenoidectomy with grommet insertion Sensorineural hearing loss (SNHL) involves damage to the inner ear (cochlea) or the auditory nerve pathway to the brain. Management focuses on amplification and rehabilitation. A hearing aid (C) is the standard intervention for amplifying sound for individuals with mild to severe SNHL. For profound SNHL where hearing aids provide insufficient benefit, a cochlear implant (D), which directly stimulates the auditory nerve, is the treatment of choice. Educational accommodations like preferential sitting in the classroom (A) are also essential. However, adenoidectomy with grommet insertion (B) is a surgical treatment for conductive hearing loss, specifically for conditions like chronic otitis media with effusion ("glue ear"). This procedure addresses middle ear pathology and would provide no benefit for a patient with sensorineural hearing loss.

Question 75. Which of the following sign is not associated with otitis media with effusion?

A. Mostly bilateral

B. AD curve on tympanometry with conductive hearing loss

C. Mostly resolves on its own

D. None

Correct answer: B

AD curve on tympanometry with conductive hearing loss Otitis Media with Effusion (OME), or "glue ear," is characterized by the presence of non-purulent fluid in the middle ear space. It is often bilateral (A) and, in many cases, is self-limiting and resolves on its own (C) within three months. The fluid in the middle ear dampens the movement of the tympanic membrane and ossicles, leading to conductive hearing loss. The characteristic finding on tympanometry is a Type B curve (a flat line), indicating poor eardrum mobility due to the fluid. A Type AD curve (deep or hypermobile) signifies ossicular chain discontinuity or a flaccid tympanic membrane, which is the opposite of what is seen in OME. Therefore, an AD curve is not associated with otitis media with effusion.

Question 76. A 42-year-old obese man presents with disrupted sleep and daytime sleepiness. Which of the following statements is incorrect?

A. Apnea with awakening

B. Apnea with fall in saturation

C. Pharyngeal muscle contraction increases OSA

D. Apnea with hypercapnia

Correct answer: C

Pharyngeal muscle contraction increases OSA The patient's symptoms are classic for Obstructive Sleep Apnea (OSA). During sleep, the upper airway muscles relax, leading to partial or complete collapse and obstruction. This obstruction causes episodes of apnea (cessation of breathing), which lead to a fall in oxygen saturation (B) and a rise in carbon dioxide

(hypercapnia, D). These physiological changes trigger brief arousals or awakenings from sleep (A) to re-establish airway patency, resulting in fragmented sleep and daytime somnolence. The underlying pathology is a relaxation or hypotonia of the pharyngeal dilator muscles during sleep. Therefore, contraction of these muscles would open the airway and alleviate obstruction, not increase it. The statement that pharyngeal muscle contraction increases OSA is incorrect.

Question 77. Which structure passes between the superior and middle pharyngeal constrictor muscles?

A. Glossopharyngeal nerve

B. Stylopharyngeus muscle

C. Pharyngeal branch of vagus nerve

D. Superior laryngeal artery

Correct answer: B

Stylopharyngeus muscle The stylopharyngeus muscle arises from the styloid process of the temporal bone and descends between the superior and middle pharyngeal constrictor muscles to enter the pharyngeal wall. It then spreads out within the pharynx and helps elevate the pharynx during swallowing and speech. Importantly, the glossopharyngeal nerve (CN IX) accompanies the stylopharyngeus muscle and also passes between the superior and middle constrictors to supply it. However, in standard anatomical descriptions and exam questions, the structure specifically noted as passing between these two constrictors is the stylopharyngeus muscle. The pharyngeal branch of the vagus nerve contributes to the pharyngeal plexus on the outer surface of the pharynx, and the superior laryngeal artery does not pass between these two constrictor muscles. Therefore, the correct answer is Stylopharyngeus muscle.

Question 78. In a child who presents with unilateral watering and photophobia, which condition is the least likely diagnosis?

A. Congenital glaucoma

B. Congenital nasolacrimal duct obstruction (NLDO)

C. Congenital entropion

D. Congenital distichiasis

Correct answer: D

Congenital distichiasis In a child with unilateral watering (epiphora) and photophobia, the likely causes are conditions that irritate the cornea or increase intraocular pressure. Congenital glaucoma commonly presents with watering, photophobia, and blepharospasm due to corneal edema and raised intraocular pressure. Congenital nasolacrimal duct obstruction (NLDO) causes persistent watering due to blockage of tear drainage, although photophobia is usually absent. Congenital entropion leads to inward turning of the eyelid, causing lashes to rub against the cornea, producing irritation, watering, and photophobia. Congenital distichiasis is a condition where an extra row of eyelashes arises from the meibomian gland openings. While it can cause

mild irritation, it is often bilateral and may be asymptomatic in children. Severe photophobia and significant unilateral watering are less typical. Therefore, among the given options, congenital distichiasis is the least likely diagnosis.

Question 79. Which of the following is not an action of the superior oblique muscle?

A. Depression

B. Intorsion

C. Abduction

D. Adduction

Correct answer: D

Adduction The superior oblique muscle, innervated by the trochlear nerve (CN IV), has three actions on the eyeball. Its primary action is intorsion (B), which is rotational movement of the top of the cornea toward the nose. Its secondary action is depression (A), moving the eye downward, which is most prominent when the eye is adducted. Its tertiary action is abduction (C), moving the eye outward, away from the nose. The muscle that performs adduction (moving the eye inward) is primarily the medial rectus, with contributions from the superior and inferior recti muscles. The superior oblique abducts the eye, it does not adduct it. Therefore, adduction is not an action of the superior oblique muscle.

Question 80. A 40-year-old man reports experiencing flashes of light. What is the most likely underlying cause?

A. Retinal detachment

B. CRAO (Central Retinal Artery Occlusion)

C. SAH (Subarachnoid Hemorrhage)

D. CRVO (Central Retinal Vein Occlusion)

Correct answer: A

Retinal detachment The symptom of photopsia, described as seeing flashes of light, is a classic sign of vitreoretinal traction. This occurs when the vitreous gel inside the eye pulls on the light-sensitive retina. This mechanical stimulation of the photoreceptors is perceived as flashes of light. Vitreoretinal traction is the primary mechanism leading to a posterior vitreous detachment (PVD), which can in turn cause a retinal tear and progress to a full retinal detachment. While other conditions can cause visual disturbances, sudden, painless flashes of light, especially when accompanied by new floaters, are highly suggestive of a PVD or retinal tear/detachment and constitute an ophthalmic emergency. CRAO (B) and CRVO (D) typically cause sudden, painless loss of vision, not flashes. SAH (C) can cause headache and visual changes but not typically isolated photopsia.

Question 81. An 80-year-old patient presents with eye pain, redness, and decreased vision. IOP is 16 mmHg in the right eye and 50 mmHg in the left. The left eye shows

a deep anterior chamber flare, a white cataractous lens, and an enlarged lens. What is the most likely diagnosis?

A. Phacolytic glaucoma

B. Phacomorphic glaucoma

C. Fuchs' heterochromic uveitis

D. Malignant glaucoma

Correct answer: A

Phacolytic glaucoma The patient has a mature, white (hyper-mature) cataractous lens. Phacolytic glaucoma is a type of secondary open-angle glaucoma caused by leakage of high-molecular-weight lens proteins through the capsule of a hyper-mature cataract. These proteins are ingested by macrophages in the anterior chamber, which then obstruct the trabecular meshwork, leading to a significant rise in intraocular pressure (IOP), corneal edema, and inflammation (flare). The key features are a hyper-mature cataract, deep anterior chamber with flare, and very high IOP, which match the description. Phacomorphic glaucoma (B) is caused by an intumescent (swollen) cataract physically pushing the iris forward, causing angle closure, which would result in a shallow, not deep, anterior chamber.

Question 82. What is anisometropia?

A. Difference in the color of the iris

B. Difference in refractive error

C. Difference in axial length/optical distance

D. Difference in visual acuity

Correct answer: B

Difference in refractive error Anisometropia is a condition where the two eyes have a significant difference in their refractive error. For example, one eye might be myopic (nearsighted) while the other is hyperopic (farsighted), or both could be myopic but to a significantly different degree. This difference in refractive power causes the brain to receive two differently focused images, which can lead to asthenopia (eye strain), headaches, and amblyopia ("lazy eye") in children if not corrected, as the brain may learn to suppress the image from the more out-of-focus eye. A difference in the color of the iris (A) is heterochromia. A difference in axial length (C) is often the underlying cause of anisometropia but is not the definition itself. A difference in visual acuity (D) can be a consequence of uncorrected anisometropia leading to amblyopia.

Question 83. A patient reports losing vision in the superior quadrant for the past week and has untreated rheumatic heart disease. What is the most likely diagnosis?

A. CRAO

B. CRVO

C. BRAO

D. BRVO

Correct answer: C

BRAO The patient's history of rheumatic heart disease (RHD) places them at risk for cardiac valve vegetations and atrial fibrillation, both of which are sources of emboli. Sudden, painless vision loss affecting a specific quadrant of the visual field is characteristic of an occlusion of a branch of the retinal artery or vein. An arterial occlusion typically causes a more profound and sudden visual field defect than a venous occlusion. A Branch Retinal Artery Occlusion (BRAO) occurs when an embolus lodges in one of the branches of the central retinal artery. This results in ischemia and infarction of the retinal area supplied by that branch, causing a visual field defect that corresponds to the affected retinal quadrant. A Central Retinal Artery Occlusion (CRAO) (A) would cause vision loss in the entire eye, not just a quadrant. Venous occlusions (B, D) typically cause a less dense visual field defect.

Question 84. What is the most common cause of proptosis in the middle age group?

A. Ocular hemangioma

B. Thyroid disorder

C. Granulomatosis in pregnancy

D. Sarcoidosis

Correct answer: B

Thyroid disorder Proptosis, or exophthalmos, is the forward protrusion of the eyeball. In adults and the middle-aged population, the most common cause of both unilateral and bilateral proptosis is Thyroid Eye Disease (TED), also known as Graves' ophthalmopathy. This is an autoimmune condition associated with Graves' disease (hyperthyroidism). The autoimmune process targets orbital fibroblasts, leading to inflammation and swelling of the extraocular muscles and an increase in orbital fat volume. This expansion of the orbital contents within the fixed bony orbit pushes the eyeballs forward. While other conditions like orbital tumors (e.g., cavernous hemangioma, A), inflammatory conditions (e.g., sarcoidosis, D), and infections can cause proptosis, thyroid eye disease is by far the most frequent etiology in this age group.

Question 85. What is the appropriate next step in managing a construction worker who got lime (chuna) particles in their eye?

A. Irrigation with normal saline

B. Topical antibiotics

C. Padding the eye and analgesics

D. Complete scraping

Correct answer: A

Irrigation with normal saline A chemical injury to the eye, particularly an alkali burn from lime (calcium hydroxide), is an ophthalmological emergency. The single most important and immediate action is copious irrigation of the affected eye. This should be done for at least 15-30

minutes, using sterile solutions like normal saline or Ringer's lactate if available, or any clean water source if not. The goal is to dilute and wash out the chemical agent as quickly as possible to minimize its contact time with the ocular surface and prevent further tissue damage. After thorough irrigation and confirmation of a neutral pH, other management steps such as applying topical antibiotics (B) to prevent secondary infection, providing analgesics (C), and a detailed examination can proceed. Scraping (D) is not an initial management step.

Question 86. All of the following are seen in third nerve (oculomotor nerve) palsy except:

A. Ptosis

B. Pupillary dilatation NODIA MEDINK

C. Loss of abduction

D. Exotropia and hypotropia

Correct answer: C

Loss of abduction The third cranial nerve (oculomotor nerve) innervates the levator palpebrae superioris, the pupillary sphincter, and four extraocular muscles: the superior, inferior, and medial recti, and the inferior oblique. A complete palsy of this nerve results in ptosis (drooping eyelid) (A) due to paralysis of the levator muscle. It also causes a fixed, dilated pupil (mydriasis) (B) because of the unopposed action of the sympathetic nervous system. The eye deviates "down and out" due to the unopposed action of the lateral rectus (innervated by CN VI) and superior oblique (innervated by CN IV) muscles, resulting in a combination of exotropia (outward deviation) and hypotropia (downward deviation) (D). Abduction (outward movement of the eye) is the primary function of the lateral rectus muscle, which is innervated by the sixth cranial nerve (abducens nerve). Therefore, loss of abduction is not seen in a third nerve palsy; in fact, abduction is unopposed. MEDICINE

Question 87. A patient wakes up during the night, has excessive daytime sleepiness, and a history of snoring. Which of the following statements about this condition is incorrect?

A. Apnea is associated with high respiratory effort

B. Apnea is associated with sudden awakening

C. Apnea is associated with a fall in SpO 2

D. Contraction of pharyngeal muscles can worsen obstruction

Correct answer: D

Contraction of pharyngeal muscles can worsen obstruction The patient's symptoms are classic for Obstructive Sleep Apnea (OSA). In OSA, the upper airway collapses during sleep, but the patient continues to make respiratory efforts against the obstruction (high respiratory effort, A). These apneic episodes lead to a fall in oxygen saturation (SpO 2) (C) and an increase in CO 2 . These chemical changes trigger a brief arousal or awakening from sleep (B) to re-establish

airway patency. The underlying cause of the obstruction is the relaxation and hypotonia of the pharyngeal dilator muscles. Therefore, contraction of these muscles would serve to open the airway and relieve the obstruction, which is the goal of therapies like hypoglossal nerve stimulation. The statement that contraction worsens the obstruction is incorrect.

Question 88. A patient presents with the following ABG and electrolyte results. What is the most likely acid– base disorder? • pH: 7.34 • Na: 135 mEq/L • Cl: 93 mEq/L • HCO 3- : 20 mEq/L • Random Blood Sugar (RBS): 420 mg/dL

A. High Anion Gap Metabolic Acidosis (HAGMA)

B. Normal Anion Gap Metabolic Acidosis (NAGMA)

C. Metabolic Alkalosis

D. Respiratory Acidosis

Correct answer: A

High Anion Gap Metabolic Acidosis (HAGMA) The patient's pH is 7.34, which is below the normal range (7.35-7.45), indicating an acidosis. The HCO3- is low at 20 mEq/L (normal: 22-26), which is consistent with a metabolic acidosis. To further classify the metabolic acidosis, we calculate the anion gap (AG): AG = Na+ - (Cl- + HCO3-). In this case, AG = 135 - (93 + 20) = 135 - 113 = 22 mEq/L. A normal anion gap is typically 8-12 mEq/L. Since the calculated AG of 22 is significantly elevated, this is a High Anion Gap Metabolic Acidosis (HAGMA). The very high random blood sugar (RBS) of 420 mg/dL strongly suggests that the cause of the HAGMA is diabetic ketoacidosis (DKA), where the unmeasured anions are ketone bodies.

Question 89. Which drug is known to increase the risk of urinary tract infections?

A. Dapagliflozin

B. Pioglitazone

C. Sitagliptin

D. Metformin

Correct answer: A

Dapagliflozin Dapagliflozin is a sodium-glucose cotransporter 2 (SGLT2) inhibitor. This class of drugs lowers blood glucose by blocking its reabsorption in the proximal renal tubules, leading to increased glucose excretion in the urine (glucosuria). This high concentration of sugar in the urinary tract creates a favorable environment for the growth of bacteria and yeast. Consequently, a well-known side effect of SGLT2 inhibitors is an increased incidence of genitourinary infections, including both bacterial urinary tract infections and genital mycotic (yeast) infections. The other listed antidiabetic agents—pioglitazone (B), sitagliptin (C), and metformin (D)—do not share this mechanism and are not associated with a similarly elevated risk of UTIs.

Question 90. Which of the following statements about atrial fibrillation is accurate?

A. Rarely seen in heart with normal morphology

B. Discrepancy in pulse rate and heart rate are reliable for diagnosis

C. Only digoxin is used for rate control

D. Cardioversion must be performed for all cases of atrial fibrillation

Correct answer: B

Discrepancy in pulse rate and heart rate are reliable for diagnosis Atrial fibrillation (AF) is an arrhythmia characterized by chaotic atrial activity and an irregularly irregular ventricular response. This irregularity means that not all ventricular contractions are strong enough to generate a palpable peripheral pulse, leading to a pulse deficit—a discrepancy where the apical heart rate (auscultated) is higher than the radial pulse rate. This is a classic and reliable clinical sign. AF can occur in structurally normal hearts ("lone AF"), making statement A incorrect. Many drugs besides digoxin (C), such as beta-blockers and calcium channel blockers, are used for rate control and are often preferred first-line agents. Cardioversion (D) is not performed for all cases; it is reserved for hemodynamically unstable patients or as part of a rhythm-control strategy in selected stable patients.

Question 91. A male patient presents with purple striae, thin skin, a non-healing wound, and a pendulous abdomen. What is the most likely underlying cause?

A. Insulin resistance

B. Hypercortisolism

C. Hypothyroidism

D. Hypercholesterolemia

Correct answer: B

Hypercortisolism This constellation of signs is pathognomonic for Cushing's syndrome, a condition caused by prolonged exposure to excess corticosteroids (hypercortisolism). Cortisol has catabolic effects on protein, which leads to the breakdown of collagen and subcutaneous tissue. This results in thin, fragile skin, easy bruising, poor wound healing, and the development of wide (>1 cm), purplish striae on the abdomen, thighs, and arms. Excess cortisol also promotes central fat redistribution, leading to truncal obesity, a "moon face," a dorsocervical fat pad ("buffalo hump"), and a pendulous abdomen. While insulin resistance (A) and hypercholesterolemia (D) can be associated with Cushing's syndrome, hypercortisolism is the underlying endocrine cause. Hypothyroidism (C) presents with different symptoms, such as weight gain, fatigue, and dry, coarse skin.

Question 92. Which of the following is NOT a complication of hypokalemia?

A. Ventricular Tachycardia

B. Cerebral Edema

C. Diabetes Insipidus

D. Quadriparesis

Correct answer: B

Cerebral Edema Hypokalemia (low serum potassium) has significant effects on excitable tissues. Severe hypokalemia can cause ECG changes (U waves, ST depression) and predispose to cardiac arrhythmias, including ventricular tachycardia (A) and fibrillation. It can lead to profound muscle weakness, which can progress to flaccid paralysis or quadriparesis (D). In the kidneys, chronic hypokalemia can impair the concentrating ability of the tubules, leading to a state of nephrogenic diabetes insipidus (C), characterized by polyuria and polydipsia. Cerebral edema (B), however, is not a complication of hypokalemia. It is classically associated with the overly rapid correction of hypernatremia or as a complication of diabetic ketoacidosis treatment.

Question 93. Which diabetes medication is preferred for a 65-year-old patient with type 2 diabetes and heart failure with reduced ejection fraction (HFrEF), given its proven cardiovascular benefits?

A. Metformin

B. Sitagliptin

C. Empagliflozin

D. Glipizide

Correct answer: C

Empagliflozin For patients with type 2 diabetes and comorbid heart failure with reduced ejection fraction (HFrEF), the choice of antidiabetic medication is critical. SGLT2 inhibitors, such as empagliflozin, have emerged as a preferred class of drugs in this population. Large cardiovascular outcome trials have demonstrated that empagliflozin not only lowers blood glucose but also significantly reduces the risk of cardiovascular death and hospitalization for heart failure in patients with T2DM and established cardiovascular disease, including HFrEF. This benefit is thought to be independent of its glucose-lowering effect. While metformin (A) is a first-line agent for T2DM, its benefits in HFrEF are less pronounced. Sitagliptin (B) has shown neutral cardiovascular outcomes, and glipizide (D) can be associated with hypoglycemia and provides no cardiovascular benefit.

Question 94. For which condition are cannabinoids not typically used as a treatment?

A. Dravet syndrome

B. Rett syndrome

C. Lennox-Gastaut Syndrome

D. Tuberous sclerosis

Correct answer: B

Rett syndrome Cannabidiol (CBD), a non-psychoactive cannabinoid, has been approved for the treatment of seizures associated with specific severe, treatment-resistant childhood epilepsy syndromes. These include Dravet syndrome (A) and Lennox-Gastaut syndrome (C). It is also

approved for seizures associated with tuberous sclerosis complex (D). These approvals are based on robust clinical trial data demonstrating efficacy in reducing seizure frequency in these conditions. In contrast, Rett syndrome (B) is a distinct neurodevelopmental disorder characterized by regression of skills, stereotypic hand movements, and breathing abnormalities. While seizure management is part of the care for Rett syndrome, cannabidiol is not a standard or approved treatment for this specific condition, and its primary symptoms are not epilepsy.

Question 95. A 55-year-old man comes to the emergency department with chest pain. His ECG shows ST- segment depression in leads V2 and V3, and his troponin levels are elevated. What is the most likely diagnosis?

A. STEMI

B. NSTEMI

C. Posterior wall MI

D. Unstable angina

Correct answer: B

NSTEMI This patient presents with chest pain, ST-segment depression in leads V2 and V3, and elevated troponin levels. Elevated troponin indicates myocardial necrosis, meaning there is actual myocardial infarction rather than just ischemia. Therefore, unstable angina (which has normal troponin levels) is excluded. In STEMI, there is persistent ST-segment elevation in the involved leads due to complete coronary artery occlusion. This patient instead shows ST-segment depression, not elevation. ST-segment depression with positive cardiac biomarkers is characteristic of Non-ST Elevation Myocardial Infarction (NSTEMI). NSTEMI usually results from partial coronary artery occlusion, causing subendocardial infarction. Although isolated ST depression in V2–V3 can sometimes suggest posterior wall MI (which is technically a STEMI equivalent), the question does not mention posterior leads (V7–V9) or ST elevation patterns. Based on the given findings alone—ST depression plus elevated troponin—the most appropriate diagnosis is NSTEMI.

Question 96. Least common cause for bilateral pedal edema

A. CLD

B. CKD

C. HF With reduced ejection fraction

D. Chronic vascular insufficiency

Correct answer: D

Chronic vascular insufficiency Bilateral pedal edema is caused by systemic conditions that lead to generalized fluid retention or decreased plasma oncotic pressure. Chronic liver disease (CLD, A) with cirrhosis causes hypoalbuminemia and portal hypertension, leading to ascites and peripheral edema. Chronic kidney disease (CKD, B), particularly with nephrotic syndrome,

causes massive protein loss and sodium retention, resulting in generalized edema. Heart failure (HF, C) leads to increased hydrostatic pressure in the venous system due to impaired cardiac output, causing dependent edema. In contrast, chronic venous insufficiency is a common cause of pedal edema, but it is often asymmetrical, being more severe in one leg than the other. While it can be bilateral, it is a local vascular issue rather than a primary systemic cause, making it a less common cause of perfectly symmetrical bilateral edema compared to the major organ failure states listed.

Question 97. What is the most appropriate first step in managing a 50-year-old man with chronic alcoholism who presents with altered sensorium and signs of portal hypertension?

A. Upper gastrointestinal endoscopy (UGIE)

B. Chlordiazepoxide

C. Thiamine

D. Lactulose

Correct answer: C

Thiamine This patient presents with altered sensorium and a history of chronic alcoholism, which raises high suspicion for Wernicke's encephalopathy, a neurological emergency caused by thiamine (vitamin B1) deficiency. The classic triad is encephalopathy, ophthalmoplegia, and ataxia, but all three are not always present. It is critical to administer parenteral thiamine immediately, before giving any glucose-containing fluids, as glucose can precipitate or worsen the encephalopathy by depleting the already low thiamine stores. While the patient may also have hepatic encephalopathy (for which lactulose, D, would be used) or be in alcohol withdrawal (for which chlordiazepoxide, B, would be used), addressing the potential Wernicke's encephalopathy with thiamine is the most urgent first step to prevent irreversible brain damage. Endoscopy (A) would be for suspected variceal bleeding.

Question 98. A 6-month-old infant has increased muscle tone and stiffness in all limbs, exaggerated deep tendon reflexes, and persistent primitive reflexes. MRI shows characteristic lesions. What is the most likely location of the lesion?

A. Paraventricular white matter

B. Basal ganglia

C. Cerebellum

D. Brainstem

Correct answer: A

Paraventricular white matter The clinical presentation of increased muscle tone (spasticity), hyperreflexia, and persistent primitive reflexes in an infant is characteristic of spastic quadriplegic cerebral palsy. This condition is caused by an upper motor neuron injury. The most common underlying pathology, particularly in infants born prematurely, is damage to the

paraventricular white matter, a condition known as periventricular leukomalacia (PVL). The descending motor tracts from the cortex pass through this white matter region, and the neurons supplying the lower limbs are located most medially, making them particularly vulnerable to ischemic or hypoxic injury. Lesions in the basal ganglia (B) typically cause dyskinetic (athetoid or dystonic) cerebral palsy. Cerebellar lesions (C) cause ataxic cerebral palsy.

Question 99. A 10-year-old child presents with short stature, an upper-to-lower segment ratio of 0.8:1, and imaging shows epiphyseal displacement in the spine. Which condition is the most likely diagnosis?

A. Achondroplasia

B. Turner syndrome

C. Hypothyroidism

D. Morquio syndrome

Correct answer: D

Morquio syndrome The patient has disproportionate short stature, indicated by the abnormal upper to lower segment ratio (a normal ratio for a 10-year-old is around 0.9-1.0). Morquio syndrome is a mucopolysaccharidosis (MPS IV) characterized by skeletal dysplasia, particularly affecting the spine. It leads to short-trunk dwarfism, a very low US:LS ratio, and characteristic vertebral abnormalities (platyspondyly), which can be described as epiphyseal displacement. Achondroplasia (A) is a short-limb dwarfism where the trunk is relatively normal, so the US:LS ratio is high. Turner syndrome (B) results in proportionate short stature. Hypothyroidism (C) causes growth delay and a persistently infantile US:LS ratio (higher than normal for age). The combination of a low US:LS ratio and spinal epiphyseal changes strongly suggests Morquio syndrome. SURGERY

Question 100. Which of the following complications are associated with gastroesophageal reflux disease (GERD)? 1. Asthma 2. Laryngitis 3. Pulmonary fibrosis 4. Chronic cough

A. 1,2

B. 1, 2, 4

C. 1,2,3

D. 1, 2, 3, 4

Correct answer: D

1, 2, 3, 4 Gastroesophageal Reflux Disease (GERD) can lead to a wide range of extra-esophageal complications due to the aspiration of gastric contents or vagally-mediated reflexes. Chronic micro-aspiration and irritation of the airways can trigger or exacerbate asthma (1) and lead to a persistent chronic cough (4). Reflux of acid into the pharynx and larynx can cause inflammation, resulting in laryngitis, hoarseness, and a globus sensation (2). While less

common, long-standing, severe GERD with chronic aspiration is considered a risk factor for the development or progression of idiopathic pulmonary fibrosis (3). Therefore, all the listed conditions are recognized potential complications of GERD.

Question 101. Which of the following is the most common hernia in females?

A. Direct inguinal hernia

B. Indirect inguinal hernia

C. Femoral hernia

D. Obturator hernia

Correct answer: B

Indirect inguinal hernia While femoral hernias are much more common in females than in males (with a female-to-male ratio of about 4:1), they are not the most common type of hernia overall in females. Indirect inguinal hernias are the most common type of groin hernia in both sexes, including females. An indirect inguinal hernia occurs when abdominal contents protrude through the deep inguinal ring, lateral to the inferior epigastric vessels, following the path of the round ligament in females. A direct inguinal hernia (A) is less common in females. A femoral hernia (C) protrudes through the femoral canal, and while it has a strong female predilection, its overall incidence is lower than that of indirect inguinal hernias in women.

Question 102. Which of the following is not a marker for gastrointestinal stromal tumors (GIST)? NODIA MEDINK

A. SDH (Succinate Dehydrogenase)

B. C-kit

C. PDGF (Platelet-Derived Growth Factor)

D. Nestin

Correct answer: D

Nestin Gastrointestinal Stromal Tumors (GISTs) are mesenchymal neoplasms defined by specific molecular markers. The vast majority (~95%) are positive for the receptor tyrosine kinase KIT (CD117) (B). A subset of KIT-negative GISTs have mutations in the related receptor PDGFRA (C). A small percentage of GISTs lacking KIT or PDGFRA mutations (wild-type GISTs) have defects in the succinate dehydrogenase (SDH) enzyme complex (A). These three markers are key to the diagnosis and classification of GISTs. Nestin (D), however, is an intermediate filament protein that serves as a marker for neural stem cells and progenitor cells. While it can be expressed in some other tumors, it is not a characteristic or diagnostic marker for GISTs.

Question 103. ER positivity is used as which of the following in the context of breast carcinoma?

A. Diagnostic marker

B. Prognostic marker

C. Surrogate molecular marker

D. Treatment

Correct answer: C

Surrogate molecular marker In breast carcinoma, estrogen receptor (ER) positivity is determined by immunohistochemistry and plays a key role in tumor classification and management. ER positivity is not primarily a diagnostic marker, because breast cancer diagnosis is based on histopathological examination. It is also not a treatment itself, though it guides hormonal therapy. ER status serves as a surrogate molecular marker for intrinsic molecular subtypes of breast cancer. For example, ER-positive tumors generally correspond to luminal subtypes (Luminal A and Luminal B) in molecular classification. Instead of performing expensive gene expression profiling for all patients, ER (along with PR and HER2 status) is used as a practical surrogate to approximate molecular subtypes. Although ER-positive tumors tend to have a better prognosis and respond well to endocrine therapy (like tamoxifen or aromatase inhibitors), its primary role in classification systems is as a surrogate molecular marker. Therefore, the correct answer is (C) Surrogate molecular marker.

Question 104. All of the following statements regarding Wilms tumor are true, EXCEPT:

A. Presents as an abdominal mass

B. Most commonly seen <5 years of age

C. Majority of patients recover due to chemotherapy and radiotherapy

D. Lung metastasis is rare and occurs late

Correct answer: D

Lung metastasis is rare and occurs late Wilms tumor, or nephroblastoma, is the most common renal malignancy in children. It typically presents as a large, asymptomatic abdominal mass (A) discovered by a parent, usually in children under the age of 5 (B). The prognosis for Wilms tumor is generally excellent, with high cure rates achieved through a multimodal approach that includes surgery, chemotherapy, and often radiotherapy (C). However, Wilms tumor is known to metastasize, and the lung is the most common site of distant spread. Contrary to the statement, lung metastases are not rare; they are present at diagnosis in approximately 10-15% of patients and are a significant factor in staging and treatment planning. Therefore, the statement that lung metastasis is rare and occurs late is false.

Question 105. A 52-year-old patient diagnosed with invasive ductal carcinoma presents with skin ulceration, inflammatory signs, and nipple retraction. This patient should be classified under which stage?

A. Stage 3

B. Stage 4 with node positivity

C. T4b

D. No metastasis

Correct answer: C

T4b The TNM staging system for breast cancer classifies tumors based on their size (T), lymph node involvement (N), and distant metastasis (M). The T4 category is reserved for tumors of any size with direct extension to the chest wall or skin. Specifically, the T4b subcategory includes tumors with edema (including peau d'orange), ulceration of the skin of the breast, or satellite skin nodules confined to the same breast. Since the patient presents with skin ulceration and inflammatory signs, the tumor is, by definition, at least a T4b. This automatically places the patient in at least Stage IIIB, regardless of lymph node status (unless distant metastases are present, which would be Stage IV). "Stage 3" (A) is too general, and we have enough information to determine the specific T stage.

Question 106. A 55-year-old man develops weakness of the left lower lip after recent parotid gland surgery. Based on the surgery and symptoms, where is the most likely location of the lesion?

A. Main trunk of facial nerve

B. Temporal branch of facial nerve

C. Cervical branch of facial nerve

D. Parotid duct

Correct answer: C

Cervical branch of facial nerve After parotid gland surgery, injury to branches of the facial nerve is a well-known complication because the facial nerve divides within the substance of the parotid gland into its terminal branches. These include the temporal, zygomatic, buccal, marginal mandibular, and cervical branches. In this case, the patient develops weakness of the left lower lip, indicating involvement of muscles responsible for depressing the lower lip, particularly the depressor anguli oris and depressor labii inferioris. These muscles are supplied by the lower division of the facial nerve. The cervical branch of the facial nerve supplies the platysma muscle and contributes to movements of the lower lip region. Damage to this branch during parotid surgery can result in drooping or weakness of the lower lip on the affected side. If the main trunk of the facial nerve were injured, there would be complete ipsilateral facial paralysis. Injury to the temporal branch would affect forehead movement and eye closure, while damage to the parotid duct would not cause facial muscle weakness. Therefore, based on the localized weakness of the lower lip following parotid surgery, the most likely site of lesion is the cervical branch of the facial nerve.

Question 107. Which of the following is NOT a risk factor for cholangiocarcinoma?

A. Hepatitis B

B. PCOS

C. Caroli's disease

D. Opisthorchis viverrini

Correct answer: B

PCOS Cholangiocarcinoma is a malignancy of the biliary duct system. Several risk factors are well-established. Chronic inflammation and cholestasis are key pathogenic mechanisms. These are seen in primary sclerosing cholangitis, choledochal cysts, and Caroli's disease (C), a congenital condition with cystic dilation of intrahepatic bile ducts. Chronic liver infections are also significant risk factors, including infestation with liver flukes like Opisthorchis viverrini (D) and Clonorchis sinensis, and chronic viral hepatitis, including Hepatitis B (A) and Hepatitis C. In contrast, Polycystic Ovary Syndrome (PCOS) (B) is an endocrine disorder affecting females of reproductive age, characterized by hyperandrogenism and ovulatory dysfunction. It has no known association with the development of cholangiocarcinoma.

Question 108. Which of the following is NOT done in the primary survey of trauma?

A. NCCT head

B. CXR

C. Intubation

D. ICD drainage

Correct answer: A

NCCT head The primary survey in trauma management follows the ABCDE mnemonic (Airway, Breathing, Circulation, Disability, Exposure) and focuses on identifying and immediately treating life-threatening injuries. Airway management, which may include intubation (C), is the first priority. Assessing breathing includes looking for conditions like tension pneumothorax, which would require immediate intervention like chest tube or intercostal drain (ICD) placement (D). A portable chest X-ray (CXR) (B) is often considered an adjunct to the primary survey to help identify thoracic injuries. However, a non-contrast CT (NCCT) of the head (A) is part of the secondary survey. It is a more detailed diagnostic study performed only after the patient has been stabilized and all immediate life threats from the primary survey have been addressed.

Question 109. Which of the following is least likely to cause hoarseness of voice after thyroid surgery?

A. Dissecting/Retracting strap muscle

B. Exploring bearh's triangle

C. Tubercle of zuckerkandi dissection

D. Ligating superior thyroid vessels

Correct answer: A

Dissecting/Retracting strap muscle Hoarseness of voice after thyroidectomy is primarily caused by injury to the laryngeal nerves. The external branch of the superior laryngeal nerve is at risk during ligation of the superior thyroid vessels (D) at the upper pole of the gland. The recurrent laryngeal nerve (RLN) is at high risk during dissection near the tubercle of Zuckerkandl (C) and

when exploring Beahrs' triangle (B), a space where the RLN is commonly found. Injury to these nerves, which control the vocal cords, directly causes voice changes. In contrast, dissecting or retracting the strap muscles (A) (sternohyoid, sternothyroid) is a standard maneuver to expose the thyroid gland. These muscles are innervated by the ansa cervicalis and are not involved in phonation. Their manipulation does not directly risk injury to the laryngeal nerves and thus will not result in hoarseness.

Question 110. The Mount Fuji sign on CT is seen in which of the following conditions?

A. Pneumocephalus NODIA MEDINK

B. Pneumoperitoneum

C. Pneumomediastinum

D. Pneumothorax

Correct answer: A

Pneumocephalus The Mount Fuji sign is a specific radiological sign seen on a non-contrast CT scan of the head in patients with tension pneumocephalus. Pneumocephalus is the presence of air or gas within the cranial cavity. In tension pneumocephalus, the trapped intracranial air exerts mass effect. The Mount Fuji sign describes the appearance of bilateral subdural air collections that compress both frontal lobes, causing them to separate and collapse, resembling the silhouette of Mount Fuji in Japan. This is a neurosurgical emergency that requires prompt intervention to decompress the trapped air. This sign is specific to the intracranial space and is not seen in pneumoperitoneum (B), pneumomediastinum (C), or pneumothorax (D).

Question 111. A 20-year-old chronic alcoholic presents with severe hematemesis. Ultrasound reveals a distended portal vein and a hyperechoic liver. Pantoprazole has been started. What should be the next step in management?

A. Initiate a course of broad-spectrum antibiotics

B. Order a liver biopsy to assess for fibrosis

C. Administer IV fluids and electrolytes

D. Perform an endoscopy to look for varices

Correct answer: C

Administer IV fluids and electrolytes A 20-year-old chronic alcoholic presenting with severe hematemesis and ultrasound findings of a distended portal vein with a hyperechoic liver strongly suggests portal hypertension secondary to alcoholic liver disease, most likely complicated by esophageal variceal bleeding. Hematemesis in this setting is a medical emergency and requires immediate stabilization before definitive diagnostic or therapeutic procedures are undertaken. The first priority in any patient with massive upper gastrointestinal bleeding is hemodynamic stabilization. This includes securing airway if necessary, establishing large-bore intravenous access, and administering intravenous fluids and correction of electrolytes to restore circulating blood volume. Blood transfusion may also be required

depending on hemoglobin levels and hemodynamic status. Stabilization helps prevent hypovolemic shock and organ hypoperfusion. Although endoscopy is essential to identify and treat varices (e.g., band ligation), it should be performed only after the patient is adequately stabilized. Broad-spectrum antibiotics are recommended in variceal bleeding but are not the immediate first step. Liver biopsy is contraindicated in an unstable bleeding patient. Therefore, the most appropriate next step in management is (C) Administer IV fluids and electrolytes. PEDIATRICS

Question 112. A child presents with short stature, a bone age younger than his chronological age, and parents of normal height. What is the most likely diagnosis?

A. Constitutional short stature

B. Familial short stature

C. Cretinism

D. Malnutrition

Correct answer: A

Constitutional short stature Constitutional delay of growth and puberty is a common cause of short stature in children. It is a variation of normal growth, not a disease. The key features are a delayed bone age compared to the chronological age, a growth velocity that is normal for the bone age, and often a family history of a similar "late bloomer" growth pattern. The child's eventual adult height is typically normal, consistent with the normal height of the parents. In familial short stature (B), the bone age is consistent with the chronological age, and the child's height is appropriate for their genetic potential (i.e., short parents). Cretinism (congenital hypothyroidism) (C) and malnutrition (D) are pathological causes of short stature that would have other associated clinical signs.

Question 113. An 8-month-old child is diagnosed with vitamin A deficiency. What is the appropriate oral dose of vitamin A?

A. 50,000 IU

B. 75,000 IU

C. 100,000 IU

D. 200,000 IU

Correct answer: C

100,000 IU The World Health Organization (WHO) has specific guidelines for the treatment of xerophthalmia (clinical vitamin A deficiency). The dosage is age-dependent. For infants aged 6 to 11 months, the recommended therapeutic dose of oral vitamin A is 100,000 IU. This dose is given immediately upon diagnosis, repeated the following day, and again 4 weeks later. For infants under 6 months of age, the dose is 50,000 IU (A). For children 12 months of age and older, the dose is 200,000 IU (D). Since the child is 8 months old, the correct dose is 100,000 IU.

Question 114. Which nutrient deficiency can cause a collagen defect?

A. Vitamin A

B. Vitamin B complex

C. Vitamin C + copper

D. Vitamin D

Correct answer: C

Vitamin C + copper Collagen synthesis is a complex process requiring several essential cofactors. Vitamin C (ascorbic acid) is a critical cofactor for the enzymes prolyl hydroxylase and lysyl hydroxylase. These enzymes are responsible for the hydroxylation of proline and lysine residues in procollagen chains, a step that is essential for the formation of stable triple-helix collagen molecules. A deficiency of vitamin C leads to scurvy, a disease characterized by impaired collagen synthesis, resulting in poor wound healing and fragile capillaries. Copper is also essential for collagen integrity; it is a cofactor for the enzyme lysyl oxidase, which catalyzes the cross-linking of collagen and elastin fibers, providing them with tensile strength. Deficiencies in vitamins A, B, and D affect other systems.

Question 115. Within what time frame can breast feeding be started in a completely healthy newborn with no anatomical issues?

A. 1 hour

B. 4 hours

C. 24 hours

D. 48 hours

Correct answer: A

1 hour Global and national health organizations, including the WHO and UNICEF, strongly recommend the early initiation of breast feeding. For a healthy, full-term newborn delivered vaginally or by cesarean section, breast feeding should be initiated as soon as possible after birth, ideally within the first hour of life. This early contact promotes bonding, provides the infant with colostrum (the nutrient-rich first milk), helps regulate the infant's temperature and blood sugar, and stimulates uterine contractions in the mother to reduce postpartum bleeding. Delaying the first feed (Options B, C, D) without a specific medical indication is not recommended and can interfere with the successful establishment of breast feeding.

Question 116. What is the fluid of choice for treating shock in a child with severe acute malnutrition (SAM) and hypoglycemia?

A. Ringer lactate

B. 10% dextrose

C. Normal saline

D. Ringer lactate + 5% dextrose

Correct answer: D

Ringer lactate + 5% dextrose Children with Severe Acute Malnutrition (SAM) are at high risk of both hypoglycemia and electrolyte imbalances, and they handle fluid poorly. Standard resuscitation fluids like plain normal saline or Ringer lactate can lead to fluid overload and heart failure. The WHO protocol for managing septic shock in a SAM child recommends a specific fluid called ReSoMal (Rehydration Solution for Malnutrition), or if unavailable, a half-strength Darrow's solution with 5% dextrose. Among the common IV fluids provided as options, the best choice is a combination fluid that provides both electrolytes and glucose. Ringer lactate with 5% dextrose is a suitable alternative. Giving 10% dextrose alone (B) would not correct the shock, while giving plain Ringer lactate (A) or normal saline (C) would not address the critical hypoglycemia.

Question 117. Which of the following statements about the ABCDE approach in Pediatric Advanced Life Support (PALS) is incorrect?

A. A-Airway

B. B-Breathing

C. C Circulation

D. D-Dehydration

Correct answer: D

D-Dehydration The ABCDE approach is a systematic framework used for the rapid assessment and management of critically ill or injured children in PALS. The mnemonic stands for: A : Airway - Assess and manage airway patency. B : Breathing - Assess respiratory rate, effort, and oxygenation. C : Circulation - Assess heart rate, blood pressure, perfusion, and establish IV access. D : Disability - Assess neurological status using a scale like AVPU (Alert, Voice, Pain, Unresponsive) and check blood glucose. E : Exposure - Undress the child to perform a full examination and check for signs of trauma or injury, while preventing hypothermia. Dehydration is a clinical condition that would be assessed under 'C' for circulation and 'E' for exposure (skin turgor), but it does not represent one of the primary headings of the ABCDE assessment itself.

Question 118. An infant with a doll-like face is diagnosed with Von Gierke disease. Which enzyme deficiency is responsible for this condition?

A. Phosphorylase

B. Glucose-6-phosphatase

C. Debranching enzyme

D. Fructose-6-phosphatase

Correct answer: B

Glucose-6-phosphatase Von Gierke disease is Glycogen Storage Disease Type Ia, the most common form of GSD. It is caused by a deficiency of the enzyme glucose-6-phosphatase. This enzyme is crucial for the final step of both glycogenolysis and gluconeogenesis, as it is required

to release free glucose from glucose-6-phosphate into the bloodstream. Its deficiency leads to a severe inability to maintain blood glucose levels during fasting, resulting in profound hypoglycemia, lactic acidosis, hyperuricemia, and hyperlipidemia. The accumulation of glycogen in the liver and kidneys causes massive hepatomegaly and renomegaly. The characteristic "doll-like" facies with chubby cheeks is a classic clinical sign. Phosphorylase deficiency (A) causes McArdle's disease (muscle) or Hers disease (liver). Debranching enzyme deficiency (C) causes Cori's disease.

Question 119. A post-term neonate is defined as a neonate that is born:

A. Beyond 37 weeks

B. Beyond 38 weeks

C. Beyond 40 weeks

D. Beyond 42 weeks

Correct answer: D

Beyond 42 weeks Gestational age is categorized to define the maturity of a newborn. A full-term pregnancy is defined as lasting from 37 weeks and 0 days to 41 weeks and 6 days. A neonate is considered preterm if born before 37 completed weeks of gestation. A neonate is defined as post-term if the pregnancy extends to 42 completed weeks (294 days) or beyond. Therefore, a neonate born beyond 42 weeks is classified as post-term. These infants are at increased risk for complications such as meconium aspiration, macrosomia, and placental insufficiency.

Question 120. According to neonatal resuscitation guidelines, at what heart rate should chest compressions be started?

A. 80/min

B. 75/min

C. 70/min

D. 60/min

Correct answer: D

60/min The Neonatal Resuscitation Program (NRP) guidelines provide a clear algorithm for managing a newborn who is not transitioning well. After initial steps (warming, clearing airway, stimulation), if the infant is apneic or gasping, positive pressure ventilation (PPV) is initiated. The heart rate is then assessed. If, despite at least 30 seconds of effective PPV that is moving the chest, the infant's heart rate remains less than 60 beats per minute, the next step is to initiate chest compressions. The compressions should be coordinated with PPV at a ratio of 3 compressions to 1 breath. If the heart rate is above 60 bpm but below 100 bpm, PPV is continued and corrective steps are reassessed, but compressions are not yet indicated.

Question 121. According to neonatal resuscitation guidelines, what initial oxygen

concentration should be administered to a term newborn with apnea and bradycardia?

A. 21%

B. 30%

C. 50%

D. 100%

Correct answer: A

21% Current neonatal resuscitation guidelines have moved away from the routine use of 100% oxygen due to concerns about hyperoxia and oxidative stress. For term neonates (≥35 weeks gestation) who require positive pressure ventilation (PPV) at birth for apnea or bradycardia, resuscitation should be initiated with 21% oxygen, which is the concentration found in room air. The infant's oxygen saturation is then monitored with a pre-ductal pulse oximeter, and the concentration of supplemental oxygen is titrated up or down as needed to meet target saturation levels for the specific age in minutes. The use of 100% oxygen is reserved for specific situations, such as when chest compressions are initiated, or if the infant fails to improve with lower concentrations.

Question 122. A 5-year-old child ingests 10 iron tablets and presents with nausea and abdominal pain. What is the antidote for iron poisoning?

A. Penicillamine

B. British Anti-Lewisite

C. EDTA

D. Deferoxamine

Correct answer: D

Deferoxamine Iron is highly toxic in overdose, causing severe gastrointestinal irritation, metabolic acidosis, and shock. When a patient has signs of systemic iron toxicity or a significantly elevated serum iron level, chelation therapy is indicated. The specific chelating agent and antidote for iron poisoning is deferoxamine. Deferoxamine is a hexadentate chelator that binds with high affinity to ferric iron (Fe3+), forming ferrioxamine, a stable, water-soluble complex that is then excreted by the kidneys, giving the urine a characteristic "vin rosé" color. Penicillamine (A) is a chelator used for copper (Wilson's disease) and lead poisoning. British Anti-Lewisite (BAL) (B) is used for arsenic, mercury, and lead poisoning. EDTA (C) is primarily used for lead poisoning.

Question 123. A 5-year-old child develops facial swelling that becomes generalized with pedal edema and ascites. He responds well to steroids. His RBS is 112 mg/dL, urine tests are normal, and kidney biopsy electron microscopy shows podocyte effacement. What is the most likely diagnosis?

A. Minimal change disease

B. Focal segmental glomerulosclerosis

C. Membranous glomerulonephritis

D. Post-streptococcal glomerulonephritis

Correct answer: A

Minimal change disease Minimal Change Disease (MCD) is the most frequent cause of nephrotic syndrome in children. It presents with sudden-onset edema, often beginning around the eyes and progressing to generalized anasarca. The condition is characterized by massive proteinuria (selective for albumin), hypoalbuminemia, hyperlipidemia, and normal renal function. Light microscopy appears normal, while electron microscopy reveals diffuse effacement (fusion) of the epithelial podocyte foot processes without immune complex deposition. The disease is immune-mediated, with T-cell dysfunction leading to the release of permeability factors that damage podocytes. MCD shows excellent response to corticosteroids, typically achieving remission within weeks. Relapses can occur during infections or after steroid withdrawal. Differentiation from focal segmental glomerulosclerosis (FSGS) is crucial since FSGS responds poorly to steroids and has worse prognosis. Most children with MCD achieve complete recovery with minimal risk of chronic kidney disease, making early recognition and steroid therapy vital.

Question 124. A 6-year-old child presents with hematuria, RBC casts, a recent upper respiratory infection, and edema. What is the most likely diagnosis?

A. Focal segmental glomerulosclerosis (FSGS)

B. Post-streptococcal glomerulonephritis (PSGN)

C. Minimal change disease (MCD)

D. Membranous glomerulonephritis (MGN)

Correct answer: B

Post-streptococcal glomerulonephritis (PSGN) Post-streptococcal glomerulonephritis (PSGN) is an immune complex–mediated renal disorder occurring 1–3 weeks after infection with nephritogenic strains of group A β -hemolytic Streptococcus. It is most common in children aged 5–12 years. The disease results from deposition of immune complexes in the glomeruli, leading to complement activation and inflammation. Clinical presentation includes periorbital and pedal edema, cola-colored urine (hematuria), oliguria, and mild hypertension. Laboratory findings show RBC casts in urine, elevated antistreptolysin-O (ASO) titers, and reduced complement (C3) levels. On light microscopy, glomeruli appear enlarged and hypercellular, while electron microscopy reveals subepithelial “hump-shaped” deposits. Treatment is mainly supportive, focusing on fluid balance and hypertension control. Antibiotics are used to eradicate any residual streptococcal infection. Prognosis in children is excellent, with complete recovery in the majority of cases, though adults may have persistent renal dysfunction or chronic glomerulonephritis.

Question 125. An 8-year-old child has high fever, restlessness, neck stiffness, and

low glucose on lab tests. What is the most likely diagnosis?

A. Bacterial meningitis

B. Tuberculous (TB) meningitis

C. Viral meningitis

D. Fungal meningitis

Correct answer: A

Bacterial meningitis Bacterial meningitis is an acute purulent infection of the meninges and subarachnoid space, most commonly caused by Streptococcus pneumoniae, Neisseria meningitidis, or Haemophilus influenzae in children. The classic triad includes fever, neck stiffness, and altered sensorium. Additional features like vomiting, photophobia, and seizures may occur. Laboratory evaluation of cerebrospinal fluid (CSF) shows elevated opening pressure, high protein concentration, markedly low glucose (CSF-to-serum glucose ratio <0.4), and neutrophilic leukocytosis. Gram staining often reveals the causative organism. Rapid diagnosis is crucial as untreated bacterial meningitis carries high morbidity and mortality due to complications such as cerebral edema, hydrocephalus, and hearing loss. Empirical treatment usually includes third-generation cephalosporins (e.g., ceftriaxone or cefotaxime) along with vancomycin until culture sensitivity results are available. Adjunctive corticosteroids (dexamethasone) reduce inflammatory complications. Early antibiotic therapy and supportive management significantly improve prognosis and reduce neurological sequelae. ORTHOPEDICS

Question 126. What is the standard management for a 75-year- old man with an intracapsular fracture of the femoral neck?

A. Hemiarthroplasty

B. Boot and Bar Cast

C. Intramedullary Nail

D. Russell’s Traction

Correct answer: A

Hemiarthroplasty In elderly patients, an intracapsular fracture of the femoral neck typically results from minor trauma due to osteoporosis and impaired bone quality. The intracapsular region has poor blood supply, predisposing it to avascular necrosis and nonunion. Therefore, internal fixation is often avoided in this age group. Hemiarthroplasty, which involves replacing the femoral head with a prosthesis while preserving the acetabulum, is the treatment of choice. It allows early mobilization, reduces complications like bedsores and pneumonia, and improves postoperative outcomes. Cemented bipolar hemiarthroplasty provides better joint stability and longevity. Younger patients (<60 years) with good bone quality may undergo internal fixation with multiple screws or dynamic hip screws. Nonoperative methods like traction or casting are outdated due to poor results and prolonged immobilization. Early physiotherapy post-surgery helps restore ambulation and independence. Overall, hemiarthroplasty remains the gold

standard in elderly individuals with displaced intracapsular neck fractures.

Question 127. In a Salter–Harris Type I fracture, through which layer does the fracture pass, resulting in a separation of that layer?

A. Mineralization Layer

B. Hypertrophic or Calcific Layer

C. Resting Layer

D. Through whole of Epiphysis

Correct answer: B

Hypertrophic or Calcific Layer Salter-Harris fractures describe injuries involving the growth plate (physis) in children, classified into five main types (I–V). Type I fracture occurs purely through the physis, separating the epiphysis from the metaphysis without involving the bone. The line of cleavage passes through the hypertrophic or calcification zone of the growth plate, the weakest region due to its chondrocytic nature. Clinically, Type I injuries often present with localized tenderness over the growth plate but may appear normal on radiographs. Prognosis is excellent, as the germinal cell layer responsible for growth (resting layer) remains intact, allowing normal bone development. These fractures usually occur after minor trauma and are commonly seen in the distal radius or phalanges. Treatment involves immobilization with a cast or splint, ensuring alignment and protection of the physis. Surgical intervention is rarely required unless there is displacement. Prompt recognition and management are essential to prevent potential growth disturbances or angular deformities.

Question 128. What is the preferred treatment for a 26-year-old man with a fracture of the proximal one-third of the femoral shaft?

A. Interlocking Nail

B. Hip Spica

C. Above Knee Slab

D. Above Knee Cast

Correct answer: A

Interlocking Nail In adult patients, fractures of the femoral shaft — particularly in the proximal or middle third — are best managed surgically using closed intramedullary interlocking nailing. This method provides stable fixation, allows early mobilization, and maintains proper limb alignment. Interlocking nails are inserted through the greater trochanter or piriform fossa into the medullary canal and locked proximally and distally with screws to control rotation and length. Conservative methods such as traction or hip spica are reserved for pediatric cases or medically unfit adults. The procedure promotes early weight-bearing, reducing complications like joint stiffness, muscle atrophy, and thromboembolism. Union typically occurs within 4–6 months. Complications may include infection, nail breakage, or malalignment, but overall success rates exceed 95%. Interlocking nailing is considered the gold standard for femoral shaft

fractures due to its biomechanical stability and high union rate.

Question 129. Which of the following is an osteoporotic fracture?

A. Vertebrae

B. Subtrochanteric Fracture

C. Glenoid Fracture

D. Midshaft of Humerus

Correct answer: A

Vertebrae Osteoporotic fractures occur due to decreased bone mass and microarchitectural deterioration, rendering bones fragile and susceptible to fractures even with minimal trauma. The most common sites include the vertebral bodies, distal radius (Colles' fracture), and proximal femur (neck of femur fracture). Vertebral compression fractures are classic for osteoporosis, typically occurring in the thoracolumbar region. Patients present with acute back pain, loss of height, and kyphotic deformity ("dowager's hump"). The pathogenesis involves accelerated bone resorption relative to formation, often due to postmenopausal estrogen deficiency, aging, or corticosteroid use. Diagnosis is confirmed through dual-energy X-ray absorptiometry (DEXA) showing a T-score ≤ –2.5. Management includes pain relief, bracing, physiotherapy, and antiresorptive agents like bisphosphonates or denosumab. Calcium and vitamin D supplementation and lifestyle measures are preventive strategies. In severe cases, vertebroplasty or kyphoplasty may be performed to stabilize the spine and relieve pain.

Question 130. Which of the following is a complication of intermittent administration of Teriparatide?

A. Osteonecrosis of Jaw

B. Net Bone Loss

C. Osteosarcoma

D. Subtrochanteric Fracture of Femur

Correct answer: C

Osteosarcoma Teriparatide is a recombinant parathyroid hormone (PTH 1–34) analog used for treating severe osteoporosis. When administered intermittently in low doses, it stimulates osteoblast activity and enhances bone formation. However, prolonged or excessive exposure can lead to uncontrolled bone turnover, predisposing to osteosarcoma, as observed in animal studies. For this reason, therapy duration is limited to a maximum of two years. Patients with Paget's disease, unexplained elevations of alkaline phosphatase, or a history of skeletal malignancy are contraindicated for its use. Common side effects include hypercalcemia, dizziness, and leg cramps. Unlike bisphosphonates, which inhibit bone resorption, Teriparatide promotes bone formation, thereby increasing bone mineral density, particularly in vertebral and femoral regions. After cessation, patients are usually transitioned to antiresorptive therapy to maintain gains. Regular monitoring of calcium levels and renal function ensures safety. While

the osteosarcoma risk in humans is extremely low, caution is warranted in long-term users or those with predisposing skeletal disorders.

Question 131. All of the following regarding Ankylosing Spondylitis are true except:

A. Occurs before the age of 20, never after 40

B. More common in males than females

C. HLA-B27 is positive in >90%

D. Non-erosive arthritis

Correct answer: A

Occurs before the age of 20, never after 40 Ankylosing spondylitis (AS) is a chronic inflammatory seronegative spondyloarthropathy that primarily affects the axial skeleton, especially the sacroiliac joints and spine. It typically presents in young adults, most commonly between 20 and 40 years of age. Although onset is uncommon after 40 years, it is not impossible. Therefore, the statement that it “occurs before the age of 20, never after 40” is incorrect. AS is more common in males than females, with a male-to-female ratio of approximately 2–3:1. A strong genetic association exists with HLA-B27, which is positive in more than 90% of patients in many populations. The disease is characterized by inflammation leading to new bone formation and eventual ankylosis of the spine. Peripheral joint involvement, when present, is typically non-erosive and affects large joints such as the hips and shoulders. Thus, among the given options, the false statement is that ankylosing spondylitis occurs before the age of 20 and never after 40. The correct answer is (A). OBS & GYNE

Question 132. What is the typical dose of Antara?

A. 150 mg

B. 200 mg

C. 250 mg

D. 300 mg

Correct answer: A

150 mg Antara is a brand preparation of fenofibrate, a fibric acid derivative used in the management of hypertriglyceridemia and mixed dyslipidemia. It works by activating peroxisome proliferator-activated receptor alpha (PPAR- α), which increases lipolysis and enhances the clearance of triglyceride-rich lipoproteins. This results in a reduction in serum triglycerides and a modest increase in high-density lipoprotein (HDL) cholesterol. The typical recommended dose of Antara is 150 mg once daily, administered orally. It can be taken with or without food, depending on the specific formulation guidelines. Dose adjustment may be required in patients with renal impairment, and liver function should be monitored periodically during therapy. Higher doses such as 200 mg, 250 mg, or 300 mg are not standard dosing regimens for Antara. Therefore, the correct answer is : (A) 150 mg.

Question 133. In the context of multiple pregnancies, which of the following is not possible?

A. MCMA (Monochorionic Monoamniotic)

B. MCDA (Monochorionic Diamniotic)

C. MADC (Monoamniotic Dichorionic)

D. DCDA (Dichorionic Diamniotic)

Correct answer: C

MADC (Monoamniotic Dichorionic) In twin pregnancies, the terms “chorionicity” and “amnionicity” refer to the number of placentas and amniotic sacs, respectively. These configurations depend on the timing of zygotic division. Monoamniotic Dichorionic (MADC) twins are embryologically impossible because a dichorionic pregnancy always has two separate placentas, which must have formed before the amniotic sac development. Dichorionicity occurs when division happens within the first 3 days after fertilization, leading to DCDA twins — the most common type, including all dizygotic and some monozygotic twins. If division occurs between days 4–8, MCDA twins form; after day 8, MCMA twins arise, sharing both amnion and chorion. Very late division (after day 13) can lead to conjoined twins. Determination of chorionicity and amnionicity via ultrasound (lambda or T-signs) is crucial for risk stratification, as monochorionic twins have higher risks of complications like twin-to-twin transfusion syndrome. Thus, MADC cannot occur as it violates embryologic timing and membrane formation principles.

Question 134. An 18-week pregnant woman has a quad test showing low risk for both neural tube defects and trisomy 21. What should be the next investigation?

A. Chorionic villi sampling

B. Amniocentesis

C. NIPT (Non-Invasive Prenatal Testing)

D. Anomaly scan

Correct answer: D

Anomaly scan At 18 weeks of gestation, the targeted anomaly scan (level II ultrasound) is the next recommended step for evaluating fetal anatomy. This scan, typically performed between 18–22 weeks, provides a comprehensive assessment of fetal structures including the brain, spine, heart, kidneys, limbs, and placenta. Since the patient’s quad test already shows a low risk for aneuploidy and neural tube defects, invasive procedures like amniocentesis or chorionic villus sampling are unnecessary due to their associated miscarriage risks. The anomaly scan helps detect major structural defects such as neural tube anomalies, congenital heart defects, cleft lip/palate, and skeletal dysplasias. Early identification allows for counseling, possible intervention, or termination within legal gestational limits if severe abnormalities are found. It also helps confirm gestational age, placental location, and amniotic fluid volume. Hence, even

in low-risk pregnancies, the anomaly scan remains a standard part of prenatal care, ensuring fetal well-being and aiding obstetric planning.

Question 135. A G2P1 woman with 6 weeks of amenorrhea presents with vaginal bleeding, hypotension, altered sensorium, abdominal pain, and cervical motion tenderness. Ultrasound reveals free fluid in the right paracolic gutter. What is the most likely diagnosis?

A. Ruptured ectopic pregnancy

B. Missed abortion

C. Abruptio placentae

D. Placenta previa

Correct answer: A

Ruptured ectopic pregnancy A ruptured ectopic pregnancy is a life-threatening emergency resulting from implantation of a fertilized ovum outside the uterine cavity, most commonly in the fallopian tube. The patient typically presents with amenorrhea, abdominal pain, vaginal bleeding, hypotension, and features of hypovolemic shock due to intraperitoneal hemorrhage. The presence of free fluid in the peritoneal cavity, especially in the paracolic gutter or Morrison's pouch on ultrasound, confirms intra-abdominal bleeding. Risk factors include prior pelvic inflammatory disease, tubal surgery, intrauterine device use, and assisted reproductive technology. Management involves rapid resuscitation with IV fluids and blood transfusion followed by emergency laparotomy for removal of the ruptured tube (salpingectomy). In stable patients with unruptured ectopic pregnancies, medical management with methotrexate can be considered. Early diagnosis through β -hCG measurement and transvaginal ultrasound is critical to prevent rupture. This condition remains a leading cause of first-trimester maternal mortality, making timely recognition and surgical intervention lifesaving.

Question 136. What is the correct dose of steroid for fetal lung maturity?

A. Betamethasone 12 mg – 4 doses every 12 hours

B. Betamethasone 6 mg – 2 doses every 12 hours

C. Dexamethasone 6 mg – 4 doses every 12 hours

D. Dexamethasone 12 mg – 2 doses every 24 hours

Correct answer: C

Dexamethasone 6 mg – 4 doses every 12 hours Antenatal corticosteroid therapy promotes fetal lung maturation and reduces the risk of respiratory distress syndrome (RDS) in preterm births. Dexamethasone 6 mg intramuscularly every 12 hours for 4 doses (total 24 mg) or Betamethasone 12 mg every 24 hours for 2 doses are the recommended regimens. The therapy is advised between 24–34 weeks of gestation in women at risk of preterm labor within the next 7 days. Corticosteroids accelerate surfactant production by type II pneumocytes, improving alveolar stability and lung compliance. They also reduce risks of intraventricular hemorrhage

and necrotizing enterocolitis in preterm neonates. The maximal benefit is seen when delivery occurs 24 hours to 7 days after the first dose. Repeat (rescue) courses may be considered if the risk of preterm birth persists. Contraindications include systemic infections and poorly controlled diabetes. This therapy is a cornerstone of modern perinatal care, significantly improving neonatal survival rates.

Question 137. In a hypertensive patient with postpartum hemorrhage, which medication is contraindicated?

A. Oxytocin

B. Methylergometrine

C. Misoprostol

D. PGF-2 alpha

Correct answer: B

Methylergometrine Methylergometrine (Methergine) is a potent uterotonic agent that induces sustained uterine contractions by acting on smooth muscle serotonin and alpha-adrenergic receptors. However, it also causes significant vasoconstriction, which can lead to severe hypertension, cerebrovascular accidents, or myocardial ischemia in patients with pre-existing hypertension, pre-eclampsia, or eclampsia. Therefore, it is contraindicated in hypertensive women. In such cases, safer alternatives like oxytocin and misoprostol (a prostaglandin E1 analog) are preferred for managing postpartum hemorrhage (PPH). PGF-2 α (Carboprost) should be used cautiously in asthmatic patients due to the risk of bronchospasm but is not contraindicated in hypertension. Active management of the third stage of labor with uterotonics remains vital in preventing PPH — the leading cause of maternal mortality worldwide. Thus, drug selection should consider underlying medical conditions to avoid iatrogenic complications during obstetric emergencies.

Question 138. A 32-year-old female at 36 weeks of pregnancy presents with blood pressure of 170/100 mmHg, visual disturbances, headache, and urine protein of 3+. What is the next step?

A. IV labetalol, magnesium sulfate ($MgSO_4$), expedite delivery

B. IV labetalol and delivery at 37 weeks

C. IV labetalol, dexamethasone, and immediate termination of pregnancy

D. IV labetalol, dexamethasone, and conservative management

Correct answer: A

IV labetalol, magnesium sulfate ($MgSO_4$), expedite delivery This patient has severe preeclampsia, characterized by BP ≥160/110 mmHg, proteinuria ≥3+, and target organ symptoms (headache, visual disturbances). Management involves immediate stabilization and expedited delivery, regardless of gestational age, as the definitive cure is delivery of the placenta. IV labetalol (20 mg bolus, repeated as needed) is used for acute BP control,

preventing maternal complications like intracerebral hemorrhage. Magnesium sulfate is administered concurrently for seizure prophylaxis (loading dose 4 g IV + 10 g IM, followed by maintenance). Corticosteroids such as dexamethasone are given only if gestation is <34 weeks to enhance fetal lung maturity — not indicated here. After stabilization, delivery is induced or cesarean section performed based on obstetric indications. Postpartum monitoring continues for 48 hours due to persistent risk of eclampsia. Early recognition and multidisciplinary care reduce maternal and perinatal mortality significantly.

Question 139. A woman with O-negative blood group and a B-positive husband received Anti-D at 28 weeks of pregnancy. What is the criterion for administering Anti-D after delivery?

A. DCT positive, Baby Rh positive

B. DCT positive, Baby Rh negative

C. DCT negative, Baby Rh positive

D. DCT negative, Baby Rh negative

Correct answer: C

DCT negative, Baby Rh positive Anti-D immunoglobulin is administered to Rh-negative mothers to prevent isoimmunization due to exposure to Rh-positive fetal blood cells. Postpartum Anti-D prophylaxis is indicated if the newborn is Rh positive and the mother’s Direct Coombs Test (DCT) is negative, meaning no sensitization has occurred yet. Administering Anti-D within 72 hours after delivery prevents maternal antibody formation by neutralizing fetal Rh antigens in the maternal circulation. If the DCT is positive, it implies that maternal sensitization has already taken place, making prophylaxis ineffective. The standard dose is 300 µg IM, covering up to 30 mL of fetal blood. Additional Anti-D doses are required in cases of antepartum hemorrhage, abortion, or invasive procedures (e.g., amniocentesis). Anti-D prophylaxis has dramatically reduced the incidence of hemolytic disease of the newborn, which once caused significant perinatal morbidity and mortality. Monitoring maternal antibody titers remains essential in subsequent pregnancies to prevent sensitization-related complications.

Question 140. What medication would you recommend to suppress breast milk production in a 29-year-old G2P1 woman whose newborn died within 48 hours?

A. Ergot alkaloids

B. Cabergoline

C. Both A & B

D. None of the above

Correct answer: B

Cabergoline Cabergoline, a dopamine agonist, is the preferred agent for lactation suppression following fetal or neonatal loss. It inhibits prolactin secretion by stimulating D2 receptors in the anterior pituitary. A single dose of 1 mg orally effectively suppresses lactation with minimal side

effects. Ergot alkaloids were used previously but are now avoided due to cardiovascular side effects like hypertension and vasospasm. Cabergoline is superior to bromocriptine due to its longer half-life, better tolerability, and lower incidence of rebound lactation. Suppression of lactation is essential in cases of stillbirth or neonatal death to prevent breast engorgement, pain, and emotional distress. Supportive measures such as tight breast binding, ice packs, and analgesics may complement pharmacological therapy. However, Cabergoline should be avoided in patients with uncontrolled hypertension or cardiac disease. This approach provides both physical and psychological relief to grieving mothers.

Question 141. Which of the following minerals is needed for fertility?

A. Zinc

B. Selenium

C. Iron

D. Copper

Correct answer: A

Zinc Zinc is an essential trace mineral vital for reproductive health in both males and females. It plays a central role in spermatogenesis, ovulation, fertilization, and embryonic development. Zinc is a cofactor for numerous enzymes involved in DNA synthesis, cell division, and hormone metabolism. In men, zinc deficiency leads to decreased testosterone levels, impaired sperm motility, and abnormal morphology, all contributing to infertility. In women, zinc supports follicular development, luteal function, and endometrial maturation, which are essential for successful conception. Dietary sources include meat, seafood (especially oysters), nuts, and legumes. The recommended daily allowance (RDA) for adults is about 10–15 mg. Chronic deficiency can result from malnutrition, malabsorption, or excessive alcohol consumption. Supplementation has been shown to improve fertility outcomes in zinc-deficient individuals. Thus, adequate zinc intake is crucial for maintaining reproductive health and optimizing fertility potential in both genders.

Question 142. A woman at 40 weeks gestation has been in the second stage of labor for 2 hours, with 4 contractions every 10 minutes. The fetal head is at +3 station and caput is present. What is the most appropriate management?

A. Outlet forceps

B. Ventouse

C. Cavity forceps

D. Low forceps

Correct answer: A

Outlet forceps Outlet forceps are indicated when the fetal head is visible at the perineum, the scalp is visible without separating the labia, and the head has reached the pelvic floor (+3 station or lower). In this case, the woman has been in the second stage of labor for 2 hours with

good contractions and the fetal head at +3 station — fulfilling criteria for outlet forceps delivery. The aim is to expedite delivery while minimizing maternal and fetal morbidity. Ventouse (vacuum extraction) is avoided when caput and molding are significant, as it increases the risk of cephalhematoma and scalp injury. Cavity or mid-forceps are used when the head is higher in the pelvis, which is not the case here. Outlet forceps delivery requires complete cervical dilatation, ruptured membranes, and an engaged, well-applied head. Adequate anesthesia and episiotomy are often needed. Properly performed, it safely shortens the second stage, reducing fetal distress and maternal exhaustion.

Question 143. A 14-year-old girl presents with acute urinary retention and cyclical abdominal pain. Examination shows a tense blue swelling in the vaginal area and a suprapubic bulge on rectal exam. What is the most likely cause of her condition?

A. Imperforate hymen

B. Transverse vaginal septum

C. Longitudinal vaginal septum

D. Cervical agenesis

Correct answer: A

Imperforate hymen An imperforate hymen is a congenital anomaly resulting from failure of the inferior end of the vaginal plate to canalize. It presents at puberty with cyclical abdominal pain, primary amenorrhea, and urinary retention due to accumulation of menstrual blood behind the intact hymen (hematocolpos or hematometra). The bluish bulge seen at the introitus represents distension of the hymenal membrane by retained blood. On rectal or abdominal examination, a midline pelvic mass may be palpable. Diagnosis is clinical and can be confirmed by pelvic ultrasonography showing a fluid-filled vagina and uterus. Treatment is surgical — cruciate or annular hymenotomy, allowing drainage of retained blood and relief of symptoms. Failure to recognize this condition can lead to complications like endometriosis, infection, or infertility due to retrograde menstruation. Transverse vaginal septum presents similarly but with a higher-level obstruction; however, it lacks the typical bluish hymenal bulge. Early diagnosis ensures prompt relief and preservation of reproductive function.

Question 144. Under normal physiological conditions, which is the most potent form of natural estrogen?

A. Estradiol

B. Estriol

C. Conjugated estrogen

D. Estrone

Correct answer: A

Estradiol Among the three naturally occurring estrogens — estradiol (E_2), estrone (E_1), and estriol (E_3) — estradiol is the most potent and biologically active form. It is primarily secreted

by the granulosa cells of ovarian follicles during the reproductive years under the influence of follicle-stimulating hormone (FSH). Estrone is produced in peripheral tissues, especially adipose tissue, from androstenedione and predominates after menopause, while estriol is mainly synthesized in the placenta during pregnancy and is the least potent. Estradiol binds strongly to estrogen receptors in target tissues like the uterus, breast, bone, and brain, promoting proliferation and maintenance of secondary sexual characteristics, endometrial growth, and bone density. Its plasma concentration fluctuates throughout the menstrual cycle, peaking before ovulation. Measurement of estradiol levels is useful in assessing ovarian function and fertility. Its potency is due to its high receptor affinity and longer biological half-life compared to other natural estrogens.

Question 145. An 18-year-old woman presents with primary amenorrhea but has normal secondary sexual characteristics. Her lab results show FSH 5.5 IU, LH 10 IU, and a 46XX karyotype. What is the most likely diagnosis?

A. Mullerian agenesis

B. Kallmann syndrome

C. Androgen insensitivity syndrome

D. Gonadal dysgenesis

Correct answer: A

Mullerian agenesis Mullerian agenesis (Mayer-Rokitansky-Küster-Hauser syndrome) is a congenital absence of the uterus and upper two-thirds of the vagina due to failure of Müllerian duct development. Affected individuals present with primary amenorrhea and normal development of secondary sexual characteristics (breasts, pubic hair) because the ovaries and hypothalamic–pituitary axis function normally, producing normal estrogen levels. Hormone levels (FSH and LH) are within normal range, as in this case. Physical examination reveals a short or absent vaginal canal and absent uterus on pelvic ultrasound or MRI. The karyotype is 46XX, distinguishing it from androgen insensitivity syndrome (46XY). Treatment focuses on creation of a functional vagina, often through non-surgical dilation (Frank’s method) or surgical vaginoplasty. Fertility options include assisted reproduction using a gestational surrogate, as the ovaries are functional. Early psychological counseling is vital to address the emotional impact of the diagnosis and infertility.

Question 146. What is the average increase in head circumference during the first three months of life?

A. 1 cm/month

B. 1.5 cm/month

C. 2 cm/month

D. 2.5 cm/month

Correct answer: C

2 cm/month Head circumference is an important indicator of brain growth and neurodevelopment during infancy. During the first three months of life, it increases by approximately 2 cm per month, reflecting rapid cerebral expansion. From 3 to 6 months, the rate slows to about 1 cm per month, and thereafter to 0.5 cm per month until the end of the first year. At birth, the average head circumference is about 35 cm, reaching approximately 47 cm by one year of age. Monitoring head circumference helps in early detection of conditions like hydrocephalus, microcephaly, and craniosynostosis. It should always be plotted on standardized growth charts during routine pediatric check-ups. Proper nutrition, absence of perinatal insults, and normal endocrine function are essential for healthy brain development. Any deviation from expected growth patterns warrants further investigation, including neuroimaging and metabolic screening, to ensure timely intervention and prevent long-term neurodevelopmental deficits.

Question 147. A 28-year-old primigravida at 32 weeks comes for a routine prenatal checkup. During the ultrasound, several measurements are taken to assess fetal growth. Which of the following is not used as a criterion for diagnosing intrauterine growth restriction (IUGR)?

A. Fetal weight less than the 3rd percentile (-3 SD)

B. Uterine artery pulsatility index (PI) greater than 95th percentile NODIA page 99 INICET Examination Paper

C. Umbilical artery absent end-diastolic flow (AEDF)

D. Abdominal circumference (AC) less than the 3rd percentile (-3 SD)

Correct answer: B

Uterine artery pulsatility index (PI) greater than 95th percentile IUGR is diagnosed when the fetus fails to achieve its genetically predetermined growth potential. Diagnostic ultrasound parameters include fetal weight and abdominal circumference below the 10th percentile (or 3rd percentile for severe IUGR), and Doppler studies such as absent or reversed end-diastolic flow (AEDF/REDF) in the umbilical artery. While increased uterine artery PI indicates high placental resistance and predicts the risk of IUGR, it is not a diagnostic criterion itself. Instead, it serves as an ancillary marker suggesting uteroplacental insufficiency. The combination of biometric and Doppler findings provides a comprehensive assessment of fetal health. Management involves close monitoring, optimizing maternal nutrition, and timely delivery if fetal compromise develops. Early detection and differentiation between symmetrical and asymmetrical IUGR are crucial, as the latter (due to placental insufficiency) is more common and amenable to intervention. Accurate diagnosis minimizes perinatal morbidity and mortality through appropriate timing of delivery and neonatal care. DERMATOLOGY

Question 148. Annular lesions are seen in all of the following except:

A. Tinea corporis

B. Porokeratosis

C. Urticaria

D. Pityriasis rosea

Correct answer: C

Urticaria Annular lesions are ring-shaped skin lesions with central clearing and a well-defined active edge. They are characteristic of several dermatoses, including tinea corporis, pityriasis rosea, and porokeratosis. In contrast, urticaria produces transient, edematous wheals that are not annular but irregular and evanescent. Tinea corporis (ringworm) is a dermatophyte infection presenting as scaly, erythematous plaques with peripheral spread. Pityriasis rosea shows herald patches followed by multiple annular, salmon-colored lesions along skin cleavage lines. Porokeratosis, a keratinization disorder, produces annular plaques with raised hyperkeratotic borders. Annularity in skin lesions results from centrifugal expansion with central healing. Correct morphological recognition aids diagnosis since many conditions can appear similar. In urticaria, lesions typically last less than 24 hours and blanch on pressure, helping differentiate it from fixed annular dermatoses. Understanding lesion morphology is vital in dermatological diagnosis, guiding further investigations and specific therapy.

Question 149. Match the dermatological disorders in Column A with their respective investigations in Column B: Disease Investigation 1. Tinea a. Biopsy 2. Leprosy b. KOH mount 3. Lupus vulgaris c. Slit skin smear 4. Allergic dermatitis d. Patch test

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

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

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

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

Correct answer: A

1-b, 2-c, 3-a, 4-d Diagnostic investigations in dermatology depend on the suspected etiology. Tinea (fungal infection) is confirmed by KOH mount, which reveals hyphae under microscopy. Leprosy is diagnosed via slit skin smear, demonstrating Mycobacterium leprae using Ziehl–Neelsen or Fite–Faraco staining. Lupus vulgaris, a form of cutaneous tuberculosis, is confirmed by skin biopsy showing granulomatous inflammation with caseous necrosis. Allergic contact dermatitis is evaluated using patch testing, where allergens are applied to the skin to identify sensitizing agents. Each investigation targets the causative pathology: mycotic, mycobacterial, inflammatory, or allergic. Accurate test selection ensures specific diagnosis, guiding appropriate antimicrobial or immunomodulatory therapy. Combining clinical morphology with targeted investigations remains fundamental in dermatology.

Question 150. A mother had painful vesicular genital lesions a year ago. Her newborn later developed meningitis, fever, and rashes on the abdomen and forearm and died within a week. Scrapings from the lesions revealed multinucleated giant

cells. What is the most likely causative organism?

A. HSV-2

B. Enterovirus 70

C. Cowdry type A

D. VZV

Correct answer: A

HSV-2 Neonatal herpes simplex virus type 2 (HSV-2) infection results from perinatal transmission during vaginal delivery in mothers with active genital herpes. The presence of multinucleated giant cells on a Tzanck smear or biopsy indicates a herpes infection. HSV-2 is the predominant cause of genital herpes and is more commonly transmitted to neonates than HSV-1. Clinical manifestations include disseminated infection with fever, vesicular rash, encephalitis, and meningitis, leading to high mortality if untreated. Transmission risk is greatest with primary maternal infection near delivery. Early diagnosis via viral culture or PCR is crucial. Treatment with intravenous acyclovir (20 mg/kg every 8 hours for 14–21 days) significantly reduces mortality and neurological complications. Preventive measures include suppressive antiviral therapy during pregnancy and cesarean delivery in women with active lesions at term. Awareness and antenatal screening help prevent neonatal HSV infections, which carry devastating outcomes if undiagnosed.

Question 151. Drug resistance is most seen with which sexually transmitted infection (STI)?

A. Chancroid

B. Donovanosis

C. Syphilis

D. Gonorrhea

Correct answer: D

Gonorrhea Neisseria gonorrhoeae, the causative organism of gonorrhea, has shown remarkable antimicrobial resistance development over decades. Initially sensitive to sulfonamides, penicillin, and tetracyclines, resistance has progressively evolved due to β -lactamase production, altered penicillin-binding proteins, and efflux pumps. Fluoroquinolone resistance emerged globally, followed by decreased susceptibility to macrolides and third-generation cephalosporins (ceftriaxone, cefixime). Multidrug-resistant strains now pose a major public health concern, leading WHO to classify gonorrhea as a “priority pathogen.” Treatment failures with oral regimens have made dual therapy — ceftriaxone (500 mg IM single dose) plus azithromycin (1 g PO single dose) — the standard recommendation. Resistance surveillance and molecular typing (NG-MAST, NG-STAR) are critical to track resistant strains. Other STIs such as chancroid (caused by Haemophilus ducreyi) and donovanosis (Klebsiella granulomatis) show far less resistance. Continuous antibiotic stewardship and new drug development are essential to

prevent gonorrhea from becoming untreatable. ANAESTHESIA

Question 152. Which of the following is a second-generation Laryngeal Mask Airway (LMA)?

A. LMA ProSeal

B. Ambu

C. Intubating LMA

D. Classic LMA

Correct answer: A

LMA ProSeal LMA ProSeal is a second-generation supraglottic airway device developed to improve the safety of ventilation and minimize the risk of aspiration compared to the Classic LMA (first-generation). It features an additional gastroesophageal drainage tube that allows gastric decompression or insertion of a nasogastric tube, reducing gastric insufflation and aspiration risk. The ProSeal's cuff design provides better oropharyngeal seal pressure (up to 30 cm H_2O), making it suitable for both spontaneous and controlled ventilation. It also has a bite block and integrated cuff pressure monitoring. Indications include short to intermediate-duration surgeries, especially in patients where endotracheal intubation is not mandatory. However, it should not be used in patients with a high risk of regurgitation or in procedures requiring muscle relaxation. The development of second-generation LMAs like ProSeal represents a major advancement in airway management by enhancing safety, ventilation efficiency, and patient comfort during anesthesia.

Question 153. Which of the following is the induction anesthesia of choice in the pediatric age group?

A. Sevoflurane

B. Desflurane

C. Halothane

D. Isoflurane

Correct answer: A

Sevoflurane Sevoflurane is the preferred inhalational induction agent for pediatric anesthesia due to its non-pungent odor, rapid onset, and smooth induction characteristics. It has a low blood-gas partition coefficient (0.65), leading to quick equilibration between alveolar and brain concentrations, ensuring rapid induction and recovery. Unlike halothane, sevoflurane has a better cardiovascular safety profile, causing minimal arrhythmias and negligible myocardial depression. Desflurane, though rapid-acting, is highly pungent and irritant to the airway, making it unsuitable for mask induction. Sevoflurane also allows for easy maintenance of spontaneous respiration during induction and is frequently used in combination with nitrous oxide and oxygen. Its hemodynamic stability and minimal airway irritation make it ideal for use in uncooperative or anxious children. Rare complications include emergence delirium and

fluoride ion production with prolonged exposure, though clinically insignificant. Thus, sevoflurane has largely replaced halothane in pediatric anesthesia practice.

Question 154. Which one of the following is the incorrect step in the ideal sequence for effective CPR?

A. 100–120 rate per minute

B. Depth of pressure is 2–3 cm Click Here to Buy book on Amazon MEDINK

C. Compression to ventilation ratio is 30:2

D. Allow complete recoil in between

Correct answer: B

Depth of pressure is 2–3 cm The American Heart Association (AHA) guidelines for adult cardiopulmonary resuscitation (CPR) specify a chest compression depth of at least 5 cm (2 inches) but not more than 6 cm, not 2–3 cm, which is insufficient to generate adequate perfusion. Therefore, option (B) is incorrect. The correct sequence follows the CAB approach — Compressions, Airway, and Breathing. Effective compressions should be performed at a rate of 100–120 per minute, allowing full chest recoil to ensure venous return. The recommended compression-to-ventilation ratio for single rescuers is 30:2. Minimizing interruptions (<10 seconds) and ensuring correct hand placement on the lower half of the sternum improve outcomes. CPR quality directly affects survival, emphasizing depth, rate, and recoil. In children and infants, compression depth is approximately one-third of chest diameter (4–5 cm). Proper training and adherence to updated guidelines are vital for effective resuscitation and neurological recovery following cardiac arrest.

Question 155. A patient undergoing surgery under general anesthesia received 85 mg of rocuronium for induction, but the anesthetist was unable to intubate. Which reversal agent is best suited for this situation?

A. Neostigmine

B. Edrophonium

C. Sugammadex

D. Glycopyrrolate

Correct answer: C

Sugammadex Sugammadex is a novel selective relaxant binding agent that rapidly reverses neuromuscular blockade induced by rocuronium and vecuronium, even after full-dose administration. It acts by encapsulating the steroidal neuromuscular blocker molecules, rendering them inactive and facilitating rapid excretion via the kidneys. In “cannot intubate, cannot ventilate” scenarios, Sugammadex provides a near-immediate reversal (within 2–3 minutes) of profound blockade, unlike neostigmine, which works only for partial reversal and requires acetylcholinesterase inhibition. It allows restoration of spontaneous ventilation and airway protection quickly, improving patient safety. The standard dose for immediate reversal

after rocuronium 1.2 mg/kg is 16 mg/kg IV. Its use has transformed airway management safety, particularly in emergency or failed intubation situations. Side effects are minimal, including transient bradycardia or hypersensitivity. By targeting the underlying pharmacology rather than acetylcholine metabolism, Sugammadex provides a fast, predictable, and safe reversal mechanism unmatched by older agents. RADIOLOGY

Question 156. Which of the following is true about CT (Computed Tomography)?

A. Water has HU of zero

B. Unfiltered X-ray beam is used

C. CT head dose is 20 mSv

D. First investigation for gallstones

Correct answer: A

Water has HU of zero In CT imaging, tissue density is quantified in Hounsfield Units (HU), where water is assigned a reference value of 0 HU and air is –1000 HU. Dense structures like bone may have +1000 HU, while fat and soft tissue fall between –100 and +100 HU. CT scanners use filtered X-ray beams that rotate around the patient, producing cross-sectional images reconstructed by computer algorithms. The radiation dose for a CT head is typically 1–2 mSv, not 20 mSv. CT is not the first investigation for gallstones — ultrasound is preferred due to better detection of radiolucent stones and absence of radiation. CT is, however, excellent for detecting calcifications, fractures, vascular lesions, and neoplasms. Understanding HU values helps differentiate between tissues (e.g., distinguishing cystic from solid lesions). Thus, recognizing that water has a zero HU forms a fundamental concept in radiologic interpretation.

Question 157. Which type of contrast can be given to patients with chronic kidney disease (CKD)?

A. Ionic iodinated contrast

B. Non-ionic iodinated contrast

C. Ultrasound contrast

D. Gadolinium

Correct answer: C

Ultrasound contrast Patients with chronic kidney disease (CKD) are at risk of contrast-induced nephropathy (CIN) when exposed to iodinated (CT) or gadolinium-based (MRI) contrast agents. Hence, ultrasound contrast, composed of microbubbles of inert gases (e.g., sulfur hexafluoride), is safest as it is not nephrotoxic and is excreted via the lungs. Non-ionic iodinated contrast, though safer than ionic types, still poses nephrotoxic risk. Gadolinium is contraindicated in advanced CKD due to the risk of nephrogenic systemic fibrosis (NSF). Ultrasound contrast enhances visualization of blood flow, liver lesions, and vascular structures without renal compromise. For patients with impaired renal function, non-contrast MRI or ultrasound contrast imaging are preferred diagnostic modalities. Pre-hydration and avoidance of nephrotoxic drugs

further minimize CIN risk if iodinated contrast use becomes unavoidable. Hence, ultrasound contrast is the safest and most appropriate choice for CKD patients requiring imaging studies.

Question 158. Which of the following is NOT characteristic of rapid cycling in mood disorders?

A. At least 4 distinct episodes per year

B. Antidepressants increase likelihood

C. Commonly associated with concomitant hypothyroidism

D. Occurs commonly in men

Correct answer: D

Occurs commonly in men Rapid cycling bipolar disorder is defined by the occurrence of four or more mood episodes (mania, hypomania, or depression) within a 12-month period. It reflects a more severe and treatment-resistant subtype of bipolar disorder. The exact mechanism is not fully understood, but biological, endocrine, and medication-related factors play a role. It is most commonly seen in women and is strongly associated with hypothyroidism, especially in patients on lithium therapy, which may impair thyroid function. Antidepressant use can precipitate or worsen rapid cycling by triggering mood switches. Hence, option D (“occurs commonly in men”) is incorrect because women are affected more frequently. Clinically, these patients show poor response to lithium and may require valproate or lamotrigine as mood stabilizers. Mnemonic: “4 F’s” — Four episodes, Female, Fluctuating thyroid, From antidepressants — helps recall key associations. Early identification is crucial because rapid cycling often predicts chronicity, higher suicide risk, and poor functional outcome without appropriate mood stabilizer therapy.

Question 159. Which of the following is not part of the diagnostic criteria for Autism Spectrum Disorder (ASD)?

A. Abnormalities in social communication

B. Cognitive dysfunction

C. Abnormalities in socialization

D. Restricted patterns of behavior & interest

Correct answer: B

Cognitive dysfunction According to DSM-5 diagnostic criteria, Autism Spectrum Disorder (ASD) is defined by two essential domains: (1) deficits in social communication and social interaction, and (2) restricted, repetitive patterns of behavior, interests, or activities. These symptoms must be present from early developmental periods and must cause clinically significant impairment. While cognitive dysfunction may be seen in some individuals with ASD, it is not a defining diagnostic criterion. Many children with ASD have normal or even superior intelligence (high-functioning autism). Therefore, option B is excluded from the core diagnostic features. Clinical presentation includes poor eye contact, lack of social reciprocity, delayed language development, and adherence to rigid routines. Early screening tools like the M-CHAT (Modified

Checklist for Autism in Toddlers) help in early identification. Mnemonic: “SIR” — Social deficits, Interests restricted, Repetitive behavior — summarizes the triad. Early behavioral therapy, speech-language interventions, and parental involvement are key to improving long-term functional outcomes in autism.

Question 160. Which of the following is not a component of Beck’s Cognitive Theory of Depression?

A. Cognitive distortions

B. Automated thoughts

C. Introjection

D. Dysfunctional belief

Correct answer: C

Introjection Aaron Beck’s Cognitive Theory of Depression postulates that depression results from distorted negative thinking rather than unconscious conflict. The theory focuses on three major cognitive components: 1. Automatic thoughts : spontaneous negative thoughts about oneself, the world, and the future. 2. Cognitive distortions : systematic errors in thinking such as overgeneralization, catastrophizing, and black-and-white thinking. 3. Dysfunctional core beliefs : deep-seated negative schemas developed from early experiences. These collectively form the “Negative Cognitive Triad”. Introjection, however, belongs to Freud’s psychodynamic theory, referring to internalization of others’ beliefs or values, and thus is not part of Beck’s model. The cognitive theory is the foundation for Cognitive Behavioral Therapy (CBT), a structured, evidence-based psychotherapeutic approach widely used for depression and anxiety disorders. Mnemonic: “A.C.D.” — Automatic thoughts, Cognitive distortions, Dysfunctional beliefs — captures Beck’s components. CBT targets these distorted thought patterns, helping patients replace maladaptive cognitions with realistic and adaptive ones, ultimately reducing depressive symptoms and preventing relapse.

Question 161. The mhGAP program includes all of the following disorders EXCEPT:

A. Obsessive-Compulsive Disorder

B. Depression

C. Schizophrenia

D. Childhood mental disorder

Correct answer: A

Obsessive-Compulsive Disorder The Mental Health Gap Action Programme (mhGAP) was launched by the World Health Organization (WHO) in 2008 to scale up services for mental, neurological, and substance use disorders, especially in low- and middle-income countries where mental health resources are limited. The program focuses on priority conditions that contribute most to the global disease burden: depression, psychosis, epilepsy, suicide prevention, dementia, substance use, and developmental disorders. The program emphasizes

integrating mental health care into primary health care settings, supported by evidence-based clinical guidelines. Importantly, Obsessive-Compulsive Disorder (OCD) is not included as a target disorder within mhGAP's initial priority list. Instead, it may be addressed secondarily under anxiety management modules. Mnemonic: "DEEP SAD" — Depression, Epilepsy, Epileptic psychosis, Psychosis, Suicide, Alzheimer's (Dementia), Developmental disorders — summarizes mhGAP priorities. The aim is early detection, affordable treatment, and reduction in stigma related to mental illness. Hence, OCD is excluded, making option A the correct answer.

Question 162. Cannabidiol is not used to treat which of the following conditions?

A. Dravet syndrome

B. Tuberous sclerosis complex

C. Lennox-Gastaut syndrome

D. Rett syndrome

Correct answer: D

Rett syndrome Cannabidiol (CBD), the non-psychoactive component of Cannabis sativa, has gained FDA approval for the treatment of rare, severe childhood epilepsies, including Dravet syndrome, Lennox–Gastaut syndrome, and Tuberous Sclerosis Complex (TSC). Its mechanism involves modulation of endocannabinoid receptors, calcium channels, and adenosine signaling, leading to decreased neuronal excitability and seizure control. CBD is marketed as Epidiolex® in oral solution form. Rett syndrome, however, is a neurodevelopmental disorder primarily affecting females, caused by mutations in the MECP2 gene on the X chromosome. It is characterized by early developmental regression, hand-wringing stereotypies, loss of speech, and autonomic dysfunction. Although seizures occur in Rett syndrome, CBD is not an approved therapy for it, and its efficacy remains under investigation. Current management focuses on supportive care, physiotherapy, and antiepileptic drugs. Mnemonic: "Let's Treat Dravet, Lennox, Tuberous — not Rett" helps recall approved indications. Recognizing FDA-approved uses of CBD is essential for avoiding off-label prescribing and understanding its role in modern epilepsy pharmacotherapy.

Question 163. Supportive therapy is not typically provided for which type of patient?

A. A patient who is severely ill, non- cooperative, and unable to participate in therapy

B. A person who is motivated and has good control over emotions

C. A person with cognitive and functional abilities intact

D. A patient who is severely ill and has lost ego integrity

Correct answer: A

A patient who is severely ill, non-cooperative, and unable to participate in therapy Supportive psychotherapy is primarily indicated for patients who are severely ill, have impaired ego strength, poor insight, or reduced capacity to tolerate insight-oriented therapy. Its main goal is to maintain current functioning, provide reassurance, strengthen coping mechanisms, and

prevent further psychological deterioration. It is commonly used in patients with chronic psychiatric illness, severe stress, or loss of ego integrity. However, supportive therapy requires at least a minimum level of cooperation and participation from the patient. If a patient is severely ill, non-cooperative, and unable to participate in therapy, meaningful therapeutic engagement is not possible. In such cases, immediate medical stabilization, pharmacotherapy, or even inpatient management may be required before psychotherapy can be initiated. A motivated person with good emotional control and intact cognitive and functional abilities is usually better suited for insight-oriented or cognitive therapies rather than purely supportive therapy. Meanwhile, severely ill patients with compromised ego strength are classic candidates for supportive therapy. Therefore, supportive therapy is not typically provided for (A) a patient who is severely ill, non-cooperative, and unable to participate in therapy. ********** MEDINK INICET Examination Paper Answer (A)What is the role of the secretions produced by the region indicated by the arrow in the given histology image? (A) Sexual function (B) Maintenance of glucose level (C) Electrolyte balance (D) Emergency response 1. (C) Electrolyte balance The provided histology image shows a cross- section of the adrenal gland. The arrow is pointing to the zona glomerulosa, the outermost layer of the adrenal cortex. This zone is responsible for synthesizing and secreting mineralocorticoids, with aldosterone being the most significant. The primary function of aldosterone is the regulation of blood pressure and electrolyte balance. It acts on the distal tubules and collecting ducts of the kidneys to increase the reabsorption of sodium and water, and to enhance the excretion of potassium. Sexual function (Option A) is primarily influenced by androgens secreted from the zona reticularis. Maintenance of glucose levels (Option B) is a key function of glucocorticoids, such as cortisol, which are secreted by the zona fasciculata. The emergency "fight-or-flight" response (Option D) is mediated by catecholamines (epinephrine and norepinephrine) secreted by the adrenal medulla, not the cortex. Which type of joint is NOT associated with the bone illustrated in the diagram? (A) Syndesmosis (B) Symphysis (C) Plane synovial joint (D) Synchondrosis 2. (D) Synchondrosis The bone shown in the image is a rib, identifiable by its elongated, curved shape and posterior articulation features. Ribs are associated with the following joint types: (C) Plane synovial joints → At the costovertebral and costotransverse joints between the rib and vertebrae. (A) Syndesmosis → The interosseous ligaments between rib and vertebrae contribute to fibrous union. (B) Symphysis → Indirectly associated via the manubriosternal joint (sternal angle) and some costal cartilage interactions. (D) However, a synchondrosis is a primary cartilaginous joint where bones are united by hyaline cartilage, such as the epiphyseal plate or first sternocostal joint (sometimes classified differently). Ribs themselves do not form true synchondroses directly in typical articulation patterns, except in early developmental stages. Thus, among the options listed, the joint type not typically associated with the rib is : (D) Synchondrosis. The spinal sensory nucleus of the trigeminal nerve sends its second-order neurons to transmit which type of sensation? (A) Touch (B) Pain (C) Vibration (D) Proprioception 3. (B) Pain The sensory

nucleus of the trigeminal nerve in the brainstem is divided into three parts. The principal (or chief) sensory nucleus processes discriminative touch and pressure. The mesencephalic nucleus handles proprioception from the muscles of mastication. The spinal sensory nucleus is primarily responsible for processing protopathic sensations, which include pain and temperature, as well as crude touch from the ipsilateral side of the face. First- order neurons from the trigeminal ganglion synapse in the spinal nucleus. The second-order neurons then decussate (cross the midline) and ascend in the ventral two-dimensionality tract to the contralateral thalamus (VPM nucleus). From there, third-order neurons project to the somatosensory cortex. Fine touch (Option A) is primarily handled by the principal nucleus, while vibration (Option C) and proprioception (Option D) are carried by other pathways. The substantia nigra has functional connections with which component of the basal ganglia? (A) Striatum (B) Pallidum (C) Subthalamic nucleus (D) Thalamus 4. (A) Striatum The substantia nigra, located in the midbrain, is a crucial component of the basal ganglia motor circuitry. It is most famously and extensively connected to the striatum (which consists of the caudate nucleus and the putamen). This connection forms the nigrostriatal pathway, where dopaminergic neurons from the substantia nigra pars compacta (SNc) project to the striatum to modulate its activity. This pathway is essential for the initiation and smooth execution of voluntary movements, and its degeneration is the primary pathology in Parkinson's disease. While the substantia nigra pars reticulata receives input from the