PrepLadder

FMGE Jan 2024 Questions with Answers

Anaesthesia

Q. Which of the following is the use of the Mallampatti classification?

- A. Endotracheal intubation
- B. To evaluate the risk of surgery
- C. To evaluate the pros and cons of surgery
- D. To evaluate the fitness of the patient

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Endotracheal Intubation The Mallampati classification is primarily used to assess the difficulty of endotracheal intubation. It evaluates the visibility of anatomical structures in the oral cavity to predict the ease or difficulty of securing the airway. Mallampati Airway Classification Mallampati Classification: (Mnemonic - PUSH - Pillars, Uvula, Soft palate, Hard palate) Class I: Faucial pillars, uvula, soft palate, and hard palate are visualized. Class II: The base of the uvula, soft palate, and hard palate are visualized. Class III: Soft palate and hard palate are visualized. Class IV: Hard palate only is visualized. Class 0: Any part of the epiglottis is visible (easy laryngoscopy with difficult airway management) Incorrect Options: Options B, C, and D: The Mallampati classification is not used to evaluate the overall risk associated with surgery and does not provide insights into the pros and cons of surgical procedures. It does not assess a patient's general fitness for surgery.

Q. Which of the following is the most common drug used in day care surgery/TIVA?

- A. Sodium thiopentone
- B. Propofol
- C. Halothane
- D. Ketamine

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Propofol Propofol is the preferred choice for daycare surgery and Total Intravenous Anesthesia (TIVA) due to its rapid onset and quick recovery profile. Additionally, Propofol is associated with a lower incidence of postoperative nausea and vomiting (PONV) Propofol Appearance: Clear, white emulsion, available as a 1% aqueous preparation (10 mg/mL) for IV administration. Composition of Propofol Chemical structure: phenol ring with two isopropyl groups. Solubility: not water-soluble; available as a 1%

aqueous oil-in-water emulsion. Emulsion ingredients: contains soybean oil, glycerol, and egg lecithin. Storage requirements: this should be administered within 6 hours of opening due to the risk of bacterial contamination, and a strict sterile technique is required 0.005% disodium edetate or 0.025% sodium metabisulfite helps slow bacterial growth. Pharmacokinetics of Propofol Administration Route: only available for intravenous use. Onset of Action: rapid onset; effects typically observed for 2–8 minutes after administration. Distribution: short initial distribution half-life leads to quick awakening. Recovery: faster recovery compared to other anesthetics, minimal "hangover" effects. Biotransformation: high clearance exceeding hepatic blood flow (possible extrahepatic metabolism); metabolism occurs in the liver, resulting in inactive metabolites. Excretion: Primarily eliminated via urine; unaffected by end-stage kidney disease. Clinical Uses Induction of Anesthesia: Suitable for patients aged 3 years and older; can be used in younger children with IV access. Maintenance of Anesthesia: For patients over 2 months old. Sedation: During monitored anesthesia for various procedures. For intubated, mechanically ventilated ICU patients. Off-Label Uses Management of refractory status epilepticus in both children and adults. Treatment of refractory postoperative nausea and vomiting. Incorrect Options: Options A, C and D are less commonly chosen for daycare surgeries

Q. Which of the following topical local anesthetics is commonly used in cataract surgery?

- A. Proparacaine 0.5%
- B. Bupivacaine 0.5%
- C. Halothane
- D. Nitrous Oxide

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Propracaine 0.5% Explanation: Proparacaine 0.5% is the most frequently used topical local anesthetic for cataract surgery due to its effectiveness in providing adequate anesthesia with minimal systemic effects. It is preferred for its rapid onset and relatively short duration of action, which is well-suited for the brief nature of cataract procedures. Incorrect Options: Bupivacaine (Option B): Bupivacaine is more commonly used for spinal, epidural, and peripheral nerve blocks. Halothane and Nitrous (Oxide Option C and D) are inhalational anesthetic agents used for general anesthesia, not topical local anesthesia.

Q. Which of the following is the mechanism of action of Local anesthetics?

- A. Blocks Na+ channels
- B. Stimulate Ca+ Channels
- C. Block Cl- Channels
- D. Stimulate K+ channels

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Blocks Na+ channels Explanation: Local anesthetics work by blocking sodium channels in nerve membranes, preventing the propagation of nerve impulses, which results in local anesthesia. MOA: Blocks inactivation gates of Na+ channels → Disrupts depolarisation → No action potential generated → No pain sensation. Incorrect Options: Stimulate Ca+ Channels (Option A): Calcium channels are involved in neurotransmitter release at synapses, but local anesthetics do not stimulate Ca²$^{+}$ channels. They primarily block sodium channels. Block Cl- Channels (Option B): Chloride channels play a role in the regulation of cell volume and maintaining membrane potential, but local anesthetics do not block chloride channels. Stimulate K+ channels (Option C): Potassium channels are involved in the repolarization phase of the action potential, but local anesthetics do not directly stimulate these channels. Their primary effect is on sodium channels to block nerve conduction.
Subject: Anatomy

Q. Identify the muscle that is defective in the given image.

- A. Gluteus medius and Gluteus minimus
- B. Gluteus maximus
- C. Piriformis
- D. Obturator internus

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Gluteus medius and Gluteus minimus Explanation: The Gluteus medius and Gluteus minimus are responsible for the abduction and medial rotation of the thigh and are innervated by the superior gluteal nerve. A positive Trendelenburg test, which is indicated by a drop in the pelvic alignment when standing on one leg, is characteristic of a defect in these muscles. (as shown in the image) This condition suggests a superior gluteal nerve injury, which results in a lurching motion towards the side of the lesion.

A surgical procedure is performed on the great saphenous vein, around 2.5 cm anterior to the medial malleolus. Which of the following structures is most likely to be injured?

- A. Saphenous nerve
- B. Sural nerve
- C. Deep peroneal nerve
- D. Tibial nerve

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Saphenous nerve Explanation: The great saphenous vein passes anterior to the medial malleolus and is closely associated with the saphenous nerve; therefore, it is more prone to injury during this procedure. Great Saphenous Vein Origin: Begins at the medial end of the dorsal venous arch. Course: Ascends 2.5 cm in front of the medial malleolus, along the medial aspect of the tibia with the saphenous nerve. Passes posterior to the medial condyles of the tibia and femur. Runs posterior to the patella and ascends along the medial side of the femur. Pierces the cribriform fascia and passes through the saphenous opening. Drains into the femoral vein after piercing the femoral sheath. Clinical Aspects Venesection: Performed at the ankle in emergencies. Care must be taken to avoid damaging the saphenous nerve (as it accompanies the vein). Coronary Bypass Surgery: Commonly used as a graft for bypass surgery. The vein must be reversed to prevent its valves from obstructing blood flow in the graft.

Q. In the given image, the physician is trying to palpate which of the following arteries?

- A. Anterior tibial artery
- B. Posterior tibial artery
- C. Dorsalis pedis artery
- D. Lateral plantar artery

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Posterior tibial artery Explanation: The posterior tibial artery is present in the posterior aspect of the leg and, runs posterior to the tibia, and supplies the calf region. Arrangement of Structures Under the Flexor Retinaculum (Medial to Lateral) Mnemonic: Tom Dick ANd Harry T: Tibialis posterior D: Flexor Digitorum longus A: Posterior tibial Artery N: Tibial Nerve H: Flexor Hallucis longus Anterior tibial artery (Option A): Anterior tibial artery is present in the anterior aspect of the leg. Dorsalis pedis artery (Option C): The anterior tibial artery continuous as the dorsalis pedis artery Lateral plantar artery (Option D): The posterior tibial artery passes under the flexor retinaculum on the medial side of the ankle and divides into the medial and lateral plantar arteries to supply the sole.

Q. Which of the following structures develop from the 6th pharyngeal arch artery on the left side?

- A. Arch of Aorta
- B. Ductus arteriosus
- C. Carotid arteries
- D. Subclavian artery

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Subclavian artery Explanation: The 6th pharyngeal arch artery on the left side specifically develops into the ductus arteriosus and a portion of the right and left pulmonary arteries. Pharyngeal Arch Artery of Arch First Maxillary artery Second Hyoid artery, Stapedial artery Third Common carotid artery, Internal carotid artery Fourth Arch of aorta (left side), Subclavian artery (right side) Sixth Ductus arteriosus (left side), Pulmonary artery (right side)

Q. Which of the following is the type of joint between epiphysis and diaphysis of a long bone?

- A. Symphysis
- B. Synchondrosis
- C. Synostosis
- D. Syndesmosis

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Synchondrosis Explanation: Synchondrosis is a type of joint that is a primary cartilaginous joint where the epiphysis and diaphysis of a long bone are connected by a growth plate made of hyaline cartilage. Primary Cartilaginous Joints (Synchondrosis) Secondary Cartilaginous Joints (Symphysis) (Option A) Immobile Occur where ossification centres remain separated by hyaline cartilage. Found in bones that form from more than one ossification centre. Hyaline cartilage here can ossify with age, leading to fusion when growth is completed. Temporary and mainly for growth. Mostly associated with growth plates. The joint between the first rib and the manubrium is a permanent synchondrosis. Slightly mobile Defined by a pad or disc of fibrocartilage between articulating bones, e.g., intervertebral discs. Built to handle a variety of stresses (compression, tension, etc.). Permanent and provide limited movement. Found along the midline (e.g., pubic symphysis, intervertebral joints). Strong ligaments reinforce the joints and are key to stability and movement. Symphyses are built for durability and movement, but they also allow growth in areas like the intervertebral discs. Synostosis (Option C): Synostosis refers to the fusion of bones where the original cartilage is replaced entirely by bone. Syndesmosis (Option D): A syndesmosis is a fibrous joint where bones are connected by a ligament or an interosseous membrane, allowing for limited movement.

Q. Which of the following nerves supplies the muscle that is involved in the moment given below?

- A. Spinal accessory nerve

- B. Long thoracic nerve
- C. Spinal branch of axillary nerve
- D. Radial nerve

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Spinal accessory nerve Explanation: The movement shown in the image is shrugging, which is carried out by the trapezius muscles and supplied by the spinal accessory nerve. Lesion of the accessory nerve or paralysis of the trapezius leads to drooping of shoulders and difficulty in shrugging and weakness of overhead abduction. Trapezius Origin: Occipital bone and cervicothoracic spine Insertion: Scapula Bone and Clavicle Three sets of fiber: Upper: Insertion on clavicle (lateral 1/3posterior side) Middle: Insertion on acromion process anteriorly Lower: Insertion on the spine of the scapula Nerve Supply: Accessory nerve (CN XI) Action: Elevation (upper fiber) and depression (lower fiber) Retractor (Midline) Rotates the Glenoid cavity superiorly. Long thoracic nerve (Option B): Supplies serratus anterior, which is responsible for scapular protraction (not related to the given movement). Spinal branch of axillary nerve (Option C): Supplies deltoid and teres minor, involved in shoulder abduction and lateral rotation. Radial nerve (Option D): Innervates triceps, wrist extensors, and is involved in elbow extension and wrist extension. Biochemistry

Q. Zellweger syndrome is associated with which cellular organelle?

- A. Peroxisomes
- B. Nucleosomes
- C. Lysosomes
- D. Ribosomes

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Peroxisomes Explanation Zellweger syndrome is a peroxisomal biogenesis disorder caused by mutations in PEX genes. It results in defective peroxisome formation, leading to an inability to metabolize very long-chain fatty acids (VLCFAs) and plasmalogens. Clinical features include hypotonia, seizures, hepatomegaly, and craniofacial abnormalities. Zellweger Spectrum Disorder Rare autosomal recessive disorder with defective peroxisome biogenesis affecting VLCFA metabolism. Includes Zellweger syndrome, neonatal adrenoleukodystrophy, infantile Refsum disease, and rhizomelic chondrodysplasia punctata. Etiology Caused by mutations in PEX genes encoding peroxins, primarily PEX1/PEX6 Functional peroxisomal disturbances: Zellweger spectrum: Generalized peroxisomal dysfunction. Adrenoleukodystrophy: Mutations in ABCD1, impacting VLCFA transport. Rhizomelic chondrodysplasia punctata: Multiple enzymatic defects.

Pathophysiology Peroxisomes: Membrane-bound organelles with >50 enzymes for fatty acid metabolism, abundant in liver/kidney. Mutated PEX genes disrupt peroxisome formation, leading to VLCFA accumulation, reduced steroid biosynthesis, and neuronal damage. Major abnormalities: Brain: Demyelination, neuronal injury. Liver: Fibrosis. Kidney: Cortical cysts. Clinical Features Multisystem involvement with severity depending on age of onset: Neonatal-Infantile: Hypotonia, feeding issues, seizures, facial dysmorphism, ocular and hearing abnormalities, hepatomegaly. Childhood: Developmental delay, FTT, hepatic dysfunction, adrenal insufficiency, neuroregression. Adolescent-Adult: Neuroregression, ataxia, neuropathy, adrenal insufficiency, leukodystrophy. Diagnosis Initial: Clinical features + elevated VLCFA on newborn screening. Biochemical tests: Elevated VLCFA, bile acid intermediates, and phytanic/pristanic acid; reduced plasmalogens. Genetic testing: Confirms PEX mutations. Prenatal diagnosis and genetic counseling recommended. Management No cure; supportive care focuses on improving quality of life. Therapies: Docosahexaenoic acid Lorenzo oil: Reduces VLCFA but doesn't halt disease progression. Cholic acid: Approved for hepatic dysfunction. Supportive Measures: Hearing aids for hearing loss. Ophthalmologic care for vision issues. Antiepileptics for seizures. Vitamin supplementation: Fat-soluble vitamins (A, D, E, K). Cortisone for adrenal insufficiency. Gastrostomy for feeding difficulties. Nucleosomes (Option B): Disorders involving nucleosomes are linked to chromatin remodeling or epigenetic regulation, not Zellweger syndrome. Lysosomes (Option C): Lysosomal storage diseases (e.g., Tay-Sachs disease, Gaucher disease) result from enzyme deficiencies affecting lysosomal function. Zellweger syndrome does not involve lysosomes. Ribosomes (Option D): Diseases involving ribosomes include ribosomopathies like Diamond-Blackfan anemia, which are unrelated to Zellweger syndrome.

Q. A 3-month-old baby presents with severe hepatomegaly, cataracts in both eyes, lethargy, and hypotonia. Based on these symptoms, which enzyme deficiency is most likely involved?

- A. Galactokinase
- B. Hepatic Kinase
- C. Hepatic Glucose-6-Phosphatase
- D. Galactose-1-Phosphate Uridyl Transferase

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Galactose-1-Phosphate Uridyl Transferase Explanation
Galactose-1-Phosphate Uridyl Transferase deficiency causes classic galactosemia, a severe metabolic disorder characterized by hepatomegaly, cataracts, lethargy, and hypotonia due to the accumulation of toxic metabolites like galactose-1-phosphate and galactitol.
Galactosemia Enzyme Deficiency Galactose-1-phosphate uridylyltransferase (GALT) - Classical type Galactokinase- benign disease with only oil drop cataract. (Option A ruled out)

Epimerase- SNHL + symptoms of classical type (Low galactose-based diet can be given which is contraindicated in the classical type) Pathophysiology Accumulation of galactose-1-phosphate (toxic causing jaundice, and liver damage) Inability to metabolize galactose from milk Damage to liver, kidney, and brain Clinical Features Hepatic: Jaundice, hepatomegaly GI: Vomiting, diarrhea, failure to thrive CNS: Seizures, intellectual disability Eyes: Oil drop cataracts Increased risk of E. coli sepsis Diagnosis Reducing substance in urine (positive)(Positive Benedict test but negative glucose oxidase test) Direct enzyme (GALT) assay Genetic testing (Perinatal diagnosis is possible) Management Lactose-free diet Breast Milk contraindicated Soy-based or elemental formulas Calcium supplementation Hepatic Glucose-6-Phosphatase (Option C): Deficiency of it causes glycogen storage disease type I (Von Gierke disease), which presents with hepatomegaly, hypoglycemia, and lactic acidosis. Cataracts are not a feature of this condition.

Subject: Dermatology

Q. A child with a sore throat starts developing skin lesions as in the image below. Which of the following is the diagnosis?

- A. Guttate psoriasis
- B. Pustular psoriasis
- C. Erythrodermic
- D. Inverse psoriasis

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Guttate psoriasis Explanation: The image given above is of Guttate psoriasis It is commonly seen in children. It is usually preceded by streptococcal infection Small, erythematous, scaly plaques on the trunk which gives raindrop-like appearance are seen Treatment: Antibiotics (penicillin, amoxicillin) Pustular Psoriasis (Option B): Pustular psoriasis (a type of unstable psoriasis) characterized by the presence of multiple sterile, non-infectious pus-filled blisters on erythematous skin, forming a characteristic 'Lakes of pus' appearance. {{caption_text}} Erythrodermic Psoriasis (Option C): It is another variant of unstable psoriasis that presents with erythema and scales covering more than 90% of the body surface. {{caption_text}} Inverse Psoriasis (Option D): Affects intertriginous areas (axilla, groin, inframammary folds) and presents with shiny, erythematous plaques without scaling, unlike guttate psoriasis. {{caption_text}}

Q. A female patient presents to the OPD with complaints of recurrent lesions on lips as shown below, which is associated with fever. Which of the following is the characteristic feature seen in Tzanck smear?

- A. Handerson patterson bodies

- B. Multinucleated giant cells
- C. Owl eye appearance
- D. Acantholytic cells

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Multinucleated giant cells Explanation: The image given in the question is of Herpes labialis which is caused by Herpes simplex virus. Fever is one of the predisposing factor of Herpes labialis It is also called cold sore. It is usually present on the vermillion border of the lips. Smear is taken from the base of the vesicle Multinucleated giant cells and Acantholytic cells are present on Tzanck smear Herpes labialis/cold sore: Reactivation of latent infection in trigeminal ganglion, causing asymptomatic shedding or clinically evident recurrent disease. Causative organism: HSV-1 > HSV-2. Features: Painful and pruritic lesions. Fever is often present, which subsides in 3-5 days. The initial vesicular lesions become pustular and then crusted before healing in 7-10 days without scarring. Can be associated with itching or burning before the development of lesions. Recurrent herpetic lesions are vesicular and ulcerative and tend to occur in the same region. Treatment: First line Acyclovir (topical/oral) Hydrocolloid dressing Topical penciclovir Second line Long-term prophylactic acyclovir Third line IV acyclovir Penciclovir Foscarnet IV cidofovir Topical imiquimod Handerson patterson bodies (Option A): Handerson patterson bodies is a histologic finding seen in Molluscum contagiosum. Owl eye appearance (Option C): refers to basophilic intranuclear inclusions surrounded by a clear halo, characteristic of Cytomegalovirus (CMV) infection. Acanthosis (Option D): Acanthosis is a histopathological finding seen in Chronic eczema.

Subject: ENT

A patient with a history of trauma presents with hearing loss. A High-Resolution Computed Tomography (HRCT) scan was performed. Which of the following structures is not typically visualized on HRCT?

- A. Cochlea
- B. Vestibule
- C. Semicircular canal
- D. Organ of Corti

✅ *Correct Answer: 4*

🧠 Solution:
Correct Option: D) Organ of Corti Explanation: HRCT of temporal bone is a specialized

imaging technique used to obtain detailed images of the bones and air-filled spaces within the ear. The organ of Corti is a neurosensory epithelium responsible for hearing present on the basilar membrane in scala media and it is difficult to identify it on HRCT. Incorrect Options: Options A, B & C: The cochlea, Vestibule, and Semicircular canals are bony structures and can be visualized on HRCT.

What is the most commonly used test for newborn hearing screening?

- A. Otoacoustic Emissions (OAE)
- B. Brainstem Evoked Response Audiometry (BERA)
- C. Pure Tone Audiometry (PTA)
- D. Tympanometry

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Otoacoustic emissions (OAE) Explanation: OAE is the best and most commonly used test for newborn hearing screening. Brainstem Evoked Response Audiometry (BERA) is used to confirm hearing loss in infants and only in neonates who have failed OAE. Uses of OAE: They are used as a screening test for neonates, uncooperative or mentally challenged individuals. Differentiate between cochlear and retrocochlear hearing loss. Helpful in early detection of noise-induced hearing loss. Incorrect Options: Options B, C & D: Brainstem Evoked Response Audiometry (BERA), Pure Tone Audiometry (PTA), and Tympanometry are not the most commonly used tests for newborn hearing screening.

Q. Which structure is most commonly involved in the compression of the anterior ethmoid nerve, leading to Sluder's neuralgia?

- A. Superior turbinate
- B. Middle turbinate
- C. Inferior turbinate
- D. Nasal septum

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option: B) Middle turbinate Explanation: Middle turbinate, more than the inferior turbinate, is the most commonly involved structure in the compression of the anterior ethmoid nerve leading to anterior ethmoid neuralgia (Sluder's neuralgia). Incorrect Options: Options A, C & D: Superior turbinate, inferior turbinate, and nasal septum are not the most commonly involved structures in the compression of anterior ethmoid nerve.

PrepLadder

Subject: Forensic Medicine

Q. During measurement of a rifled barrel weapon, the caliber depends on?

- A. Distance between two opposite lands
- B. Distance between two opposite grooves
- C. Number of lead pellets
- D. Mass and velocity

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Distance between two opposite lands Explanation: In forensic ballistics, "caliber" refers to the diameter of a rifled firearm's barrel, specifically measured between opposing lands. This measurement, typically expressed in inches or millimetres, is crucial for linking a bullet to a specific firearm. Rifled Firearms: Rifled firearms have a bore characterised by a series of grooves that spiral along the barrel's length. These grooves (Option B), known as "rifling," alternate with raised areas called "lands." The caliber is determined by measuring the distance between these lands. (Option A) The direction of rifling can be either right (clockwise) or left (counter-clockwise), with most handguns featuring a right-hand twist. As the bullet travels through the barrel, it engages with the lands and grooves, imparting a spin that stabilises its flight and leaves distinctive markings on the bullet, which serve as identifiers for the firearm. Number of lead pellets (Option C) Bore or Gauge: It is used for smooth bore weapons. The number of balls/pellets of equal size/weight made from 1 pound lead (454g) 12 bore = 12 balls Mass and velocity (Option D) of a projectile fired from a rifled barrel weapon are important factors in its performance, they are not used directly to determine the caliber of the weapon

Q. During the forensic examination of semen from a rape victim, the identification of distinctive yellow needle-like crystals raises attention. What is the specific test employed to ascertain the presence of sperm?

- A. Barberio test
- B. Acid phosphatase test
- C. Papanicolaou smear
- D. Florence test

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Barberio test Explanation: Barberio test, indicated by the presence of yellow needle-shaped crystals, is used to identify the seminal fluid in this condition. The Barberio test specifically detects Spermine, a compound derived from the prostate, and is used to identify seminal fluid. Test Name Substance Detected Result Reagent Used Mnemonic Notes Barberio Test Spermine Yellow needle-shaped crystals of Spermine Picrate Picric acid Barbar picks your hair with a needle Detects Spermine from the prostate; confirms the presence of seminal fluid. Florence Test Choline Dark brown rhombic crystals of Choline iodide KI (Potassium Iodide) Florence has 'C', C for Choline It detects choline from the seminal vesicle and is used to identify seminal fluid. Florence Test (Option D): This test detects choline and produces different crystal formations (dark brown rhombic crystals). Acid phosphatase test (Option B) can be used to detect seminal fluid, as acid phosphatase is present in high concentrations in semen. The test does not involve the formation of yellow needle-like crystals. Papanicolaou smear (Option C) commonly known as a Pap smear, is a screening test used to detect cervical cancer and abnormalities in cervical cells.

Subject: Gynaecology & Obstetrics

Q. For how long is exclusive breastfeeding recommended?

- A. 3 months
- B. 6 months
- C. 9 months
- D. 12 months

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) 6 months Explanation: The recommended duration for exclusive breastfeeding is 6 months. Exclusive Breastfeeding: Only breast milk for the first 6 months No additional food or drinks Exceptions: oral rehydration solutions, drops/syrups of vitamins, minerals, or medicines Provides optimal nutrition and health benefits to infant 3 months (Option A): While three months of exclusive breastfeeding provides some benefits, it is insufficient for optimal infant development. According to protocol, continuing exclusive breastfeeding for a full six months is recommended. Nine months (Option C): By nine months, infants should already be receiving complementary foods alongside breast milk . Exclusive breastfeeding at this stage would not meet the growing nutritional needs of the developing infant. Twelve months (Option D): Although breastfeeding can continue for 12 months or longer, exclusive breastfeeding should not extend beyond six month. At this stage, infants require additional nutrients from complementary foods while continuing to receive breast milk.

PrepLadder

Q. Which of the following is the correct definition of postpartum pyrexia?

- A. After 24 hours, temperature > 100.4 degrees Fahrenheit
- B. After 6 hours, temperature > 100.4 degrees Fahrenheit
- C. After 3 hours, temperature > 100.4 degrees Fahrenheit
- D. After 12 hours, temperature > 100.4 degrees Fahrenheit

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) After 24 hours, temperature > 100.4 degrees Fahrenheit Explanation: Postpartum pyrexia, also known as puerperal fever, occurs after delivery and has specific diagnostic criteria. Definition: Temperature > 100.4°F (38°C) Occurs between first to tenth day postpartum Must be present on at least two occasions First 24 hours postpartum are excluded Clinical Significance: Important marker for postpartum infections Requires careful monitoring and evaluation Early detection prevents serious complications Option B (After 6 hours), Option C (After 3 hours), and Option D (After 12 hours) are incorrect as the first 24 hours postpartum must be excluded when defining postpartum pyrexia.

Q. A 32-year-old woman presents with intermenstrual bleeding following the insertion of an intrauterine device (IUD). She reports no other complications. What is the most appropriate initial management step?

- A. Remove the IUD
- B. Reassure the patient and observe
- C. Perform a pelvic ultrasound
- D. Prescribe hormonal therapy

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Reassure the patient and observe Explanation: Intermenstrual bleeding is a common side effect following IUD insertion. It occurs due to the body's adjustment to the device and can persist for a few cycles. Management includes: Reassurance and observation as the first-line approach Tranexamic acid or NSAIDs can be used during the first few cycles to manage bleeding if needed Remove the IUD (Option A): Removal is generally not necessary unless there are additional signs of complications such as severe pain, abnormal discharge, or evidence of infection. Perform a pelvic ultrasound (Option C): While ultrasound might be considered if there are additional symptoms or concerns, it is not

routinely needed solely for intermenstrual bleeding following IUD insertion. Prescribe hormonal therapy (Option D): Hormonal therapy is not the first-line treatment for intermenstrual bleeding after IUD insertion. The primary approach is to observe and manage symptoms conservatively unless there are indications for further intervention.

Subject: Medicine

Q.. A 46-year-old male presents to the outpatient department with a history of lower back pain and painful urination. Upon investigation, he is found to have normocytic normochromic anemia and hypercalcemia. Serum protein electrophoresis reveals an M-spike in the gamma region. Which of the following tests is most appropriate to confirm the diagnosis of multiple myeloma?

- A. Liver function test
- B. Bence Jones protein in urine
- C. Urine albumin-to-creatinine ratio (UACR) test
- D. Heat and acetic acid test

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Bence Jones protein in urine Explanation: Clinical features of CRAB (hypercalcemia, renal dysfunction, anemia, and bone lesions), along with the presence of an Gamma region M spike in serum electrophoresis, point towards the diagnosis of Multiple myeloma. Investigations of Multiple myeloma: Hematological Analysis: It may reveal anemia; ESR is usually elevated. Rare cases of plasma cell leukemia with high plasma cell counts >2000 plasma cells/μL. Serum calcium and urea nitrogen may be elevated. Serum alkaline phosphatase is usually normal. Peripheral smear: Rouleaux formation A/G ratio: Decreased Increased level of β2 microglobulin. Decreased albumin Renal function test: Increased serum creatinine and uric acid. Imaging: Chest and bone radiographs: Lytic lesions/diffuse osteopenia MRI: Extent of bone marrow infiltration and cord or root compression in patients with pain syndrome PET/CT: Assess bone damage, extramedullary sites of the disease Anion gap: (Na+ + K+) – (Cl- + HCO3-): Decreased Serum or urine electrophoresis: M spike Serum light chain assay: Increased Immunofixation: Detects subtypes of light chain. 24-hour urine specimen: Bence Jones protein (serum-free light chains) excretion Fat pad biopsy: To detect amyloid deposits Flow cytometry: CD 138+ (bone marrow plasma cells) FISH: Done to detect chromosomal abnormalities Chromosome 17 deletion and translocation leads to poor prognosis. Bone marrow biopsy: Plasmacytosis >10% Liver function test (Option A): While liver function tests may be abnormal in some patients with multiple myeloma, they are not specific or diagnostic for the condition. LFTs are more useful in assessing liver involvement or complications. Urine

albumin-to-creatinine ratio (Option C): This test assesses kidney function and proteinuria but is not specific for multiple myeloma. While renal function may be affected in myeloma, UACR doesn't detect the characteristic Bence Jones proteins. Heat and acetic acid test (Option D): This is an outdated test that is not used in modern diagnosis of multiple myeloma. Current diagnostic methods are more sensitive and specific.

Q. A young woman presents with recurrent headaches, easy bruising, and episodes of visual blurring. Her platelet count is elevated, while her red blood cell (RBC) and white blood cell (WBC) counts are normal. What is the most likely diagnosis?

- A. Essential Thrombocytosis
- B. Polycythemia Vera
- C. Chronic Myeloid Leukemia (CML)
- D. Acute Myeloid Leukemia (AML)

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Essential Thrombocytosis Explanation: The clinical manifestations indicate Essential Thrombocytosis, a myeloproliferative neoplasm characterized by an isolated elevation in platelet count. The patient presents with classic symptoms including headaches, easy bruising, and visual disturbances, along with the key diagnostic finding of elevated platelets with normal RBC and WBC counts. This condition results from abnormal proliferation of megakaryocytes in the bone marrow, leading to excessive platelet production. Essential Thrombocytosis Definition Clonal myeloproliferative disorder Characterized by increased platelet production Abnormal megakaryocyte proliferation Genetics JAK2 V617F mutation (50-60% of cases) CALR mutations (type 1 and 2) MPL mutations Lab Findings Platelet count >450,000/μL Increased bone marrow megakaryocytes Normal RBC and WBC Count Clinical Features Often asymptomatic Thrombotic events (arterial > venous) Erythromelalgia Ocular migraines & visual disturbances TIAs Spontaneous bleeding & easy bruising Diagnostic Criteria Platelet count >450,000/μL Bone marrow showing megakaryocyte proliferation Not meeting WHO criteria for other myeloid neoplasms Presence of JAK2, CALR, or MPL mutation Complications Thrombosis (major cause of morbidity) Hemorrhage (especially with counts >1 million/μL) Progression to myelofibrosis Small risk of leukemic transformation Treatment Low-dose aspirin for thrombosis prevention Hydroxyurea for high-risk patients Anagrelide for cytoreduction Plateletpheresis for severe cases Polycythemia Vera (Option B) presents with elevated levels of all three blood cell lines—RBCs, WBCs, and platelets. The normal RBC count in this case makes this diagnosis unlikely. Patients typically present with ruddy complexion, pruritus, and thrombotic complications. Chronic Myeloid Leukemia (Option C) typically shows elevation in granulocytes and often an increase in platelets as

well. The presence of normal WBC count makes CML an unlikely diagnosis, as it characteristically presents with marked leukocytosis. Acute Myeloid Leukemia (Option D) typically presents with abnormal levels of blood cells and can show varying counts of WBCs, RBCs, and platelets. The normal blood counts except for platelets make AML less likely, as it usually presents with cytopenias and blast cells in the peripheral blood.

Q. Which of the following is the diagnostic test for carcinoid tumors?

- A. 24-hour urinary catecholamines
- B. Serum calcitonin levels
- C. Serum chromogranin A
- D. Urinary 5-hydroxyindoleacetic acid

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Urinary 5-hydroxyindoleacetic acid Explanation: The clinical manifestations indicate that carcinoid tumors are neuroendocrine tumors that secrete serotonin, which is metabolized to 5-HIAA and excreted in urine. Diagnosis of Carcinoid Syndrome Diagnostic Method Details 5-HIAA Urine Test Primary diagnostic test 24-hour urine collection Measures serotonin metabolites Can be challenging if patient is consuming serotonin-rich foods (e.g., salmon, eggs) Somatostatin Scintigraphy Also known as OctreoScan Can confirm presence of somatostatin receptors Helps in tumor localization Used to predict response to somatostatin analogue therapy 68Ga-DOTATATE PET Scan More sensitive imaging technique Uses radioactive gallium-68 Helps predict response to treatment Particularly useful for NET imaging Chromogranin A Blood test biomarker Elevated in metastatic disease Should be interpreted with caution in patients with renal dysfunction, patients taking PPIs Not diagnostic alone, but helpful in monitoring Clinical Symptoms Flushing episodes (2-5 mins) Diarrhea Wheezing Heart valve problems Abdominal pain Telangiectasia 24-hour urinary catecholamines (Option A): This test is used to diagnose pheochromocytoma and other catecholamine-secreting tumors, not carcinoid tumors. Catecholamines are not characteristic of carcinoid syndrome. Serum calcitonin levels (Option B): This test is used to diagnose medullary thyroid carcinoma, which is a different type of neuroendocrine tumor. Calcitonin is unlikely to be elevated in carcinoid syndrome. Serum chromogranin A (Option C): While chromogranin A can be elevated in some neuroendocrine tumors, it is not specific for carcinoid tumors and is not the diagnostic test of choice. It may be used as a supplementary marker but not for primary diagnosis.

PrepLadder

Subject: Microbiology

Q. Which of the following microorganisms is likely responsible for causing bilateral infiltrates in an HIV-positive patient?

- A. Cryptococcus
- B. Histoplasmosis
- C. Pneumocystis Jirovecii
- D. Aspergillus

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) Pneumocystis Jirovecii Explanation: In HIV-positive patients, particularly those with a weakened immune system (low CD4 count), Pneumocystis jirovecii is a common cause of bilateral infiltrates in the lungs, leading to Pneumocystis pneumonia (PCP). PCP is a fungal infection that often presents with symptoms like shortness of breath, cough, and fever, and it typically affects both lungs (bilateral infiltrates). Pneumocystis jirovecii Morphology Trophozoite - thin-walled, irregularly shaped, 1-5 µm in size Precyst - an intermediate stage of the sexual phase, 5-8 µm in size Cyst - thick-walled, spherical, containing up to 8 intracystic bodies and up to 8 µm in size Risk factors HIV: CD4 < 200 Primary immunodeficiency states Transplant recipients Hematological malignancies Clinical features Transmitted by respiratory droplets and is asymptomatic in immunocompetent individuals. In immunocompromised patients, life-threatening pneumonia develops. PCP - Pneumocystis Carinii pneumonia Dyspnoea Dry cough Fever Weight loss B/L interstitial pneumonia causing bilateral infiltrates Diagnosis GMS / Giemsa stain- mc used Giemsa, toluidine blue, methenamine silver, and calcofluor white stains can demonstrate trophozoites - cyst wall is black with a methenamine silver stain. {{caption_text}} {{caption_text}} Crushed Ping Pong ball (also called Helmet/Hat or Cup and Saucer appearance). The β-d-glucan test has proven to be quite useful for rapid diagnosis of Pneumocystis pneumonia with a high degree of sensitivity and specificity. Treatment The cornerstone for both prevention and treatment is trimethoprim-sulfamethoxazole. Alternative therapies have been used in AIDS patients; they include pentamidine, trimethoprim-dapsone, clindamycin-primaquine, atovaquone, and trimetrexate. Incorrect Options: Cryptococcus (Option A): This fungal infection can cause meningitis or pulmonary issues in immunocompromised patients but typically presents with a more localized infection rather than bilateral infiltrates. Histoplasmosis (Option B): While it is a fungal infection common in HIV patients, it typically causes granulomas or localized lung infiltrates, not usually bilateral infiltrates. Aspergillus (Option D): This fungus can cause lung infections, but it is more likely to cause invasive aspergillosis, which typically presents with a single, more focal lesion rather than bilateral infiltrates.

PrepLadder

Q. A patient presents with a history of watery diarrhea and vomiting. The pathogen exhibited darting motility. Which is the best selective media for the involved pathogen?

- A. Nutrient media
- B. TCBS
- C. Cetrimide agar
- D. Potassium Tellurite Agar

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) TCBS Explanation: Given the clinical presentation of watery diarrhea and vomiting, the most likely pathogen involved is Vibrio cholerae or another species of the Vibrio genus, which are known to cause gastroenteritis and are characterized by darting motility under the microscope. TCBS agar is a selective culture medium specifically designed for isolating Vibrio species, including Vibrio cholerae. It allows for the growth of alkaline-tolerant bacteria and inhibits the growth of most other enteric bacteria. Colonies of Vibrio cholerae typically appear as yellow on this medium due to sucrose fermentation, making this method highly specific for confirming the diagnosis. Diagnosis of Vibrio cholerae Specimen Collection: Preferred Specimen: Stool (mucus flakes) Alternative: Rectal swab if stool is not available Enrichment broth : selenite F broth and alkaline peptone water Transport Media: VR (Venkatraman Ramakrishnan) media - specific transport media for V. cholera Cary-Blair medium Microscopy: Morphology: Comma or curved-shaped, reddish Gram-negative bacilli Appearance: Fish-in-stream appearance Motility: Demonstrated by dark field or phase contrast microscopy showing darting motility Culture: Culture Media and Colony Characteristics: MacConkey Agar: Colorless colonies that may later turn pink due to late fermentation of lactose Blood Agar: Green colonies indicating hemolysis Nutrient Agar: Translucent, round discs with a bluish tinge under transmitted light Gelatin Stab: Infundibuliform (funnel-shaped) or napiform (turnip-shaped) liquefaction Selective Media: Thiosulfate-Citrate-Bile Salts-Sucrose (TCBS) Agar: (Option B) Differentiates between sucrose fermenters (like Vibrio cholerae) and non-sucrose fermenters (such as Vibrio parahaemolyticus). Vibrio cholerae produces yellow colonies due to sucrose fermentation. {{caption_text}} Biochemical Reactions: Fermentation: Glucose and sucrose Indole Test: Positive Nitrate Reduction: Nitrates are reduced to nitrites Cholera Red Reaction: Due to nitroso-indole formation Catalase: Positive Oxidase: Positive String Test: A loopful of growth mixed with 0.5% deoxycholate results in string formation Serological Tests (Not useful for diagnosis) Indirect Hemagglutination Complement- Dependent Vibriocidal Antibody Test Treatment: Rehydration: Oral Rehydration Solution (ORS) Intravenous (IV) fluids Antibiotics: Secondary treatment Incorrect Options: Nutrient media (Option A): This is a general-purpose medium and is not selective, so it wouldn’t be the best choice for isolating Vibrio species. Cetrimide agar (Option C): This medium is selective for

Pseudomonas aeruginosa, not Vibrio species. Potassium Tellurite Agar (Option D): This is typically used for isolating Corynebacterium diphtheriae, not for Vibrio.

Q. Which blood is transfused in a patient with a Bombay blood group?

- A. A
- B. B
- C. AB
- D. O negative

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) O negative Explanation: The Bombay blood group (hh) is a rare blood type in which the individual lacks the H antigen, which is a precursor for the A and B antigens on red blood cells. This means that a person with the Bombay blood group cannot receive blood from individuals with the typical ABO blood groups (A, B, AB, or O) since their immune system will recognize the A, B, and H antigens as foreign and mount an immune response. Because of this, only O negative blood (which lacks A, B, and H antigens) is compatible for transfusion to a person with the Bombay blood group. Incorrect Options: A, B, and AB blood (Option A, B, & C): These all contain the A, B, or both antigens, which a person with the Bombay blood group would react against due to the absence of the H antigen, leading to severe transfusion reactions.

Subject: Ophthalmology

Q. Which nerve defect causes lagophthalmos?

- A. 7th nerve
- B. 6th nerve
- C. 4th nerve
- D. 5th nerve

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) 7th nerve Explanation: Lagophthalmos is the inability to close the eye. It is a feature of 7th nerve palsy. Neuroparalytic keratitis can occur due to seventh nerve palsy, resulting in lagophthalmos from affected orbicularis oculi and leading to exposure keratitis Bell’s palsy: Description Most common cause of facial palsy Characterized by idiopathic, LMN facial paralysis of acute onset Most commonly the Labyrinthine segment of

the facial nerve is involved. Males and females are equally affected. Aetiology Idiopathic: Most common cause Viral Infection: HSV >> Herpes zoster Vascular Ischemia Hereditary: Positive family history in 6-8% Autoimmune Risk Factors More common in diabetics (due to angiopathy) and pregnant women (due to fluid retention). Clinical Features Sudden onset of facial paralysis with inability to close the eye (Bell's phenomenon) (Option A), asymmetry of the face, epiphora, drooping mouth, and dribbling of saliva. Associated symptoms may include ear pain, noise intolerance (stapedial paralysis), or loss of taste (chorda tympani involvement). Diagnosis Diagnosis is made by excluding other causes of peripheral facial paralysis. Treatment General: Reassurance, pain relief, eye protection and physiotherapy Medical: Prednisolone 60 mg per day for 5 days then reduced by 10 mg per day (for a total treatment time of 10 days) and 50 mg per day (in two divided doses) for 10 days, Acyclovir Surgical: Nerve decompression Prognosis 85%-90% of patients fully recover Incomplete resolution are mainly seen in recurrent/late recovery cases Incorrect Options: 6th nerve (Option B) leads to lateral rectus muscle paralysis, causing impaired abduction. 4th nerve (Option C) affects the superior oblique muscle, resulting in vertical diplopia. 5th nerve (Option D) is responsible for facial sensation and corneal reflex, but not eyelid closure.

Q. Which nerve innervates the lateral rectus muscle?

- A. Sixth nerve
- B. Seventh nerve
- C. Third nerve
- D. Fourth nerve

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Sixth nerve Explanation: Nerves of the eye: Optic nerve (CN II) Purely sensory Senses the incoming light and image displayed on retina Oculomotor nerve (CN III) (Option C) Innervates majority of the extraocular muscles Motor innervation to the superior rectus muscle, medial rectus muscle, inferior rectus muscle, inferior oblique muscle, levator palpebrae superioris muscle, ciliary muscle, and the sphincter muscle. Trochlear nerve (CN IV) (Option D) Motor innervation to the superior oblique muscle Trigeminal Nerve (CN V) Ophthalmic branch of the trigeminal nerve provides sensory innervation to the eye Afferent part of corneal and lacrimation reflex Abducens Nerve (CN VI) (Option A) Motor innervation to the lateral rectus muscle Facial Nerve (CN VII) Motor innervation of the orbicularis oculi muscle Efferent part of corneal and lacrimation reflex Sympathetic Nervous System Long ciliary nerves: Innervates the pupillary dilator muscles causing mydriasis Parasympathetic nervous system Short ciliary nerves: Innervates the sphincter pupillae muscles causing miosis 7th CN palsy (Option D) This nerve innervates facial muscles, not extraocular muscles.

Q. How does the World Health Organization (WHO) define blindness?

- A. VA < 3/60
- B. VA < 6/60
- C. VA > 3/60
- D. VA > 6/60

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) VA < 3/60 Explanation: NPCB Classification of Visual Impairment The National Programme for Control of Blindness (NPCB) in India defines blindness as "visual acuity of <3/60 in a better eye with best possible correction" and central visual field <10 degrees. The NPCB further categorizes visual impairment as: Classification Visual Acuity Visual Impairment Visual acuity of less than 6/18 in the better eye with available correction Low Vision Visual acuity of less than 6/18 to 6/60 Economic Blindness Visual acuity of less than 6/60 to 3/60 Social Blindness Visual acuity of less than 3/60 to 1/60 Manifest Blindness Visual acuity of less than 1/60 to the perception of light Absolute Blindness No perception of light WHO Classification of Visual Impairment The World Health Organization (WHO) defines blindness as "visual acuity of less than 3/60 (Snellen) or its equivalent".(Option A) The International Classification of Disease 11 (2018) classifies vision impairment into distance and near-presenting vision impairment Classification Visual Acuity Mild Distance Vision Impairment Presenting visual acuity worse than 6/12 Moderate Distance Vision Impairment Presenting visual acuity worse than 6/18 Severe Distance Vision Impairment Presenting visual acuity worse than 6/60 Blindness Presenting visual acuity worse than 3/60 Near Vision Impairment Presenting near vision acuity worse than N6 or M0.8 at 40 cm with existing correction Option B,C and D are incorrect.

Subject: Orthopaedics

Q. The diagnosis in a patient who is unable to do internal and external rotation of the hip is?

- A. Femur head fracture
- B. Acetabular fractures
- C. Dislocation of hip
- D. Pelvis fracture

✅ *Correct Answer: 3*

🧠 Solution:
Correct Option: C) Dislocation of the hip Explanation: The attitude of the lower limb in the dislocation of the hip is flexed, adducted and fully internally rotated which makes it impossible for further internal or external rotation of the hip. Posterior dislocation of hip Anterior dislocation of hip Mechanism of injury: Caused by force along the femoral shaft with the hip flexed (e.g., dashboard injury in motor accidents). Mechanism of injury: Rare injury that occurs with forced abduction and external rotation. Clinical Features: History of trauma. Pain, swelling. Deformity: flexion, adduction, internal rotation. Shortening of the leg. Femoral head is palpable in the gluteal region. Radiological Features: Femoral head displaced from the acetabulum. The thigh is internally rotated, the lesser trochanter is not seen, and Shenton’s line is broken. May require a CT scan for associated fractures. Clinical features: The limb appears externally rotated. Possible lengthening of the affected limb The femoral head is palpable in the groin. {{caption_text}} {{caption_text}} Femur Head Fracture (Option A) may affect hip movement, it doesn't specifically cause a loss of both internal and external rotation as prominently as a dislocation Acetabular Fractures (Option B) may not result in an absolute inability to perform internal and external rotation unless they are associated with significant displacement or damage to the surrounding structures. Pelvic Fracture (Option D does not typically cause a complete loss of internal and external rotation of the hip, unless there is concurrent injury to the hip joint itself.

Subject: PSM

Q. In the context of a new onset of a morbid disease, how does the change in incidence affect the prevalence of the disease?

- A. Prevalence is not related to incidence
- B. Incidence will increase, and prevalence will decrease
- C. Incidence and prevalence will increase
- D. Prevalence will increase with a decrease in the incidence

✅ *Correct Answer: 3*

🧠 Solution:
Correct Option C- Incidence and prevalence will increase: When a new morbid disease appears, the number of new cases (incidence) will increase. As a result, more individuals will have the disease at any given time, contributing to an increase in prevalence. Incorrect Options: Options A, B, and D are incorrect, as explained above.

Q860001. Calculate relative risk for the given situation: Exposed to malaria Not exposed to malaria Vaccinated 6 94 Non-vaccinated 12 88

- A. 0.5
- B. 2
- C. 1.5
- D. 1.7

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- 0.5 Explanation: Relative risk = Incidence in Vaccinated / Incidence in Non-Vaccinated Relative risk (RR): Incidence in Vaccinated (Exposed to Malaria): Number of vaccinated individuals exposed: 6 Total vaccinated individuals: 6 (exposed) + 94 (not exposed) = 100 Incidence in vaccinated = 6/100 = 0.06 (or 60/1000) Incidence in Non-Vaccinated (Exposed to Malaria): Number of non-vaccinated individuals exposed: 12 Total non-vaccinated individuals: 12 (exposed) + 88 (not exposed) = 100 Incidence in non-vaccinated = 12/100 = 0.12 (or 120/1000) Relative Risk (RR): RR = Incidence in Vaccinated / Incidence in Non-Vaccinated RR = 0.06 / 0.12 = 0.5

Q859981. A gym owner observes that individuals who drink iced tea during their workouts tend to lose more weight. What is the nature of this relationship?

- A. Spurious
- B. Relative
- C. Direct
- D. Indirect

✅ *Correct Answer: 4*

🧠 Solution:
Correct Option D - Indirect Explanation: In this case, weight loss (outcome) is not directly caused by drinking iced tea (independent variable). A third factor could influence both, like the workout itself. Also, these individuals might be more health-conscious overall, engage in more vigorous workouts, or follow a better diet, which facilitates their weight loss. Types of Association: Type of Association Description Spurious (Option A) An association that appears to be present but is actually due to chance or an error in data. If the gym owner's observation was spurious, it would mean that the association between iced tea consumption and weight loss is completely false and exists due to some error in observation or data collection. Indirect (Option D) An association in which a third variable (known as the confounding variable) causes both the predictor and the outcome. Direct (Causal) (Option C) An association where the predictor directly influences the outcome. If the relationship between iced tea consumption and weight loss were direct, it would mean that drinking iced tea itself leads to weight loss. However, it is unlikely that drinking iced tea

alone would have a direct effect on weight loss. a. One-to-One causal A direct causal link between a single predictor and a single outcome. b. Multifactorial An association involving multiple factors contributing to the outcome. Relative (Option B): This would imply a comparison between two things, but doesn't directly address the relationship type.

Q859982. A study was conducted in 3 states to measure the mean blood pressure in each community. Health workers were assigned to visit each house in the 3 communities. The mean blood pressure of each community was then compared. What is the study design called?

- A. Case-control
- B. Cross-sectional
- C. Cohort
- D. Ecological study

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option: B) Cross sectional A cross-sectional study involves observing a defined population at a single point in time or over a short period. In this scenario, health workers measured the mean blood pressure of each community at one point in time, making it a cross-sectional study. Cross-sectional studies: Observations are done only once in the population. Carried over a given point of time or period of time. This helps to find out the existence of both old and new cases (Prevalence rate). This does not help to study the natural history of the disease and the risk factors. This is not time-consuming, not difficult, and cheap. Incorrect Options: Case-control (Option A): A case-control study compares individuals who have a specific condition (cases) with individuals who do not have the condition (controls). Cohort (Option C): A cohort study follows a group of people over time to see how their exposures affect their outcomes. Ecological study (Option D): An ecological study examines the relationships between exposure and outcome at the population or group level rather than the individual level.

Q859980. Which of the following is a technology-based surveillance system for tuberculosis (TB) in India?

- A. Nikshay
- B. Nischay
- C. Dots99
- D. DOTS

✅ *Correct Answer: 1*

PrepLadder

🧠 Solution:
Correct Option A - Nikshay Nikshay is a web-based solution for monitoring the Revised National Tuberculosis Control Program (RNTCP) and the National Tuberculosis Elimination Program (NTEP) in India. It is a Health Management Information System (HMIS) - an online software for reporting & compliance with treatment. Incorrect Options: Nischay (Option B): Nischay Kits are home-based UPT testing kits provided free by Asha DOTS 99 (Option C): DOTS 99 is a toll-free number written below anti-TB tablets to ensure the continuity of the treatment. The patients in the continuation phase are expected to call the Toll-free number when they take the medicine. DOTS (Option D): Directly Observed Treatment Short course involves the direct observation of patients taking their TB medication during the intensive phase by a healthcare worker.

Q859983. Wasting in a child is assessed by which of the following measures?

- A. Weight-for-height
- B. Weight-for-age
- C. Height-for-weight
- D. Height-for-age

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- Weight-for-height Explanation: Weight-for-height is a key indicator used to assess wasting in a child. Wasting refers to a child who has a low weight compared to their height, indicating acute undernutrition. Weight-for-height assesses acute malnutrition (wasting). Height-for-age assesses chronic malnutrition (stunting). Weight-for-age is an overall indicator but does not differentiate between acute and chronic malnutrition, making it less specific for either. Head circumference is a general indicator that can reflect both acute and chronic malnutrition, but it's not the primary marker for either. Incorrect Options: Options B, C, and D are not the key indicators for wasting.

Q859979. For what population size is an urban Primary Health Centre (PHC) typically intended?

- A. 1 per 50,000
- B. 1 per 100,000
- C. 1 per 250,000
- D. 1 per 200,000

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A - 1 per 50,000 An urban Primary Health Centre (U-PHC) is designed to cater to a population of around 50,000 people. Type of primary health centre Plain population Hilly & tribal population Rural PHC 1 per 30,000 1 per 20,000 Urban PHC 1 per 50,000 - Multispeciality UPHC/Polyclinic 1 per 2-3 lakh - Incorrect Options: Options B, C & D: A U-PHC is not intended for such a large population as it might not effectively serve the healthcare needs of the population.

Q. What were the goals for Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) by 2023?

- A. 70/30
- B. 30/70
- C. 100/30
- D. 30/100

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- 70/30 The goal for MMR and IMR by 2023: Maternal Mortality Rate (MMR): Reduce to less than 70 per 100,000 live births. Infant Mortality Rate (IMR): Reduce to less than 30 per 1,000 live births.

Q. Which of the following is the vector responsible for transmitting Orientia tsutsugamushi?

- A. Mite
- B. Tick
- C. Louse
- D. Flea

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- Mite The vector responsible for transmitting Orientia tsutsugamushi, the causative agent of scrub typhus, is the Trombiculid mite, specifically the larval stage. Incorrect Options: Options B, C, and D are not responsible for transmitting Orientia tsutsugamushi.

Q. What is the WHO definition of blindness?

- A. 6/60
- B. 3/60
- C. 6/18
- D. 1/60

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option B- 3/60 Explanation: The World Health Organization (WHO) defines blindness as a visual acuity of less than 3/60 in the better eye with the best possible correction. Distance vision impairment (WHO): Mild – visual acuity worse than 6/12 Moderate – visual acuity worse than 6/18 (Option C) Severe – visual acuity worse than 6/60 (Option A) Blindness – visual acuity worse than 3/60 (Option B) 1/60 (Option D): 1/60 is not the specific cut-off point defined by the WHO for blindness.

Q. In a population with a total of 4050 births, there are 50 stillbirths, 50 neonatal deaths within the first 7 days, and 150 deaths between 8 and 28 days of life. What is the Neonatal Mortality Rate (NMR) for this population?

- A. 12.5
- B. 50
- C. 49.4
- D. 62.5

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option B- 50 Explanation: Neonatal Mortality Rate (NMR) measures the number of deaths of infants within the first 28 days of life per 1000 live births. It is calculated as, Neonatal Mortality Rate (NMR) = (No. of deaths of children (neonates) 0 – 28 days of life / live births) x 1000) Calculate Live Births: Live births = Total births - stillbirths Live births = 4050 - 50 = 4000 Determine the Total Number of Neonatal Deaths: Neonatal deaths include deaths within the first 7 days and between 8 and 28 days. Total neonatal deaths = 50 (deaths within the first 7 days) + 150 (deaths between 8 and 28 days) = 200 Calculate NMR: NMR = (200/4000) x 1000 = 50

Q. What concentration of fluoride is typically associated with causing crippling fluorosis?

- A. > 10 mg/L
- B. > 6 mg/L

- C. > 3 mg/L
- D. > 1.5 mg/L

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- > 10 mg/L Explanation: Crippling fluorosis is a severe form of skeletal fluorosis that results in significant disability. It typically occurs when the fluoride concentration in drinking water exceeds 10 mg/L. Fluoride (mg/L) Effects Less than 0.5 Dental cavities 0.5–1.0 Protection against dental cavities. Good for bone and teeth. 1.5–3.0 Dental fluorosis 3.0–10 Skeletal fluorosis 10 or more Crippling skeletal fluorosis and severe osteosclerosis Drinking Water Quality Aspect Recommended Value Microbiological Aspects Coliform Bacteria (E. coli) 0 coliforms per 100ml of potable water Chemical Properties Chlorides Maximum: 600 mg/L Hardness 100-300 mg/L Total Dissolved Solids (TDS) Less than 600 mg/L (good), permissible up to 1000 mg/L Lead 0.01 mg/L Fluoride 0.5-0.8 mg/L Nitrate < 50 mg/L Physical Properties Turbidity Up to 5 NTU (Nephelometric Turbidity Unit) Color Up to 15 TCU (True Color Unit) or 5 Hazen units

Q. The Anemia Mukt Bharat program aims to address anemia across India through targeted interventions. Which statement accurately describes its administration of Iron and Folic Acid (IFA) supplementation?

- A. IFA is provided during the 2nd trimester of pregnancy and continues during lactation for up to 6 months
- B. IFA supplementation is administered solely during pregnancy
- C. A 100-day course of IFA supplementation is sufficient
- D. Administering IFA during the 1st trimester is adequate.

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option A- IFA is provided during the 2nd trimester of pregnancy and continues during lactation for up to 6 months The Anemia Mukt Bharat program includes comprehensive IFA supplementation that begins during the 2nd trimester of pregnancy and continues through lactation for up to 6 months. Weekly Iron Folic Acid Supplementation: 5-9 year children: Weekly 1 IFA - 45 mg. of Fe + 400 mcg. of folic acid, sugar coated - pink color. Biannual deworming with one tablet of Albendazole tablet 400 mg done during the National Deworming days once in 6 months (10 of Aug and 10 of Feb of every year) Adolescent boys and girls - weekly 1 IFA - containing 100 mg Fe and 500 mcg of folic acid and biannual deworming with 1 tablet of 400 mg Albendazole. Pregnant women: starts in 2nd trimester of pregnancy and continues through lactation for up to 6 months. Incorrect Options: Options

B, C, and D are incorrect as IFA is provided during the 2nd trimester of pregnancy and continues during lactation for up to 6 months.

Subject: Pathology

Q. Which of the following organs is a primary lymphoid organ?

- A. Lymph node
- B. Spleen
- C. Thymus
- D. MALT

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) Thymus Explanation: The thymus is a primary lymphoid organ. Lymphoid Organs are structures involved in the production, maturation, and storage of immune cells, essential for the immune system to detect and respond to pathogens. They are classified as: Primary lymphoid organ (Development and maturation of T and B lymphocytes) Secondary lymphoid organ (Site of adaptive immune responses to antigens) Primary Lymphoid Organs Secondary Lymphoid Organs Bone Marrow: Origin of all blood cells from pluripotent hematopoietic stem cells (a process called hematopoiesis). Hematopoiesis shifts to bone marrow from the liver after fetal life, eventually confined to axial bones after puberty. Progenitor T and B cells develop in bone marrow; B cells mature here, while T cell progenitors migrate to the thymus. Lymph Nodes: (Option A ruled out) Filter antigens and activate T and B cells. Structured into cortex (B cell area), paracortex (T cell area), and medulla (rich in plasma cells). Spleen: (Option B ruled out) Largest secondary lymphoid organ, involved in filtering blood-borne antigens. Contains white pulp (T and B cells) and red pulp (site of RBC destruction). Thymus: (Option C) Site of T cell proliferation and maturation. Developed from the third/fourth pharyngeal pouch in embryonic life. Active during childhood, decreases in size after puberty. Thymic hormones (e.g., thymulin, thymopoietin) help attract and mature T cells. Central tolerance occurs here, removing self-reactive T cells to prevent autoimmunity. Mucosa-associated Lymphoid Tissue (MALT): (Option D ruled out) Located in mucosal sites (intestine, respiratory, urogenital tracts) to protect against pathogens. Includes loose clusters of lymphoid cells and organised structures (e.g., tonsils, Peyer’s patches in intestines). {{caption_text}}

Q. A 35-year-old patient presents with colicky abdominal pain, joint pain, and palpable purpura. Urinalysis shows only red blood cells with no other significant findings. Which of the following is the likely diagnosis?

- A. IgA vasculitis
- B. Granulomatosis with polyangiitis
- C. Microscopic polyangiitis
- D. Behçet's disease

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) IgA vasculitis Explanation: The scenario of colicky abdominal pain, joint pain, palpable purpura, and hematuria without proteinuria suggests Henoch-Schönlein Purpura (IgA Vasculitis). It is an IgA-mediated small vessel vasculitis characterized by inflammation of small blood vessels. The exact cause of HSP is unclear, but it is thought to involve an abnormal immune response, where IgA immune complexes deposit in blood vessel walls, causing inflammation and damage. It is more common in children but can occur in adults. It is characterized by Henoch Schonlein purpura (palpable purpura) Purpuric rash in lower limbs Abdominal pain Arthralgia Renal (hematuria) It is associated with elevated serum IgA levels. Urinalysis: The presence of red blood cells cast in urine. Granulomatosis with polyangiitis (GPA) (Option B), also known as Wegener's granulomatosis, is an autoimmune condition that primarily affects the small- to medium-sized blood vessels, leading to granulomatous inflammation and necrosis. It involves respiratory symptoms and renal issues, while Henoch-Schönlein Purpura (HSP) is more likely here due to abdominal pain, joint pain, and palpable purpura, which are hallmark features of HSP with IgA deposition. Microscopic polyangiitis (MPA) (Option C) is a small-vessel vasculitis primarily affecting the kidneys and lungs, often presenting with rapidly progressive glomerulonephritis and pulmonary symptoms like hemoptysis, along with ANCA positivity. Behcet's disease (Option D) is a systemic vasculitis that presents with oral and genital ulcers, ocular involvement, and skin lesions like erythema nodosum.

Subject: Pediatrics

Q. What condition is likely in a newborn presenting with dry, rough skin, a big tongue and rough hair?

- A. Congenital hypothyroidism
- B. Prader-Willi syndrome
- C. Edward syndrome
- D. Galactosemia

✅ *Correct Answer: 1*

PrepLadder

🧠 Solution:
Correct Answer: A) Congenital hypothyroidism Explanation: Congenital hypothyroidism (also known as cretinism) presents with: Dry, rough skin Macroglossia (an enlarged, protruding tongue) Rough hair Congenital Hypothyroidism {{caption_text}} {{caption_text}} Clinical features Usually birth weight & length is normal Wide open anterior fontanelle Delayed closure of anterior fontanelle Prolonged physiological jaundice- Early sign (it is due to delayed maturation of glucuronide conjugation) Myxedematous facies: Large, protruded tongue (Macroglossia) Cold intolerance Hypotonia Rough skin and Rough hair Constipation Abdominal distension Umbilical hernia In Untreated Cases: Delayed development Intellectual disability Delayed dentition Short stature Delayed puberty Delayed bone maturation X-ray findings in congenital hypothyroidism: Absence of distal femoral and proximal tibial epiphysis at birth Punctate epiphyseal dysgenesis Deformity or breaking of the 12th thoracic or 1st or 2nd lumbar vertebrae X-ray image of skull- large fontanelle and wide sutures Screening: Universal newborn screening for congenital hypothyroidism At birth, with umbilical cord blood Heel prick: dried blood spots, sample collected beyond 48 hrs or 48-72hrs Should not be done in first 1-2 days, to avoid TSH surge Most sensitive approach- check for T4 and TSH both ASH's first strategy: Initial TSH screening using dried blood spot If TSH>20mIU/L, recheck Obtain a venous blood sample to check T4 and TSH levels if TSH remains elevated. Treatment Oral levothyroxine (early morning with empty stomach for older children; and for newborns, it is to be given at a fixed time). The dose is higher in the earlier age group and as the babies grow the dose reduces. Newborn-10-15mg/kg/day Children- 2-4mg/kg/day Incorrect Options: Prader-Willi syndrome (Option B): This genetic disorder presents with poor feeding and hypotonia in infancy, followed by excessive eating and obesity in early childhood. It is also associated with intellectual disability & hypogonadism. It does not typically present with the skin, tongue, and hair changes. Edward syndrome (Option C): This chromosomal disorder (trisomy 18) presents with distinctive features, including rocker-bottom feet, overlapping fingers, cardiac anomalies, kidney malformations and microcephaly. The described skin and tongue manifestations are not typical features. Galactosemia (Option D): Galactosemia is characterized by jaundice, hepatomegaly, diarrhea, and vomiting. It does not cause the characteristic skin, tongue, and hair changes.

Q. What is the likely age of a child who can ride a tricycle, walk up stairs with alternate steps, but cannot hop?

- A. 2.5 years
- B. 3.5 years
- C. 4.5 years
- D. 5.5 years

✅ *Correct Answer: 2*

PrepLadder

🧠 Solution:
Correct Answer: B) 3.5 years Explanation: The clinical scenario indicates a child at 3.5 years of age based on the developmental milestones described. At this age, children typically achieve the ability to ride a tricycle and climb stairs with alternating feet, while hopping skills are still developing. At 3 years, a child goes upstairs with alternating feet & downstairs with 2 per step and rides a tricycle. A child hops at 4 years and goes downstairs with alternating feet. Since the child described cannot hop, they are likely younger than 4 years old. So, the developmental age of the child is more than 3 years and less than 4 years. Incorrect Options: 2.5 years (Option A): At 2.5 years, children usually go upstairs and downstairs with two feet per step but can not ride a tricycle. 4.5 years (Option C): By 4.5 years, children should be able to hop and go up and down stairs with alternating feet. 5.5 years (Option D): At 5.5 years, children should be able to skip and stand on one leg for more than 10 seconds. Also, hopping skills are well developed.

Q. What is the daily fluid requirement for a 3-day-old baby with a birth weight of 1500 grams?

- A. 100-110 ml/kg/day
- B. 80-90 ml/kg/day
- C. 120-130 ml/kg/day
- D. 130-150 ml/kg/day

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) 80-90 ml/kg/day Explanation: The fluid requirement of a baby weighing 1500gm or more is: Day 1: 60ml/kg/day Day 2: Increase it by 10-15 ml/kg/day) = 70-75 ml/kg/day Day 3: Increase it by 10-15 ml/kg/day) = 80-90 ml/kg/day Daily fluid requirements Birth Weight Day 1 2-6 7 & Beyond <1500 gm 80 ml/kg/day Increase daily by 10-15 ml/kg/day 150 ml/kg/day >1500 gm 60 ml/kg/day Increase daily by 10-15 ml/kg/day 150 ml/kg/day

Q. What could be the possible diagnosis for a newborn exhibiting weak lower limb pulses and strong upper limb pulses?

- A. TGA
- B. COA
- C. TOF
- D. Ebstein anomaly

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) COA Explanation: The clinical manifestations indicate Coarctation of Aorta (COA), a congenital narrowing of the aorta typically occurring just distal to the left subclavian artery at the insertion of the ductus arteriosus. Coarctation of the Aorta is characterized by weak femoral pulses (lower limb pulses) and strong upper limb pulses. There is a disparity in pulsation and BP in the arms and legs. This is referred to as Radio-femoral delay. {{caption_text}} Coarctation of the Aorta Definition Constrictions of the aorta of varying degrees at any point from the transverse arch to the iliac bifurcation. Clinical presentation: Differential cyanosis Heart failure in severe cases Weakness or pain/claudication (or both) in the legs after exercise Radio-femoral delay: Disparity in pulsation and BP in the arms and legs Systolic or continuous murmurs are heard over the left and right sides of the chest laterally and posteriorly due to collateral blood flow. Investigation: Chest x-ray: {{caption_text}} The arrows indicate rib notching and the yellow line shows the site of coarctation Enlarged left subclavian artery produces a prominent shadow in the left superior mediastinum. Notching of the inferior border of the ribs from pressure erosion by enlarged collateral vessels (Common in late childhood after 1st decade of life) Descending aorta has an area of post-stenotic dilation. ECG, echocardiography, colour Doppler, CT, and MRI. Treatment: Infusion of prostaglandin E1 to reopen the ductus and reestablish adequate lower-extremity blood flow. Surgical repair Incorrect Options: Transposition of Great Arteries (TGA) (Option A) is a congenital heart defect where the aorta arises from the right ventricle, and the pulmonary artery arises from the left ventricle. It presents with early cyanosis and circulatory compromise but does not typically cause differential pulses between the upper and lower extremities. Tetralogy of Fallot (TOF) (Option C): While TOF causes cyanosis and may have associated heart failure, it does not cause differential pulses between the upper and lower extremities. TOF is characterized by ventricular septal defect, overriding aorta, pulmonary stenosis and right ventricular hypertrophy. Ebstein anomaly (Option D): This condition involves abnormal positioning of the tricuspid valve and right heart dysfunction but does not cause differential pulses.

Q. At what age does the transfer of one object to another hand happen?

- A. 4 months
- B. 9 months
- C. 7 months
- D. 12 months

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) 7 months Explanation: Transfer of objects between hands is an important fine motor milestone in infant development. Transfer of objects from one hand to

another is a fine motor skill It appears at 7 months of age Represents development of hand coordination Part of neurological development

Subject: Pharmacology

Q. What is the mechanism of action of Ethosuximide?

- A. Enhances GABAergic inhibition
- B. Inhibits calcium channels in thalamic neurons
- C. Blocks sodium channels
- D. Increases serotonin levels

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Inhibits calcium channels in thalamic neurons Explanation: Ethosuximide blocks T-type calcium channels in the thalamus and prevents the firing of action potential to the cortex. By inhibiting these channels, ethosuximide reduces neuronal excitability in the thalamus and helps prevent these abnormal brain wave patterns, thereby controlling the seizures. It is the drug of choice in typical absence seizures. Incorrect Options: Enhances GABAergic inhibition (Option A): Drugs like benzodiazepines (e.g., diazepam) and barbiturates enhance GABAergic inhibition by increasing GABA receptor activity. Ethosuximide does not primarily act on GABA receptors. Blocks sodium channels (Option C): Sodium channel blockers (e.g., phenytoin, carbamazepine) are effective for other types of seizures, but ethosuximide does not primarily work by blocking sodium channels. Increases serotonin levels (Option D): Some antidepressants and antipsychotics modulate serotonin levels, but ethosuximide's mechanism of action is not related to increasing serotonin.

Q. What is the primary mechanism of action of methotrexate?

- A. Inhibits DNA synthesis by blocking thymidylate synthase
- B. Inhibits dihydrofolate reductase, leading to decreased DNA synthesis
- C. Inhibits RNA synthesis by blocking RNA polymerase
- D. Interferes with microtubule formation during cell division

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Inhibits dihydrofolate reductase, leading to decreased DNA synthesis
Explanation: Methotrexate is an antimetabolite and antifolate drug that primarily inhibits

the enzyme dihydrofolate reductase (DHFR). DHFR is responsible for converting dihydrofolate (DHF) into tetrahydrofolate (THF). THF is essential for the synthesis of purine nucleotides and thymidylate, which are crucial for DNA synthesis and repair. (Option A) By inhibiting DHFR, methotrexate decreases the production of THF, leading to a reduction in DNA synthesis. Inhibits RNA synthesis by blocking RNA polymerase (Option C): Methotrexate does not inhibit RNA polymerase directly. It primarily affects DNA synthesis by inhibiting DHFR. Interferes with microtubule formation during cell division (Option D): This mechanism is associated with drugs like taxanes and vinca alkaloids, which disrupt microtubule dynamics and mitosis. Methotrexate does not work through this mechanism.

Subject: Physiology

Q. What is the typical Glomerular Filtration Rate (GFR) in a healthy adult?

- A. 125 ml/min
- B. 200 ml/min
- C. 100 ml/min
- D. 150 ml/min

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) 125 ml/min Explanation: This is the typical GFR for a healthy adult. GFR measures how well the kidneys are filtering blood. A rate of 125 ml/min reflects optimal kidney function and is considered normal. Glomerular Filtration Rate: GFR is the rate at which plasma is filtered by the glomeruli in the kidneys. It is a key indicator of kidney function, as it shows how efficiently the kidneys are filtering wastes from the blood. The normal GFR range is around 90-120 ml/min/1.73 m² for most adults, but 125 ml/min is considered the standard average for a healthy individual. The formula to calculate GFR is: GFR=Net Filtration Pressure (NFP)×Filtration Coefficient (Kf) Net Filtration Pressure (NFP) is determined by the difference between the hydrostatic pressure in the glomerular capillaries and the opposing pressures in the Bowman’s capsule and the colloid osmotic pressure of the blood. Filtration Coefficient (Kf) depends on the surface area and permeability of the glomerular capillaries. Factors affecting GFR include: Renal Blood Flow: Increased blood flow boosts GFR, while decreased blood flow reduces it. Hydrostatic and Osmotic Pressures: High glomerular capillary pressure increases GFR, whereas high pressure in Bowman’s capsule or elevated colloid osmotic pressure decreases it. Constriction of Afferent and Efferent Arterioles: Constriction of afferent arterioles reduces GFR, while constriction of efferent arterioles can increase GFR. Hormonal and Neural Controls: Various hormones like angiotensin II and conditions like sympathetic nervous system activation can modulate GFR by affecting blood flow and pressure within the kidneys.

Q. What renal function is represented by the formula UV/P?

- A. Filtration
- B. Tubular Secretion
- C. Tubular Reabsorption
- D. Clearance

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Clearance Explanation: The formula UV/P, where U is the concentration of a substance in the urine, V is the urine flow rate, and P is the concentration of the substance in the plasma, represents the renal clearance of that substance. It quantifies the volume of plasma from which the substance is completely removed per unit time. Clearance measures the volume of plasma completely cleared of a substance by the kidneys per minute (mL/min), reflecting renal excretory efficiency. It is essential for evaluating kidney function, including filtration, reabsorption, and secretion processes. To calculate the clearance rate (Cs) of the substance, use the formula: Clearance Formula: (Cs) = (Us x V) / Ps Us: Urine concentration of the substance V: Urine flow rate Ps: Plasma concentration of the substance Types of Clearance Measurements: Inulin Clearance Used to measure Glomerular Filtration Rate (GFR) as it is freely filtered but not reabsorbed or secreted. Not ideal for routine use due to intravenous administration. Creatinine Clearance Estimates GFR using creatinine, which is primarily filtered by the glomeruli. Slightly inaccurate due to tubular secretion, but practical for clinical settings. PAH Clearance Estimates Renal Plasma Flow (RPF). PAH is cleared through both glomerular filtration and tubular secretion. Correction for PAH extraction ratio improves accuracy. Filtration (Option A): This process refers to the initial filtration of blood through the glomerulus to form filtrate. The formula does not measure this process directly. Tubular Secretion (Option B): This is the process by which substances are actively transported from the blood into the renal tubules. The formula does not specifically measure tubular secretion. Tubular Reabsorption (Option C): This refers to the process of reabsorbing substances from the renal tubules back into the blood. The formula does not measure reabsorption directly.

Subject: Psychiatry

Q860139. What is the medical term for a person who fears seeing tall buildings and looking down from heights?

- A. Agoraphobia
- B. Acrophobia
- C. Claustrophobia

- D. Nomophobia

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Acrophobia Explanation: Acrophobia is referred to as an intense fear of heights, often leading to anxiety and panic when in high places or even when thinking about being at a height. The term "phobia" is used when fear is limited to a specific object, situation, or idea. Phobias are linked to physical symptoms of anxiety and a tendency to avoid the feared stimulus. Incorrect Options: Agoraphobia (Option A) is a fear of entering open or crowded places or being in places where escape might be difficult. Those affected often avoid crowded areas, public transport, or being far from home, and in severe cases, may avoid leaving home altogether. Claustrophobia (Option C) is the intense fear of enclosed or small spaces. These individuals may experience anxiety, panic, and discomfort when in places like elevators, tunnels, or crowded rooms. Nomophobia (Option D) is a fear or anxiety of being without a mobile phone or losing access to it. People often experience distress when they cannot use their phone due to factors like low battery, lack of signal, or being without it.

Q. A mother presented her daughter with complaints that she has started behaving weirdly about her food habits for the last few months. She eats a lot of burgers in one go, and then she vomits it out. Her BMI is 27. What is the most probable diagnosis?

- A. Anorexia nervosa
- B. Binge eating disorder
- C. Bulimia nervosa
- D. OCD

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) Bulimia nervosa Explanation: The patient exhibits binge eating followed by vomiting, which is characteristic of Bulimia nervosa (eating disorder). Bulimia Nervosa (eating disorder) Age of Onset Late adolescence and young adulthood (8-21 years). Features Binge Eating Episodes: Recurring episodes of binge eating, occurring at least weekly for the last 3 months. Compensatory Behaviors: Purging behaviours (self-induced vomiting, laxative abuse, diuretics), excessive exercise, fasting. BMI: Often normal or slightly overweight (compared to anorexia nervosa). Gender prevalence: More common in females than males. Physical signs Appear due to repeated purging. Parotitis or (parotid gland hypertrophy (may see increased serum amylase) Enamel erosion (from vomiting) Dental caries Mallory-Weiss syndrome (esophageal tears). Russell's Sign (callus on knuckles:

Due to self-induced vomiting, the knuckles get injured by the teeth. {{caption_text}} Treatment Cognitive Behavioral Therapy (CBT): First-line treatment focuses on modifying distorted thoughts and behaviours related to eating and body image. Nutritional Rehabilitation: Aimed at restoring healthy eating patterns and addressing nutritional deficiencies. Antidepressants Fluoxetine: Most effective medication for reducing binge-eating episodes and associated symptoms. Topiramate: This can be effective in suppressing binge eating but not as commonly used as fluoxetine. Bupropion: Contraindicated due to an increased risk of seizures, especially in patients with eating disorders. Evidence indicates that CBT and medications (particularly fluoxetine) are the most effective combination. Incorrect Options: Anorexia nervosa (Option A) involves an intense fear of gaining weight and a distorted body image, as seen in the patient's anxiety over gaining a few pounds. It also includes behaviours like binge eating followed by purging, such as self-induced vomiting, but with a decreased BMI. Binge eating disorder (Option B) does not involve purging behaviours and is characterised by episodes of eating large quantities of food without compensatory actions. OCD (Obsessive Compulsive Disorder) (Option D) is not an eating disorder. It is characterised by persistent, unwanted thoughts (obsessions) and repetitive behaviours (compulsions) performed to reduce anxiety. Individuals often feel compelled to engage in these actions despite recognising them as irrational.

Subject: Radiology

Q. Ga-68 PSMA PET scan is used to diagnose which of the following conditions?

- A. Lung cancer
- B. Prostate cancer
- C. Colon cancer
- D. Liver cancer

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Prostate cancer Explanation: The Ga-68 PSMA PET scan is specifically designed to detect prostate cancer. PSMA stands for Prostate-Specific Membrane Antigen, which is a protein highly expressed on the surface of prostate cancer cells. The PET scan utilizes a radiotracer labeled with Gallium-68 to target and visualize these PSMA proteins, thus providing detailed imaging of prostate cancer. Advancements in Prostate Cancer Diagnosis: Prostate Cancer Statistics: Second most common cancer in men and the sixth leading cause of cancer-related death globally. Early detection leads to a cure rate of over 90%. Role of Molecular Imaging: Essential for individualized diagnosis and treatment of prostate cancer. Utilizes modalities like PET, SPECT, MRI, CT, ultrasound, and bioluminescence for non-invasive cellular and molecular imaging. Limitations of 18F-FDG

PET: Not routinely used for early-stage prostate cancer due to its low metabolic activity in prostate cancer cells. Advancement with Ga-68 PSMA Imaging: A groundbreaking tool in nuclear medicine for managing metastatic prostate cancer, gaining global recognition. Ga-68 PSMA PET scan is a highly sensitive imaging modality primarily used for the detection and management of prostate cancer. It utilizes a radiotracer labeled with Gallium-68 that binds to Prostate-Specific Membrane Antigen (PSMA), which is overexpressed in prostate cancer cells. Lung cancer (Option A): Imaging for lung cancer usually involves CT, PET-CT with FDG, or biopsy for diagnosis. Colon cancer (Option C): FDG PET-CT is used for staging and recurrence detection in colorectal cancer. Liver cancer (Option D): Diagnosis of liver cancer (e.g., HCC) relies on imaging modalities like multiphase CT or MRI; PET-CT may play a secondary role.

Subject: Surgery

Q860167. A 35-year-old woman, 10 years after mastectomy, notices gradual swelling and heaviness in her right upper limb without pain. On examination, bluish nodules on the skin with no infections are noted. What is the most likely cause of her symptoms?

- A. Lymphangiosarcoma
- B. Thoracic outlet syndrome
- C. Chronic venous insufficiency
- D. Recurrent breast cancer

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Lymphangiosarcoma Explanation: Lymphangiosarcoma is the most likely cause of these symptoms, especially in a patient with a history of mastectomy. This condition, also known as Stewart-Treves syndrome, can develop years after mastectomy due to long-standing lymphedema, which is a consequence of lymphatic obstruction. Complications of mastectomy: Complications Explanations Lymphedema Swelling is caused by the accumulation of lymph fluid in the arm or chest wall due to the removal of lymph nodes.(After MRM and axillary dissection) Wound infection/Flap necrosis Postoperative infections where blackening of suture line is seen (flap necrosis), if necrosed site note removed, leads to wound infection Post-Mastectomy Pain Syndrome Chronic pain in the chest or upper arm due to nerve damage or scar tissue formation. Nerve Injuries Long thoracic nerve- injury leads to winging of the scapula Thoracodorsal nerve Lymphangiosarcoma Stewart-Treves syndrome - Cancerous growth in the lymphatic vessels, often associated with long-standing lymphedema. After an average of 10.5 years following MRM and radiotherapy, the patient develops angiosarcoma Thoracic Outlet Syndrome (Option B) is characterised by symptoms such as pain, paraesthesia, oedema, cyanosis, cold extremities, and weakness in the hands. Chronic Venous Insufficiency (Option C) typically

presents with postural discomfort, varicose veins, oedema, skin pigmentation, induration, dermatitis, lipodermatosclerosis, and ulceration. Recurrent Breast Cancer (Option D) usually presents with a palpable lump, nipple retraction, swelling of lymph nodes, and signs of metastasis.

Q. A patient presents with calf pain while walking a certain distance. The pain is severe enough that he must stop and rest before continuing. According to Boyd's grading, which of the following grades best describes this condition?

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

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) Grade 3 Explanation: Grade III is characterised by pain that persists during walking, and the patient has to stop and rest to relieve the pain. Boyd's classification of intermittent claudication: Grade Description Grade I Pain develops after walking a certain distance (claudication distance). The pain subsides due to increased blood flow and collateral circulation. Grade II Pain persists even while continuing to walk, but the patient can still walk with effort. Grade III Patient must stop and rest to relieve the pain; walking becomes significantly impaired. Grade IV Patient experiences rest pain, and the pain persists even at rest, indicating severe arterial disease.

PrepLadder

Exam: FMGE June 2024 Question Paper

Subject: Anaesthesia

Q. Which of the following inhalation agents has a blood-gas partition coefficient similar to nitrous oxide?

- A. Isoflurane
- B. Desflurane
- C. Sevoflurane
- D. Halothane

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option: B) Desflurane Explanation: Desflurane Properties Desflurane is a fluorinated ether with high vapor pressure (681 mm Hg at 20°C) and very low blood solubility (λb/g 0.42), allowing rapid induction and emergence. It requires a special vaporizer (tec 6) for precise anesthetic control. {{caption_text}} Tec 6 Blood gas coefficient indicates speed of onset and recovery, solubility of inhalational agent in the blood. It is inversely proportional to speed of onset High B/G has a slow onset Low B/G has a fast onset Desflurane has similar blood-gas partition co-efficient similar to Nitrous oxide. Uses Desflurane is ideal for rapid induction and emergence due to its low blood solubility, but it is not suitable for inhalation induction due to its pungency and airway irritation. C/I It should be avoided in patients with severe hypovolemia, malignant hyperthermia, and intracranial hypertension. Systemic Effects Cardiovascular Desflurane decreases systemic vascular resistance and arterial blood pressure. It causes moderate increases in heart rate, central venous pressure, and pulmonary artery pressure, particularly during rapid concentration increases, which can be managed with fentanyl, esmolol, or clonidine. Respiratory Causes decreased tidal volume and increased respiratory rate. It is pungent and can cause airway irritation, making it unsuitable for inhalation induction. Hepatic Minimal metabolism and risk of anesthetic-induced hepatitis, with maintained hepatic oxygen delivery. Renal Minimal nephrotoxicity, but decreases in urine output and glomerular filtration occur with reduced cardiac output. Neuromuscular Desflurane causes a dose-dependent decrease in neuromuscular response, enhancing the effects of nondepolarizing neuromuscular blockers. Cerebral Increases cerebral blood flow (CBF), intracranial pressure, and cerebral blood volume but decreases cerebral oxygen consumption. CBF can be lowered through hyperventilation. Incorrect Options: Other incorrect options do not have blood gas partition co-efficient similar to nitrous oxide. Isoflurane (Option A): Most commonly used in CVS and CNS surgeries Cost-effective Sevoflurane (Option C): Induction agent of choice in children

Second fastest-acting inhalational agent Halothane (Option D): Undergoes maximum metabolism in liver (20%) Most hepatotoxic- can cause halothane-induced hepatitis if given repeatedly

Q. In epidural anesthesia, which of the following layers is least likely to be punctured during the procedure?

- A. Arachnoid mater
- B. Ligamentum flavum
- C. Supraspinous
- D. Infraspinous

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Arachnoid mater Explanation: It is least likely to be punctured in epidural anesthesia as it is not intended to be pierced. Order in which structures are pierced: Skin Subcutaneous fat Supraspinous ligament (Option C) Interspinous ligament (Option D) Ligamentum flavum (Option B)

Subject: Anatomy

Q. Identify the marked structure:

- A. Internal capsule
- B. Body of fornix
- C. Globus pallidus
- D. Lateral ventricle

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Internal capsule Explanation: Internal Capsule The internal capsule is a compact bundle of projection fibres that connects the cerebral cortex with subcortical centres such as the thalamus, brainstem, and spinal cord. It contains both afferent (sensory) fibres from the thalamus to the cortex and efferent (motor) fibres from the cortex to the cerebral peduncle and midbrain. INTERNAL CAPSULE: V-shaped projection fiber—angled laterally, present between thalamus and caudate nucleus medially and lentiform nucleus laterally. Parts of Internal Capsule: Anterior limb: Between caudate nucleus medially and lentiform nucleus laterally. Posterior limb: Between thalamus medially and lentiform nucleus laterally. Genu: Between anterior and posterior limb. Sublentiform: Present below the lentiform. Retrolentiform: Present behind lentiform. Lesion of Internal Capsule Occurs due to hemorrhage, leading to spastic paralysis (due to involvement of

pyramidal and extrapyramidal fibers for the upper limb, trunk, and lower limb) and loss of sensations in the opposite half of the body. Most commonly involved artery – Charcot’s artery of cerebral hemorrhage (striate branches from middle cerebral artery). Lesions in the sublentiform and retrolentiform parts of the internal capsule lead to visual loss and auditory defects. (Option B, C, and D ruled out)

Q. Which muscle movements are related to the Abducens nerve?

- A. Lateral rectus
- B. Medial rectus
- C. Superior oblique
- D. Inferior oblique

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Lateral rectus Explanation: The lateral rectus muscle is supplied by the Abducens nerve. Extraocular muscles Voluntary muscles Involuntary muscles Four recti muscles Superior rectus Inferior rectus Medial rectus Lateral rectus Two oblique muscles Superior oblique Inferior oblique Levator palpebrae superioris (1) Superior tarsal or Muller's muscle Inferior tarsal Orbitalis. Origin, insertion, and nerve supply of extraocular muscles: Origin Insertion Nerve supply (SO4, LR6) Recti Common annular tendon or tendinous ring of Zinn. (all recti have the same origin) Sclera little posterior to the limbus (corneoscleral junction) The average distance from Limbus is: Superior: 7.7 mm Inferior: 6.5 mm Medial: 5.5 mm Lateral: 6.9 mm Lateral rectus: Abducens nerve Rest all other recti: Oculomotor nerve (Option B) Superior oblique The undersurface of the lesser wing of the sphenoid Into the sclera behind the equator in the posterior superior quadrant of the eyeball. Trochlear nerve (Option C) Inferior oblique The orbital surface of the maxilla Into the sclera behind the equator in the posterior superior quadrant of the eyeball, a little below the superior oblique. Oculomotor nerve (Option D) Levator palpebrae superioris Orbital surface of the lesser wing of the sphenoid bone. Superior lamella: Anterior surface of the superior tarsus and skin of the upper eyelid. Inferior lamella: Upper margin of the superior tarsus and the superior conjunctival fornix. Actions of muscles on the eyeball: Mnemonic SIN- Superior rectus/ Superior oblique assist in INtorsion RAD- Rectus muscles help in ADduction Superior rectus (SR) Medial rectus (MR) Inferior rectus (IR) Lateral rectus (LR) Superior oblique (SO) Inferior oblique (IO) Elevation Adduction Intorsion Adduction Depression Adduction Extorsion Abduction Depression Abduction Intorsion Elevation Abduction Extorsion

Subject: Biochemistry

Q. Which substance is involved in the conjugation process in the liver?

- A. Hyaluronic Acid
- B. Glucuronic Acid
- C. Gluconic Acid

- D. Glycolic Acid

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Glucuronic Acid Explanation Glucuronidation is a biochemical process in which a glucuronic acid molecule is attached to a substance, making it more water-soluble and easier to excrete. This process is essential for the detoxification and elimination of substances like bilirubin, drugs, and hormones in the liver. Synthetic Reaction Description Examples Glucuronidation Conjugation with glucuronic acid via UDP-glucuronosyl transferases (UGTs). Chloramphenicol, aspirin, paracetamol, morphine, bilirubin, steroid hormones, thyroxine. Acetylation Conjugation with acetyl CoA, mediated by N-acetyl transferases. Isoniazid, sulfonamides, hydralazine, dapsone, clonazepam. Methylation Methylation of amines and phenols by methyl transferases using methionine or cysteine as donors. Adrenaline, histamine, methyldopa, captopril, mercaptopurine. Sulfation Conjugation of phenols and steroids with sulfate by sulfotransferases (SULTs). Chloramphenicol, methyldopa, adrenal steroids. Glycine Conjugation Conjugation with glycine for drugs with carboxylic acid groups. Salicylates, nicotinic acid. Glutathione Conjugation Conjugation of reactive intermediates with glutathione via glutathione-S-transferases. Paracetamol (reactive intermediates), quinones, epoxides. Ribonucleoside Synthesis Conjugation for activation of purine and pyrimidine antimetabolites. Cancer chemotherapeutic agents. Hyaluronic Acid (Option A): Hyaluronic acid is a glycosaminoglycan involved in extracellular matrix formation and lubrication of joints. It does not play a role in hepatic conjugation processes. Gluconic Acid (Option C): Gluconic acid is a product of glucose oxidation and is not involved in the conjugation process in the liver. Glycolic Acid (Option D): Glycolic acid is an alpha-hydroxy acid commonly associated with skincare and is not involved in hepatic conjugation.

Q. A 7-year-old child of short stature presents with skin patches and learning difficulties. Diagnostic workup indicates a defect in DNA repair specifically related to double-strand breaks. What is the most likely diagnosis?

- A. Bloom Syndrome
- B. Xeroderma Pigmentosum
- C. Cockayne Syndrome
- D. Lynch Syndrome

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Bloom Syndrome Explanation Bloom Syndrome Bloom syndrome is caused by a defect in the BLM gene, which encodes a RecQ helicase essential for DNA repair, particularly double-strand break repair. Clinical Features: Physical: Short stature, narrow face, small jaw, large ears, and high-pitched voice. Skin: Red rash on sun-exposed areas (face,

arms, hands) with dilated blood vessels; patches of lighter/darker skin. Development: Fertility and learning difficulties; growth and developmental delays. Infections: Frequent ear and lung infections. Comorbidities: Increased risk of diabetes and chronic obstructive pulmonary disease (COPD). Cancer Risk: Early-onset cancers, especially squamous cell skin cancer, leukemia, lymphoma, and gastrointestinal cancers. Xeroderma pigmentosum (Option B): It is an autosomal recessive disorder characterized by sun sensitivity, with approximately 50% of patients having acute burning on minimal sun exposure. UV radiation causes the cross-linking of pyrimidine residues, preventing normal DNA replication. Nucleotide excision repair (NER) prevents this DNA damage. Inherited loss-of-function mutations in any of these genes give rise to xeroderma pigmentosum. The onset of freckling (lentigines) on sun-exposed skin before age two years in most patients. At an early age, there is a significantly increased risk of sunlight-induced cutaneous neoplasms (basal cell carcinoma, squamous cell carcinoma, melanoma). Cockayne Syndrome (Option C): Cockayne syndrome is associated with defective transcription-coupled nucleotide excision repair, resulting in photosensitivity, growth failure, and neurodevelopmental abnormalities. Double-strand break repair is not affected. Lynch Syndrome (Option D): Lynch syndrome, also known as hereditary non-polyposis colorectal cancer (HNPCC), involves a defect in mismatch repair genes (MLH1, MSH2, MSH6, PMS2). It is not associated with childhood growth failure or learning difficulties.

Subject: Dermatology

Which of the following deficiencies causes follicular hyperkeratosis?

- A. Vitamin A
- B. Vitamin C
- C. Vitamin E
- D. Vitamin B6

✅ *Correct Answer: 1*

🧠 Solution:

Correct Answer: A) Vitamin A Explanation: Follicular hyperkeratosis is characterized by dry, rough skin with small, keratotic papules around hair follicles, often seen in Vitamin A deficiency. This occurs due to abnormal keratinization of epithelial cells. Vitamin A Deficiency Manifestations : 1) Ocular manifestations : Vitamin A deficiency is the most significant preventable cause of blindness, especially in children below 5 in developing countries. Early Signs: Loss of sensitivity to green light. Difficulty adapting to dim light. Night blindness. Prolonged Deficiency: Xerophthalmia: Dry, thick, keratinized conjunctiva and cornea. If untreated, it leads to corneal ulceration and ultimately results in blindness due to the formation of opaque scar tissue. WHO grading of xerophthalmia: XN Night blindness. X1 X1A: Conjunctival xerosis. X1B: Bitot spots. X2 Corneal xerosis. X3 X3A: Corneal ulceration, less than one-third. X3B: Corneal ulceration, more than one-third. XS

Corneal scar. XF Xerophthalmic fundus. Bitot's Spots: Grayish-white triangular plaques firmly adherent to the conjunctiva. Keratomalacia: When xerophthalmia persists for a longer time, it progresses to keratomalacia (corneal softening). 2) Immune Function: Deficiency increases susceptibility to infections. Infection reduces retinol-binding protein synthesis, lowering vitamin A levels and impairing immune responses. 3) Skin and Mucous Membrane Lesions: Follicular Hyperkeratosis (Phrynoderma): Causes rough skin due to hyperkeratinization of the follicular epithelium. Keratinizing Metaplasia: Affects respiratory, gastrointestinal, and genitourinary tracts. Epithelium is atrophied. 4) Other General Manifestation : Growth retardation due to defective synthesis of chondroitin sulfate. Decreased protein synthesis. Incorrect Options: Vitamin C Deficiency (Option B): Causes scurvy, leading to corkscrew hairs, perifollicular hemorrhages, and poor wound healing, but not follicular hyperkeratosis. Vitamin E Deficiency (Option C): Causes neurological symptoms (ataxia, peripheral neuropathy, hemolytic anemia) but does not affect keratinization. Vitamin B6 Deficiency (Option D): Leads to cheilitis, glossitis, irritability, and neuropathy, but not follicular hyperkeratosis.

Q. What nutritional deficiency is commonly associated with a chronic alcoholic presenting with a pruritic, eczematous rash on the neck and dorsum of the hands?

- A. Vit B3
- B. Vit B1
- C. Vit D
- D. Vit C

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Vit B3 Explanation: The patient is a chronic alcoholic with a pruritic, eczematous rash on the neck and dorsum of the hands, which is characteristic of pellagra—a disease caused by niacin (Vitamin B3) deficiency. Pellagra is characterized by the classic triad of symptoms: Dermatitis Bright red erythema- in sun-exposed areas (face, ankles, feet) Casal’s necklace- ↑pigmentation around the neck Diarrhoea, and Dementia. {{caption_text}} Causes of pellagra : Dietary Deficiency- Maize and Sorghum based diet Impaired Tryptophan Metabolism Factors Affecting Tryptophan to Niacin Conversion: Vitamin B6 Deficiency Medications: Isoniazid (INH), OCPs Hormonal Influences: Estrogen metabolites hinder tryptophan metabolism. Genetic Disorders: Inherited conditions like Hartnup disease can impede tryptophan absorption in the intestines and reabsorption in the kidneys Carcinoid Syndrome Other Contributing Factors: Alcoholism: Interferes with nutrient absorption, including niacin and tryptophan. Malabsorption Syndromes Incorrect Options: Vitamin B1 (Thiamine) Deficiency (Option B): Leads to Beriberi (wet/dry) and Wernicke-Korsakoff syndrome, which primarily causes neurological and cardiac symptoms rather than a rash. Vitamin D Deficiency (Option C): Causes rickets in children and osteomalacia in adults, presenting with bone pain and muscle weakness, but no skin rash. Vitamin C Deficiency (Option D): Leads to scurvy, characterized

by bleeding gums, petechiae, impaired wound healing, and corkscrew hairs, but not the photosensitive rash seen in pellagra.

Q. A 45-year-old patient presents with itchy, flat-topped, polygonal, violaceous papules on the inner wrists and flexors surfaces of the forearms. The lesions have a characteristic shiny surface and are arranged in a linear pattern. The patient denies any recent medication changes. What is the treatment?

- A. Topical steroids
- B. Antibiotics
- C. Immunosuppressants
- D. Anti-fungal

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Topical steroids Explanation: The patient's itchy, flat-topped, polygonal, violaceous papules on the inner wrists and flexor surfaces of the forearms are characteristic of Lichen Planus (LP). Lichen Planus: Clinical Features 6 P’s → Pruritic, Purple, Polygonal, Planar Papules & Plaques Mucosal involvement → Wickham striae (reticular white lines) Koebner phenomenon: This phenomenon refers to the development of lesions at sites of trauma to uninvolved skin Histology → Sawtooth infiltrate of lymphocytes at the dermal-epidermal junction Association → Hepatitis C Treatment Topical (First-line for mild cases) Corticosteroids (Clobetasol, Betamethasone) Calcineurin Inhibitors (Tacrolimus, Pimecrolimus) – for oral/genital LP Antihistamines – for pruritus relief Local anesthetics (Lidocaine gel) – for painful oral lesions Intralesional (For hypertrophic LP) Intralesional corticosteroids (Triamcinolone injections) Systemic (For severe, widespread, or refractory cases) Oral corticosteroids (Prednisolone) Dapsone Hydroxychloroquine (HCQS) Azathioprine, Mycophenolate mofetil (MMF) Phototherapy (For generalized LP, especially in children) Narrow-band UVB (NBUVB) phototherapy

Subject: ENT

Q. A 50-year-old male presents with right-sided serous otitis media and a history of cervical lymphadenopathy. The probable diagnosis is?

- A. Angiofibroma
- B. Nasopharyngeal cancer
- C. Adenoid hypertrophy
- D. Tonsillar abscess

✅ *Correct Answer: 2*

PrepLadder

🧠 Solution:
Correct Option: B) Nasopharyngeal cancer Explanation: The question clearly hints of the elderly age along with right-sided serous otitis media and cervical lymphadenopathy which helps in the diagnosis of nasopharyngeal carcinoma. Clinical features: Nasal Obstruction Discharge Denasal speech (rhinolalia clausa) Epistaxis Otologic Conductive hearing loss Serous or suppurative otitis media (Unilateral serous otitis media in adults is an important indicator) Tinnitus Dizziness due to Eustachian tube obstruction Ophthalmoneurologic Squint Diplopia (CN VI involvement) Ophthalmoplegia (CN III, IV, VI) Facial pain Reduced corneal reflex (CN V involvement) Exophthalmos Blindness (CN II) Jugular foramen syndrome with CN IX, X, and XI involvement Horner syndrome Cervical Nodal Metastases Lump of nodes between the angle of the jaw and mastoid, or along the spinal accessory in the posterior triangle Distant Metastases Common sites-bone, lung, and liver Common symptoms Cervical lymphadenopathy Hearing loss Nasal obstruction Epistaxis Cranial nerve palsies (CN VI most common) Headache Earache Neck pain Weight loss Incorrect Options: Angiofibroma (Option A): Angiofibroma is seen in the juvenile age group which eliminates the option. Adenoid hypertrophy (Option C): Adenoid hypertrophy is not associated with cervical lymphadenopathy Tonsillar abscess (Option D): This is an infection and not tumor to be associated with cervical lymphadenopathy

Q. A 22-year-old male with recurrent bleeding, presents with bowing of posterior maxillary wall on CECT. All are false except?

- A. Outgrown the blood supply
- B. Tumor vessels lack contractility
- C. Bleeding is from the adjacent invading blood vessels
- D. It lacks capsule

✅ *Correct Answer: 2*

🧠 Solution:
Correct Options: B) Tumor vessels lack contractility Explanation: The anterior bowing of the posterior wall of the maxillary sinus is called the Holman-Miller Sign This is seen in Juvenile nasal angiofibroma This tumor bleeds excessively because the tumor lacks smooth muscle that can contract. Examination of Juvenile nasopharyngeal angiofibroma (JNA) Anterior Rhinoscopy Reveals a reddish-purple mass obstructing the nasal passages, often with blood-stained discharge. Posterior Rhinoscopy Visualizes a smooth or lobulated mass in the nasopharynx using a small mirror. Oral Examination Assesses for tumor extension into the oral cavity, possibly pushing the soft palate downwards. Neck Palpation Detects any enlarged lymph nodes, especially in the upper cervical region. Neurological Examination Assesses cranial nerve involvement, focusing on eye movements, facial sensation, and hearing. Digital palpation Caution, avoid digital palpation of the nasopharyngeal mass to prevent severe bleeding. Investigations of Juvenile nasopharyngeal angiofibroma (JNA) Contrast-Enhanced CT Scan Investigation of choice; shows tumor size, location, and bony involvement. Pathognomonic sign: Holman-Miller sign (bowing of maxillary wall). Magnetic Resonance Imaging (MRI) Evaluates soft tissue and intracranial extension, differentiates

between extradural and intradural spread. (Option A ruled out) Digital Subtraction Angiography (DSA) Visualizes tumor vascularity, identifies feeding vessels and aids in preoperative embolization to reduce surgical blood loss. Nasopharyngoscopy Provides a direct view of the tumor, but biopsy is generally avoided due to high bleeding risk. (Option C ruled out) Audiometry Assesses hearing loss caused by Eustachian tube obstruction; establishes baseline and monitors post-treatment hearing. Biopsy Biopsy is contraindicated due to risk of profuse bleeding. Incorrect Options: Outgrown the blood supply (Option A): Outgrown the blood supply is a wrong statement because JNA is an extremely vascular tumor. Bleeding is from the adjacent invading vessels (Option C): JNA has its blood supply which is most commonly by the internal maxillary artery. It lacks capsule (Option D): Capsule is associated with the extension of the tumor and not bleeding.

Subject: Forensic Medicine

Q. A person who was mentally unsound at the time of committing a crime is exempt from liability if they were unaware of the nature of their actions or its consequences. What is this principle called?

- A. McNaughton rule
- B. Durham's rule
- C. Currens rule
- D. Irresistible impulse test

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) McNaughton rule Explanation:McNaughton Rule is a legal standard used to determine whether a defendant is criminally responsible if they were suffering from a severe mental illness at the time of the crime. McNaughten Rule: The key principle states that every person is presumed sane until proven otherwise. To establish a defence of insanity, it must be proven that the accused, at the time of the act, had a mental disease that prevented them from understanding the nature of the act or recognising it as wrong. Legal Test of Insanity (Right or Wrong Test): A person is not criminally responsible if they did not know the nature of their act or that it was wrong at the time of the crime. Requirements include: Evidence of a mental disease. The mental disease must be present at the time of the crime. The condition must be severe enough to prevent understanding that the act is wrong or illegal. Criminal responsibility of insane persons rules: Durham’s Rule (1954): An accused is not criminally responsible if their unlawful act results from a mental disease or defect. (Option B ruled out) Curren’s Rule (1964): An accused is not criminally responsible if, due to a mental disease or defect, they were unable to regulate their conduct according to the law at the time of the act. (Option C ruled out) American Law Institute Test (1970): A person is not responsible for criminal actions if, due to mental disease or defect, they lack adequate capacity to understand the wrongfulness of their actions or to conform to legal requirements. Brawner Rule (1972): Insanity determinations should be made by a jury, which has the discretion to decide the "insanity question." The Irresistible

Impulse: This rule posits that an individual may recognize an act as illegal but, due to mental impairment, cannot control their actions. For example, Lorena Bobbitt was acquitted in 1994 by arguing that an irresistible impulse led her to commit her crime. (Option D ruled out)

Q. Acute liver failure is a clinical feature of which of the following?

- A. OP poisoning
- B. Amanita Phalloides poisoning
- C. Belladonna poisoning
- D. Morphine poisoning

✅ *Correct Answer: 2*

🧠 Solution:
Correct Option: B) Amanita Phalloides poisoning Explanation: Amanita poisoning causes acute liver failure. It is a wild mushroom known as the death cap mushroom. Amanita poisoning presents with nausea, vomiting, diarrhea, enlarged and tender liver, jaundice, oliguria , mental confusion, convulsions and coma Early mushroom poisoning Late mushroom poisoning Hallucinogenic mushroom poisoning Species Inocybe Amanita phalloides Amanita muscaria Toxin Muscarine Amatoxin (Option A) Muscimol Symptoms Cholinergic symptoms (DUMBBELLS) Hepatotoxicity Hallucinations, seizures Treatment Atropine Thioctic acid Silibinin (hepatoprotective) Supportive treatment ATROPINE CONTRAINDICATED OP poisoning (Option A) presents with pinpoint pupils and diaphoresis, liver failure is not seen Belladonna poisoning (Option C) presents with tachycardia, hallucinations not liver failure Morphine poisoning (Option D) presents with respiratory depression and pinpoint pupils, liver failure is not seen

Q. A family died in a closed room that was full of smoke from a wood fire. Which of the following findings is likely to be seen on the body?

- A. Cherry red hypostasis
- B. Cyanosis
- C. Blackish discoloration
- D. Brown colored pigmentation

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Cherry red hypostasis Explanation: In this scenario, a family died in a closed room full of smoke from a wood fire, which likely caused carbon monoxide (CO) poisoning. Cherry-red post-mortem staining is a hallmark sign of carbon monoxide (CO) poisoning. Postmortem Staining in Poisoning Cases Postmortem staining (Livor mortis) is the skin discoloration after death due to blood settling in dependent areas. The color of the staining can indicate certain types of poisoning: Poison Postmortem Staining Characteristics

Opium (Option C ruled out) Purple or blackish staining Carbon monoxide (Option A) Cherry red discoloration (COHb > 30%) Hydrogen sulfide Greenish discoloration in tissues Datura Asphyxial signs (no specific color) Organochlorine/Kerosene Asphyxial signs (no specific color) Phosphates, aniline, and nitrites (Option D ruled out) Brown-colored pigmentation Carbon Monoxide Physical Appearance Odourless, colorless, non-irritating gas, lighter than air Sources of Poisoning Incomplete combustion of almost of fuel (wood, charcoal, gas, kerosene) Automobile exhaust Fires: A common cause of accidental CO poisoning resulting in mass deaths - large building (hotel, theatre, block of flats, etc.) in flames Paint remover (especially methylene chloride) Tobacco smoke Normal CO level in plasma 1 to 5 % 7 to 8 % in smokers Mode of Action 230 to 270 times greater affinity for hemoglobin than oxygen Leftward shift of the oxyhemoglobin dissociation curve Reduced arterial oxygen content Inactivating mitochondrial cytochrome oxidase - cellular respiration is interfered CO-induced brain injuries are common in basal ganglia, cerebral white matter, hippocampus, and cerebellum. Clinical Features Depends on the concentration of CO in the blood CO exposure during pregnancy is teratogenic Diagnosis Carboxyhemoglobin level (COHb) in blood Arterial blood gases Treatment Oxygen (100%) through a tight-fitting mask or endotracheal tube, until COHb falls to 15 to 20% Hyperbaric oxygen: Inhalation of oxygen at a pressure greater than 1 atmosphere absolute Autopsy Findings Cherry red (pink) color of skin, inner aspects of lips, nail beds, tongue, palms and soles Cutaneous bullae (skin blisters) in the calves, buttocks, wrists, and knees Cherry pink color of blood and tissues Firmer white matter of the brain Necrosis and cavitation of basal ganglia Cyanosis (Option B) is not appreciated in CO poisoning.

Subject: Gynaecology & Obstetrics

Q. A 27-year-old pregnant female in her first trimester presents to the OPD for a regular antenatal checkup. During blood type screening, potential ABO incompatibility is discussed. The healthcare provider explains that certain antibody types are less concerning than others during pregnancy. ABO incompatibility does not occur due to which antibody in her case?

- A. IgA
- B. IgG
- C. IgD
- D. IgM

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer D) IgM Explanation: The clinical scenario addresses maternal-fetal ABO incompatibility and antibody transfer across the placenta: IgM antibodies cannot cross the placenta due to their large molecular size Placental transfer is selective and depends on antibody structure. Only IgG antibodies can effectively cross the placenta ABO incompatibility occurs primarily through IgG-mediated hemolysis IgA (Option A): While IgA

antibodies are not known to cross the placenta, it is not the primary antibody class that's excluded from crossing the placenta. IgG (Option B): IgG is the only antibody that is known to cross the placenta, making it the primary concern in blood type incompatibility. IgD (Option C): IgD antibodies are not known to cross the placenta, it is not the primary antibody class that's excluded from crossing the placenta.

Q. Identify the option with the least risk of TOLAC (trial of labor after cesarean)?

- A. Classical C section
- B. Pre-eclampsia
- C. Low-segment transverse incision
- D. Breech presentation

✅ ***Correct Answer: 3***

🧠 Solution:
Correct Answer: C) Low-segment transverse incision Explanation: Low-segment transverse incision has the lowest risk for uterine rupture during trial of labor after cesarean (TOLAC). Incision location: Lower uterine segment Direction: Horizontal (transverse) Healing characteristics: Better wound healing Scar strength: Superior to classical incision Clinical Significance: Lower rupture risk during subsequent pregnancies Better healing due to less contractile portion of uterus Preferred technique for primary cesarean sections Favorable for future TOLAC Classical C section (Option A): This vertical incision through the contractile portion of the uterus carries a significantly higher risk of uterine rupture (4-9%) during TOLAC. The location and direction of this incision make it a contraindication for future vaginal delivery attempts. Pre-eclampsia (Option B): This is a medical condition that affects pregnancy but has no direct relationship to the type of uterine incision or TOLAC risk. Pre-eclampsia is a separate consideration in pregnancy management and doesn't inherently affect TOLAC decision-making. Breech presentation (Option D): This refers to fetal positioning and is not related to the type of uterine incision or its associated risks in TOLAC. While breech presentation may influence delivery decisions, it doesn't directly impact the risk of uterine rupture during TOLAC.

Q. Identify the given instrument?

- A. Graves vaginal speculum
- B. Cusco vaginal speculum
- C. Sims speculum
- D. Auvard speculum

✅ ***Correct Answer: 2***

🧠 Solution:
Correct Answer: B) Cusco vaginal speculum Explanation: The image shows a Cusco vaginal speculum, a commonly used instrument in gynecological examinations. Key Features: Design: Bivalve speculum with two symmetrical blades Material: Stainless steel Mechanism:

Self-retaining with adjustable width Operation: Opens in an anterior-posterior direction Clinical Applications: Visualization of cervix Vaginal examination Pap smear collection IUD insertion Graves vaginal speculum (Option A): Has wider blades than Cusco Uses- Performing pelvic & cervical examinations Pap Smears Inserting IUCD Sims speculum (Option C): {{caption_text}} L-shaped design with one side longer than the other. Uses- Inspect cervix and vagina post-delivery Clean vagina following delivery Inspect for local causes of APH (bleeding) Used during D&E operations Collection of samples (blood, urine in VVF) Auvard speculum (Option D): Weighted speculum Self-retaining via weighted mechanism Uses- Posterior vaginal wall retraction during operations Used in anterior colporrhaphy Used in vaginal hysterectomy

Q. Which among the following hormones acts on post ovulatory endometrium?

- A. Luteinizing hormone
- B. Follicular stimulating hormone
- C. Progesterone
- D. Oestrogen

✅ ***Correct Answer: 3***

🧠 Solution:
Correct Answer: C) Progesterone Explanation: Progesterone is produced by the corpus luteum and plays a key role in preparing the endometrium for potential implantation during the post-ovulatory (luteal) phase of the menstrual cycle. Hormonal Actions: Promotes endometrial secretory changes Maintains endometrial thickness Essential for early pregnancy maintenance Luteinizing hormone (Option A): LH primarily triggers ovulation through the LH surge and supports corpus luteum formation. It does not directly act on the endometrium. LH's main role is in follicular development and ovulation. Follicular stimulating hormone (Option B): FSH is responsible for follicular development and estrogen production during the proliferative phase. It has no direct action on post-ovulatory endometrium. Its primary role occurs before ovulation in follicle development. Oestrogen (Option D): While estrogen is crucial for endometrial proliferation in the first half of the menstrual cycle, it is not the primary hormone acting on post-ovulatory endometrium. Estrogen's main effects occur during the proliferative phase, before ovulation.

Q. Identify the condition that is least likely to cause postmenopausal bleeding?

- A. Endometrial CA
- B. Granulosa cell tumor
- C. Genital tract trauma
- D. Ovarian follicular cyst

✅ ***Correct Answer: 4***

🧠 Solution:
Correct Answer: D) Ovarian follicular cyst Explanation: Ovarian follicular cysts are the least

likely cause of postmenopausal bleeding among the given options. Endometrial CA (Option A): This is one of the most common causes of postmenopausal bleeding, accounting for approximately 10% of cases. Any postmenopausal bleeding must be evaluated to rule out endometrial cancer as it is often the first sign of the disease. Granulosa cell tumor (Option B): This is an estrogen-producing ovarian tumor that can cause endometrial hyperplasia and subsequent bleeding. The excess estrogen production stimulates the endometrium, potentially leading to irregular bleeding even in postmenopausal women. Genital tract trauma (Option C): While not as common as endometrial cancer, trauma to the genital tract can cause bleeding at any age. This may occur due to injury during intercourse, medical procedures, or other traumatic events to the genital area.

Subject: Medicine

Q. An 8-year-old child with a history of GTCS came with an episode of convulsions for more than 45 minutes. What will be the appropriate management for this patient?

- A. Lorazepam followed by levetiracetam
- B. Valproate followed by gabapentin
- C. Carbamazepine followed by lorazepam
- D. Levetiracetam followed by valproate

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Lorazepam followed by levetiracetam Explanation: Status epilepticus (SE) is defined as continuous seizures or repetitive, discrete seizures with impaired consciousness lasting more than 30 minutes. They are generally of 2 types: Generalized convulsive status epilepticus (GCSE) GCSE is an emergency and must be treated immediately (e.g., persistent, generalized electrographic seizures, coma, and tonic-clonic movements). Nonconvulsive status epilepticus (NCSE) E.g., persistent absence seizures or focal seizures with confusion or partially impaired consciousness, and minimal motor abnormalities. In the case of impending and early SE, the standard protocol involves administering IV lorazepam 0.1 mg/kg followed by levetiracetam 20-30 mg/kg. For established and early refractory SE, the treatment progresses to Propofol 2 mg/kg IV followed by 2-10 mg/kg/hr with the addition of anticonvulsants like levetiracetam. Management of Status Epilepticus: Valproate followed by gabapentin (Option B): While valproate can be used in the treatment of GTCS, this combination is not the standard first-line treatment for status epilepticus. Gabapentin is typically used for chronic seizure management rather than acute status epilepticus. Carbamazepine followed by lorazepam (Option C): Carbamazepine is primarily used in the treatment of partial or focal seizures and is not appropriate for acute status epilepticus. Additionally, benzodiazepines should be administered first in status epilepticus, not after other anticonvulsants. Levetiracetam followed by valproate (Option D): This sequence is incorrect as benzodiazepines (lorazepam) should be the first-line treatment in early status epilepticus.

PrepLadder

Q. A patient having hypertension is on thiazides and is complaining of fatigue and hypokalemia. Which of the following drugs can prevent potassium loss?

- A. Furosemide
- B. Amiloride
- C. Acetazolamide
- D. Indapamide

✅ *Correct Answer: 2*

🧠 Solution:

Correct Answer: B) Amiloride Explanation: Amiloride is a potassium-sparing diuretic that acts by inhibiting the epithelial sodium channel (ENaC) in the distal nephron. When used in combination with thiazide diuretics, it helps prevent hypokalemia while maintaining Thiazide’s antihypertensive efficacy. This combination approach is particularly useful in patients experiencing thiazide-induced hypokalemia. Amiloride works as a weak antihypertensive but is valuable for its potassium-sparing properties, though it should be used cautiously in patients with renal failure or hyperkalemia. Classification of Diuretics : Type Mechanism of action Examples Clinical uses Side effects Carbonic anhydrase inhibitors Inhibit carbonic anhydrase enzyme in the proximal tubule, decreasing bicarbonate reabsorption Acetazolamide, Methazolamide Glaucoma, Altitude sickness Metabolic acidosis, Hypokalemia Loop diuretics Inhibit the Na-K-2Cl symporter in the thick ascending loop of Henle Furosemide, Bumetanide Acute pulmonary edema, Chronic heart failure, Hypercalcemia Hypokalemia, Ototoxicity, Metabolic alkalosis, Hyperglycemia, Hyperuricemia Thiazide diuretics Inhibit sodium reabsorption in the distal convoluted tubule Hydrochlorothiazide, Chlorthalidone Hypertension, Edema Hypokalemia, Hyponatremia, Hyperglycemia Hyperuricemia Potassium-sparing Inhibit sodium channels in the distal nephron or block aldosterone receptors Spironolactone, Amiloride Heart failure, Hyperaldosteronism Hyperkalemia, Gynecomastia (for Spironolactone) Osmotic diuretics Increase osmolarity of the glomerular filtrate, inhibiting water reabsorption. Mannitol, Glycerin Cerebral oedema, Acute glaucoma Dehydration, Electrolyte imbalance Furosemide (Option A): This is a loop diuretic that actually increases potassium excretion and can worsen hypokalemia. It is primarily used in patients with reduced GFR, CHF, or conditions requiring significant sodium excretion. Acetazolamide (Option C): This carbonic anhydrase inhibitor is mainly used for treating glaucoma, altitude sickness, and periodic paralysis. It does not prevent potassium loss and can actually contribute to electrolyte imbalances. Indapamide (Option D): This thiazide-like diuretic, similar to traditional thiazides, can cause potassium depletion and would not help prevent hypokalemia. It shares the same mechanism of action and side effect profile as other thiazide diuretics.

Subject: Microbiology

PrepLadder

Q. A 6-month-old boy presents with recurrent bacterial and fungal infections, chronic diarrhea, and failure to thrive. He is diagnosed with severe combined immunodeficiency due to an autosomal recessive inheritance pattern. Which enzyme deficiency is responsible?

- A. Phosphomannose isomerase
- B. Ornithine transcarbamylase
- C. Hypoxanthine-guanine phosphoribosyltransferase
- D. Adenosine deaminase

✅ ***Correct Answer: 4***

🧠 Solution:
Correct Answer: D) Adenosine deaminase Explanation: The patient’s symptoms—recurrent bacterial and fungal infections, chronic diarrhea, and failure to thrive—are characteristic of Severe combined immunodeficiency (SCID). SCID is a condition where there is a severe deficiency in both T-cell and B-cell function, leading to an increased susceptibility to infections. One of the most common causes of SCID is a deficiency in adenosine deaminase (ADA), an enzyme involved in purine metabolism. A deficiency in ADA results in toxic accumulation of adenosine and deoxyadenosine, which primarily affects T-cells and B-cells, leading to immune dysfunction. Phosphomannose isomerase (Option A): A deficiency in this enzyme leads to congenital disorders of glycosylation, which can present with developmental delay, but it is not associated with SCID. Ornithine transcarbamylase (Option B): This enzyme deficiency leads to urea cycle disorders, specifically hyperammonemia, which does not cause SCID or the described immune symptoms. Hypoxanthine-guanine phosphoribosyltransferase (HGPRT) (Option C): A deficiency in HGPRT causes Lesch-Nyhan syndrome, characterized by neurological and behavioral problems, gout, and kidney stones, but not SCID.

Q. A 10-year-old boy is brought to the ED after being stung by a bee while playing outside. Within minutes of the sting, he developed shock, respiratory failure, and vascular collapse. What type of hypersensitivity reaction is most likely responsible?

- A. IgG-mediated reaction
- B. IgA-mediated hypersensitivity
- C. IgE-mediated reaction
- D. T cell-mediated response

✅ ***Correct Answer: 3***

🧠 Solution:
Correct Answer: C) IgE-mediated reaction Explanation: The symptoms described—shock, respiratory failure, and vascular collapse—occur within minutes of a bee sting, which is a classic presentation of an allergic reaction triggered by IgE-mediated hypersensitivity (also known as Type I hypersensitivity). This reaction is commonly referred to as anaphylaxis. Type I Hypersensitivity (Early), is an immediate reaction triggered by IgE-mediated mast cell degranulation, causing symptoms like hives,

swelling, and respiratory distress within minutes of allergen exposure. Other options describe features inconsistent with her presentation and typical of delayed hypersensitivity types (I (Delayed), III, and IV), which have different mechanisms and symptom timelines. Type I hypersensitivity reaction phases and its features: Phase Timing Mechanism Clinical Features Early Phase Seconds to minutes Mast cell/basophil degranulation: IgE cross-linking leads to the release of histamine and other mediators. Skin: Urticaria (hives), itching (pruritus), erythema (redness), localized angioedema (swelling around lips, eyes) Respiratory: Bronchoconstriction leading to wheezing, shortness of breath, chest tightness, sneezing, nasal congestion (allergic rhinitis) Cardiovascular: Vasodilation and hypotension (drop in blood pressure), dizziness, syncope (fainting) Gastrointestinal: Nausea, vomiting, abdominal pain, diarrhea due to smooth muscle contraction Systemic Reaction: Anaphylaxis in severe cases, with generalized urticaria, angioedema, severe hypotension, and respiratory distress (life-threatening) Late Phase 4–12 hours, peaks at 24–48 hours, lasting up to days Inflammatory cell recruitment: Cytokines/chemokines attract eosinophils, neutrophils, and macrophages, causing sustained inflammation. Skin: Persistent redness, swelling, intense itching, and development of an eczema-like rash (seen in atopic dermatitis) Respiratory: Recurrent bronchoconstriction, prolonged wheezing, coughing, chest tightness, mucus production, and airway hyperresponsiveness (chronic asthma exacerbation) Eyes: Persistent redness and irritation in conjunctiva (allergic conjunctivitis) Chronic Changes: In prolonged or recurrent reactions, there may be tissue remodeling, fibrosis, and thickening of affected areas (e.g., airways in asthma, skin in chronic dermatitis) Types of hypersensitivity reactions and their features: Type Mechanism Clinical Features Onset Type I Early IgE-mediated mast cell degranulation Hives, swelling, respiratory distress Immediate (minutes) Type I Delayed IgE-mediated mast cell degranulation Wheezing, chest tightness, localized itching Hours to days Type II Antibody-mediated cell destruction Hemolytic anemia, thrombocytopenia Delayed (hours to days) Type III Immune complex deposition Joint pain, fever, vasculitis Delayed (hours to days) Type IV T-cell mediated response (Option D ruled out) Skin rash, contact dermatitis Delayed (48-72 hours) {{caption_text}} IgG-mediated reaction (Option A): This is typical of Type II hypersensitivity reactions (such as hemolytic anemia), which involve antibody binding to antigens on cells or tissues, leading to cell destruction. It is not associated with anaphylaxis. IgA-mediated hypersensitivity (Option B): This is involved in Type III hypersensitivity (e.g., in conditions like immune complex disease), where antibody-antigen complexes form and cause inflammation, but it is not the cause of anaphylaxis.

Subject: Ophthalmology

Q. A 32-year-old patient presents with blurred vision, photophobia, and mild ocular pain. Examination reveals aqueous flares and keratic precipitates in the anterior chamber. What is the likely diagnosis?

- A. Intermediate uveitis
- B. Posterior uveitis
- C. Toxoplasma uveitis

- D. Iridocyclitis

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Iridocyclitis Explanation: Type of Uveitis Signs Anterior (Option D) Granulomatous iridocyclitis, iris nodules, large mutton fat KPs, anterior chamber cells and flare, posterior synechiae Intermediate (Option A) Vitreous cells, snowball opacities, snowbanking Posterior (Option B) Choroidal and retinal granulomas, cystoid macular edema, periphlebitis retinae with candle wax droppings appearance Peripheral Multifocal Chorioretinitis Small, punched-out atrophic spots, highly suggestive of sarcoidosis Uveoparotid Fever (Heerfordt’s Syndrome) Bilateral granulomatous panuveitis, painful parotid gland enlargement, cranial nerve palsies, skin rashes, fever, malaise Toxoplasma uveitis (Option C): Definitive host: Cat; Intermediate host: Human Ocular features: granulomatous or non-granulomatous uveitis Primarily it is posterior uveitis and spreads to anterior

Q. Optic nerve glioma is seen in?

- A. NF-1
- B. Tuberous sclerosis
- C. NF-2
- D. Schwannoma

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) NF-1 Explanation:Optic nerve gliomas usually present with proptosis, visual loss, and optic nerve swelling, but not typically with leukocoria or an intraocular mass with calcification. Various conditions other than retinoblastoma, which present as leukocoria are collectively called pseudoglioma. Differential diagnosis of Retinoblastoma Leukocoria Congenital cataract Inflammatory deposits in vitreous following a plastic cyclitis or choroiditis, Coloboma of the choroid, Retinopathy of prematurity Persistent hyperplastic primary vitreous Toxocara endophthalmitis Exudative retinopathy of Coats Endophytic retinoblastoma Tuberous sclerosis Neurofibromatosis-1 (Option A) Astrocytoma Exophytic Retinoblastoma Exudative retinopathy of Coats Options B, C, and D are incorrect. Optic nerve glioma is not associated with these conditions.

Subject: Orthopaedics

Q. A patient experienced a fall onto an outstretched hand, and an X-ray revealed a fracture of the first metacarpophalangeal (MCP) joint with accompanying subluxation. Define this type of fracture.

- A. Bennett’s fracture
- B. Scaphoid fracture
- C. Reverse Colle’s fracture
- D. Colle’s fracture

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Bennett’s fracture Explanation: Bennett’s fracture is an oblique intra-articular fracture dislocation at the base of the first metacarpal bone (the thumb). Bennett fracture: Oblique intra-articular fracture (2 part) of the base of the first metacarpal with subluxation of the metacarpal. It is caused by a longitudinal force applied to the thumb. Treatment: Closed reduction and percutaneous K-wire fixation Open reduction and internal fixation {{caption_text}} {{caption_text}} Scaphoid (Options B) occurs from a fall on a dorsiflexed hand, typically affecting the waist of the scaphoid, and is characterised by pain and tenderness in the anatomical snuff box (the scaphoid fossa). Reverse Colle’s fracture (Options C) involves a fracture at the distal end of the radius. Colle’s fracture (Options D) is due to fracture of radius and presents with Dinner-fork deformity

Q. A 17-year-old boy presents to the clinic complaining of a painless lump on the lateral aspect of his left knee. The radiograph of the patient is shown below. Which of the following is the most likely diagnosis?

- A. Enchondroma
- B. Osteosarcoma
- C. Osteomyelitis
- D. Osteochondroma

✅ *Correct Answer: 4*

🧠 Solution:
Correct Option: D) Osteochondroma Explanation: Osteochondroma, also known as exostosis, is characterized by an exophytic growth from the bone. This type of growth appears as a cauliflower-like structure in imaging studies. Osteochondroma: Benign cartilaginous neoplasms arising from physeal cartilage beneath the periosteum. Growth via enchondral ossification, similar to normal bone development. More common in males, usually appearing during adolescence. Affects long bones, especially the femur and humerus. Clinical Presentation Usually presents as a painless mass. Symptoms may include: Formation of a bursa due to friction. Activity-related discomfort. Rare symptoms: Neuropathic pain from nerve compression. Sudden pain due to fracture. Factors affecting malignant transformation: Larger lesions with thicker cartilage caps (especially >1.5 cm). More common in trunk lesions, and rare in extremities. Suspicious changes in size or pain after skeletal maturity in MO patients. Radiographic Appearance Bony protuberance with

well-defined borders. Key radiographic features: Cortex flaring into the osteochondroma. (Option B) Thin outer cortex with inner cancellous structure. Pedunculated (cauliflower-like summit) or broad sessile base. Pedunculated lesions point away from the joint toward the diaphysis. {{caption_text}} MRI findings: Cartilaginous cap thickness, generally thicker in children and thins with age. {{caption_text}} {{caption_text}} Enchondroma (Options A) presents with Asymmetric limb shortening, Swelling of fingers/toes and impaired movement of interphalangeal joints Osteosarcoma (Options B) Sun-rays appearance is typically seen in osteosarcoma. Osteomyelitis (Options D) shows periosteal new bone formation (periosteal reaction) by 7-10 days

Q. Identify the type of fracture in a patient who sustained a road traffic accident resulting in fractures of both the tibia and fibula.

- A. Bumper Fracture
- B. Patella sleeve fracture
- C. Depressed skull fracture
- D. Cervical fracture

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Bumper fracture Explanation: A bumper fracture refers specifically to a lateral tibial plateau fracture, which commonly occurs in road traffic accidents. This type of fracture often involves both the tibia and fibula. Classification of Tibial Plateau Fracture The tibial plateau refers to the proximal tibial surface, which comprises the medial and lateral articular surfaces of the respective tibial condyles. Lateral tibial plateau fractures are the most common. Mechanism of Injury The main mechanism of injury is a varus or valgus force, with or without axial load. Young Adults: Road traffic accidents, leading to split fractures (high ligament injury risk). Elderly: Trivial falls, causing depression or split depression fractures (associated with osteoporosis) (low ligament injury risk). Classification (Schatzker) Type I: Lateral plateau split fracture (young adults). Type II: Lateral plateau split depression (young adults). Type III: Lateral plateau pure depression (elderly). Type IV: Medial plateau fracture. Type V: Bicondylar fracture. Type VI: Dissociation of metaphysis and diaphysis. Clinical Features Knee swelling due to hemarthrosis. Inability to bear weight Reduce range of knee movements Compartment syndrome (earliest sign: stretch pain). Imaging X-ray: Initial fracture detection. {{caption_text}} {{caption_text}} {{caption_text}} CT with 3D Reconstruction: Gold standard. MRI: To assess ligament injuries. Management Non-surgical: Stable fractures with minimal displacement. Surgical (ORIF): For displaced fractures or significant depression. Ligament reconstruction if needed. Patella sleeve fracture (Options B) This injury generally occurs from direct trauma to the front of the knee or from a fall, and while possible in road traffic accidents, it is less likely in this case where the deformity and mechanism suggest lateral tibial plateau involvement. Depressed skull fracture (Options C) Typically caused by small objects impacting the skull at high velocity. Cervical fracture (Options D) do not involve fracture of both tibia and fibula.

PrepLadder

Subject: PSM

Q. Rukmini is attending the village health nutrition and sanitation program day. How frequently is this conducted?

- A. Every month
- B. Every week
- C. Every 14 days
- D. Every 3 months

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Every month Explanation: The Village Health Nutrition and Sanitation Day (VHND) is scheduled to take place once every month, preferably on Wednesdays. In cases where certain villages have been missed, the VHND can be organized on any other day within the same month to ensure uniformity. The Anganwadi Center (AWC) is designated as the central location for hosting the VHND, serving as a hub for service provision under various health programs such as RCH-II and NHM. During the VHND, community health workers like ASHAs and AWWs mobilize villagers, with a particular focus on women and children, to gather at the nearest AWC. At the event, villagers have the opportunity to receive basic health services, and gain valuable information on preventive and promotive healthcare practices.

Q. Arrange the order of the Disaster management cycle

- A. Impact-response-rehabilitation-mitigation
- B. Rehabilitation-response-impact-mitigation
- C. Response-disaster-rehabilitation-mitigation
- D. Impact-mitigation-response-rehabilitation

✅ *Correct Answer: 1*

🧠 Solution:
Correct Option: A) Impact-response-rehabilitation-mitigation Disaster management cycle: The three fundamental aspects of disaster management: Disaster impact: Involves disaster response and relief. Disaster preparedness: It is the proper equipment of the country to manage disasters. Disaster mitigation: Preventing the hazard from becoming a disaster.

Q. The needle with the syringe is disposed of in which container?

- A. Yellow
- B. Red
- C. Blue
- D. White

PrepLadder

✅ *Correct Answer: 4*

🧠 Solution:
Correct Option: D) White Explanation: Needle with a syringe/syringes with fixed needles should be disposed of in a white puncture proof, tamper-proof bag/container. Colour Type of waste Example of waste Treatment and disposal Yellow (Option A) Human anatomical waste. Animal anatomical waste. Soiled waste. Discarded or expired medicine. Microbiology, biotechnology and other clinical laboratory waste. Chemical waste. Chemical liquid waste. Placenta. Post-operative body parts. Plaster of Paris (POP). Pathological waste. Cotton waste. Dressing materials. Beddings. Body fluid contaminated paper and cloth. Face mask, cap, shoe cover and head cover. Cytotoxic, expired and discarded medicines. Microbiology and biotechnology lab waste. Blood bag Vacutainers with blood Incineration. Plasma pyrolysis. Deep burial. Red (Option B) Contaminated waste that is recyclable. Syringe without needles. Fixed needle syringes with their needle cut. IVset. Catheters. Gloves (soiled or unsoiled). Urine bag. Dialysis kit. IVbottles. Tubing's. Bottles. Vacutainers with needle cut. Vacutainers without blood. ELISA plate and vials not containing blood samples. Autoclaving or microwaving/ hydroclaving followed by shredding or mutilation and waste set to registered recyclers or for energy recovery/road making. Plastic waste should not be sent to landfill sites. White (Option D) Waste Sharps Needles Syringes with fixed needles Blades Scalpers Trocar cannula Insulin pen needle Puncture proof , Leak proof, Tamper proof containers Autoclaving or dry heat sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete Or sent for final disposal to iron foundries or sanitary landfill or designated concrete waste sharp pit Blue (Option C) Glassware or metallic body implants. Includes broken or discarded glass and metallic objects that are contaminated. Glass: Broken glass. Ampoules. Lab slide Metals: Nails. Metallic body implants. Scissors. Artificial pacemakers. Cardboard boxes with blue coloured marking or blue coloured puncture- proof and tamper-proof containers. Disinfection (cleaning with detergent and soaking in sodium hypochlorite) or autoclaving or microwaving or hydroclaving and then sent for recycling.

Q. Which of the following is not a part of the global hunger index?

- A. U5MR
- B. Malnutrition
- C. Inadequate food supply
- D. Infant mortality rate

✅ *Correct Answer: 4*

🧠 Solution:
Correct Option: D) Infant mortality rate Explanation: The Global Hunger Index (GHI) does not include the Infant mortality rate. It measures three dimensions of hunger: Food availability (Option C), Child's nutritional status (Option B) and Child mortality due to undernutrition It includes three equally weighted indicators: The proportion of people who

are food energy-deficient (FAO estimates) Prevalence of underweight children under 5 years (WHO data) Mortality rate of children under 5 years (UNICEF reports) (Option A)

Q. Iron absorption is decreased in which of the following?

- A. Amla
- B. Sprouting
- C. Tea
- D. Lemon

✅ *Correct Answer: 3*

🧠 Solution:
Correct Option: C) Tea Tannin in tea interferes with iron absorption. Sources rich in iron: Two types: haem-iron and non-haem iron. Haem iron Haem iron is better absorbed than non-haem iron. Found in liver, meat, poultry, and fish. Promotes absorption of non-haem iron in plant foods eaten concurrently. Non-Haem iron: It is found in plant-based foods such as cereals, green leafy vegetables, legumes, nuts, oilseeds, jaggery, and dried fruits. Additional Iron Sources: Cooking in iron vessels can significantly contribute to dietary iron in some areas. Iron Content in Milk: Low in all mammalian species. Breast milk contains less than 0.2 mg/dL but has good bioavailability. Bioavailability and Absorption Inhibitors: Non-haem iron absorption is hindered by phytates, oxalates, carbonates, phosphates, and dietary fibre. Foods like milk, eggs, and tea also inhibit iron absorption. Indian vegetarian diets often contain high levels of these inhibitors (e.g., phytates in bran, phosphates in egg yolk, tannin in tea, and oxalates in vegetables). Incorrect Options: Amla (Option A): Vitamin C in Amla is the promoter of iron absorption Sprouts (Option B): Sprouting promotes iron absorption. Lemon (Option D): Vitamin C in Lemon is the promoter of iron absorption

Subject: Pathology

Q. Which of the following is the investigation of choice for CML?

- A. LAP score
- B. FISH
- C. Karyotyping
- D. Reciprocal translocation

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) FISH Explanation: Fluorescence in situ hybridisation (FISH) is the choice of investigation for detecting the Philadelphia chromosome in CML. It makes a cytogenetic analysis of the Philadelphia chromosome. The presence of the Philadelphia chromosome, resulting from the reciprocal translocation between chromosomes 9 and 22 [t(9;22)(q34;q11)], or detection of the BCR-ABL1 fusion gene on mRNA, confirms the diagnosis of CML. Diagnosis of Chronic Myeloid Leukemia (CML) CBC Normal RBC +

Elevated TLC + Elevated platelets Peripheral smear Left shift with predominant segmented neutrophils, myelocytes, and metamyelocytes. College girl/garden party appearance: Due to non-uniform appearance (every cell appears different). {{caption_text}} Bone marrow aspirate Increased Myeloid: Erythroid ratio. Dwarf megakaryocytes. Sea blue histiocytes (blue-coloured cytoplasm) Pseudo Gaucher cells {{caption_text}} The image shows Pseudo-Gaucher cells NAP (Neutrophil Alkaline Phosphatase)/LAP score (Leukocyte Alkaline Phosphatase) (Option A ruled out) Decreased FISH (IOC) (Option B) Confirms t(9:22) translocation. Analysis to quantify Philadelphia chromosome-positive cells. Estimates the tumour load. {{caption_text}} The image shows BCR-ABL gene fusion (red + green) in fluorescence in-situ hybridisation (FISH; the ABL gene is red, and the BCR gene is green). PCR To quantify BCR-ABL-1 It can be a false negative or false positive False negative: Early part of the disease Karyotyping (Option C) examines chromosomes to detect abnormalities like Down syndrome or the Philadelphia chromosome in CML. While it can identify chromosomal abnormalities, it is less sensitive than FISH for detecting the Philadelphia chromosome. Reciprocal translocation (Option D) is a chromosomal abnormality where segments of two chromosomes are exchanged, such as the Philadelphia chromosome in CML. It results in the BCR-ABL fusion gene, detectable by FISH or karyotyping, but is not an independent diagnostic test.

Q. A 5-year-old child presents with a lesion in the right eye. Histopathology reveals the presence of Flexner-Wintersteiner rosettes. What is the likely diagnosis?

- A. Retinoblastoma
- B. Optic nerve glioma
- C. Rhabdomyosarcoma
- D. Ocular melanoma

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Retinoblastoma Explanation: The presence of a lesion in the right eye and histopathological findings of Flexner-Wintersteiner rosettes strongly suggest a diagnosis of Retinoblastoma. Retinoblastoma It is caused by the inactivation of both alleles of the RB1 tumour suppressor gene. Types Heritable (germline): It frequently leads to bilateral retinoblastoma and is caused by a germline mutation in the RB1 gene in all cells, followed by a somatic mutation in the retinal cells. Affected individuals are also at increased risk for developing non-ocular tumours, such as osteosarcoma. Non-heritable (sporadic): This form typically presents as a unilateral tumour and results from two somatic mutations in the retinal cells occurring after embryonic development, without a germline mutation. It is not inherited and does not carry an increased risk of developing non-ocular tumours. Clinical features Occurs in young children, usually before 5 years of age (most common ocular neoplasm in children). Leukocoria: White pupillary reflex (most common presenting sign of retinoblastoma). Strabismus Painful red eye Poor vision Asymptomatic Fundus

examination A white, elevated mass in the retina is characteristic of retinoblastoma Genetic testing RB1 gene mutation on chromosome 13q14 Histopathology Flexner-Wintersteiner rosettes (highly specific): These are composed of an ‘empty’ lumen surrounded by columnar cells. Homer-Wright rosettes: These are pseudo-rosettes and consist of cells surrounding a central lumen made up of their processes. Undifferentiated tumour cells. Areas of necrosis and calcification. {{caption_text}} Optic nerve glioma (Option B) is a benign tumour that arises from the glial cells of the optic nerve. It is most commonly seen in children and is often associated with neurofibromatosis type 1. Symptoms may include vision loss, proptosis, and visual field defects. It typically occurs along the optic nerve and does not exhibit Flexner-Wintersteiner rosettes. Rhabdomyosarcoma (Option C) is a malignant soft tissue sarcoma that originates from skeletal muscle cells or their precursors. It is most common in children and can occur in various locations, including the head and neck, genitourinary tract, and extremities. Symptoms depend on the tumour's location but often include a painless mass or swelling. It affects the eye but does not show these characteristic rosettes. Ocular melanoma (Option D) is a rare malignant tumour that develops in the pigment-producing cells (melanocytes) of the eye, most commonly in the choroid (part of the eye's vascular layer). It is more common in adults and can lead to symptoms like vision changes, dark spots in the field of vision, and proptosis.

Q. Which among the following is the least radiosensitive cell?

- A. Monocytes
- B. Platelets
- C. Lymphocytes
- D. Neutrophils

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Platelets Explanation: Among the given options, platelets are the least radiosensitive cells. Radiosensitivity refers to the susceptibility of cells or tissues to the effects of radiation. Cells with higher rates of proliferation and less differentiation tend to be more radiosensitive because they are actively dividing and thus more vulnerable to the damaging effects of radiation. Platelets are the least radiosensitive as they do not divide actively. Order of Radiosensitivity: Lymphocytes > neutrophils ~ monocytes > platelets

Q. Which HLA is associated with Reiter syndrome?

- A. HLA-DR3
- B. HLA-B27
- C. HLA-DQ8
- D. HLA- DR4

✅ *Correct Answer: 2*

PrepLadder

🧠 Solution:
Correct Answer: B) HLA-B27 Explanation: Reiter Syndrome (also known as Reactive Arthritis) is associated with HLA-B27. It is defined by the triad of: Arthritis Nongonococcal urethritis or cervicitis Conjunctivitis Etiology: It occurs days to weeks after genitourinary (Chlamydia) or gastrointestinal (Shigella, Salmonella, Yersinia, Campylobacter, and Clostrdioides difficile) infections. HIV-positive patients may also be affected. Clinical features: Onset: Acute Enthesitis, oligoarthritis and/or spinal inflammation. Lower limb joints and entheses are predominantly affected. Systemic disturbances like fever and weight loss. Achilles insertional enthesitis/tendonitis or plantar fasciitis may also be present. The first attack of arthritis is usually self-limiting, but recurrent or chronic arthritis can develop. Low back pain and stiffness (due to enthesitis and osteitis) Sacroiliitis Extra-articular features: Circinate balanitis: Starts as vesicles on the coronal margin of the prepuce and glans penis, later rupturing to form superficial erosions with minimal surrounding erythema, some coalescing to give a circular pattern. Keratoderma blennorrhagica: Begins as discrete waxy, yellow-brown vesico-papules with desquamating margins, occasionally coalescing to form large crusty plaques on the palms and soles of the feet. Pustular psoriasis Nail dystrophy with subungual hyperkeratosis Mouth ulcers Conjunctivitis Uveitis HLA-DR3 (Option A) is associated with autoimmune diseases such as Systemic Lupus Erythematosus (SLE), Type 1 diabetes, and Graves' disease, but it is not linked to Reiter's Syndrome (Reactive Arthritis), which is specifically associated with HLA-B27. HLA-DQ8 (Option C) is associated with Celiac disease and some autoimmune disorders, such as Type 1 diabetes, but it is not linked to Reiter's Syndrome. HLA-DR4 (Option D) is associated with autoimmune conditions such as Rheumatoid Arthritis (RA) and Type 1 diabetes.

Subject: Pediatrics

Q. A child with diarrhea was eager to drink, and the skin pinch went back slowly. Which of the following categories is the child classified into as per IMNCI?

- A. Pink
- B. Yellow
- C. Green
- D. None

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) Yellow Explanation: The clinical manifestations indicate some dehydration according to IMNCI (Integrated Management of Neonatal and Childhood Illness) classification. IMNCI uses a color-coded classification system where “eagerness to drink (indicating thirst)” and “slow skin pinch return” are characteristic findings in the "some dehydration" category. Assessment of Dehydration Parameters: Parameters No Dehydration (Green) (Option C)

Some Dehydration (Yellow) (Option B) Severe Dehydration (Pink) (Option A) Sensorium Well alert Restless, irritable Lethargic, floppy Eyes Normal Sunken Very sunken Tears Present Absent Absent Mucosa Moist Dry Very dry Thirst Drinks normally Thirsty, drinks eagerly Drinks poorly/unable Skin pinch Goes back quickly Goes back slowly (<2 sec) Goes back very slowly (>2 sec) Pink (Option A): This category indicates severe dehydration with features like lethargy, very sunken eyes, and very slow skin pinch return (>2 seconds), none of which are present in this case. Severe dehydration requires immediate IV fluid therapy. Green (Option C): This indicates no dehydration, where children drink normally and skin pinch returns immediately. The child's eagerness to drink and slow skin pinch return are inconsistent with this category. None (Option D): This is incorrect as the child's symptoms clearly fit into the established IMNCI classification system.

Q. Anencephaly occurs due to the inability of the neural tube to close at which week of intrauterine life?

- A. 3rd week
- B. 4th week
- C. 5th week
- D. 2nd week

✅ *Correct Answer: 2*

🧠 Solution:
Correct Answer: B) 4th week Explanation: Anencephaly is a severe neural tube defect that occurs at the 4th week of gestation due to failure of closure of the rostral neuropore Results in absence of: Scalp Cranial bones Meninges Rudimentary brain tissue is exposed to the external environment which is incompatible with life. Anencephaly is a severe neural tube defect characterized by the partial or complete absence of the brain and cranial vault, resulting from the failure of neural tube closure during early fetal development. During labor, it may present with face presentation or shoulder dystocia. Prenatal ultrasound shows the absence of the cranial vault, exposed brain tissue, and the "frog eye sign," characterised by a flattened head with prominent, bulging orbits. {{caption_text}} {{caption_text}} 3rd week (Option A): At this stage, neurulation has just begun, and the neural tube formation is still in its early phases. The critical closure of the rostral neuropore has not yet started at this point in development. 5th week (Option C): By this time, neural tube closure should have already been completed. 2nd week (Option D): This is too early in development as neurulation has not yet begun. The embryo is still in the process of gastrulation during this period.

Q. Conjunctival xerosis is caused by which vitamin deficiency?

- A. Vitamin A
- B. Vitamin K
- C. Vitamin C
- D. Vitamin D

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Vitamin A Explanation: Conjunctival xerosis (drying of conjunctiva) is the earliest sign of vitamin A deficiency. WHO Grading of eye signs of vitamin A deficiency (VAD) in children Grade Eye Sign XN Night blindness X1A Conjunctival xerosis X1B Bitot's spots X2 Corneal xerosis X3A Corneal ulcer covering less than 1/3 of the cornea X3B Corneal ulcer covering at least 1/3 of the cornea XS Corneal scarring Management of Vit A deficiency Standard Oral Treatment Children <6 months: 50,000 IU Children 6-12 months: 100,000 IU Children >1 year: 200,000 IU Administration Schedule Initial dose Repeat same dose next day Final dose 4 weeks later Parenteral Administration(For severe malabsorption or persistent vomiting) Children <6 months: 75% of oral dose Children ≥6 months: 50% of oral dose Ocular Emergencies Corneal clouding: Immediate parenteral administration of 50,000-100,000 IU (15-30 mg retinol) Keratomalacia: Antibiotic drops/ointment and eye padding Vitamin K (Option B): This vitamin is essential for blood clotting, and its deficiency results in bleeding manifestations such as easy bruising and mucocutaneous bleeding. It notably causes hemorrhagic disease in newborns, but it is not associated with ocular surface changes. Vitamin C (Option C): Deficiency leads to scurvy, characterized by gum bleeding, scorbutic rosary, and painful pseudo paralysis. Vitamin D (Option D): This vitamin primarily affects bone metabolism, and its deficiency leads to rickets in children. It does not have any direct effects on the conjunctiva or other ocular structures.

Subject: Pharmacology

Q. A patient was given an antipsychotic drug, haloperidol and the patient developed acute dystonia. Which is the next best step?

- A. Give Benztropine
- B. Change to clozapine
- C. Give Fluphenazine
- D. Increase dose of haloperidol

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Give Benztropine Explanation: Acute muscle dystonia is the first extrapyramidal symptom caused by antipsychotics. It is characterised by brief or prolonged muscle contractions causing abnormal movements or postures, such as oculogyric crises (upward eye rolling), tongue protrusion, trismus, torticollis (neck muscle twisting), laryngeal-pharyngeal dystonias, and dystonic postures of the limbs and trunk. Anticholinergic drugs like Benztropine, Diphenhydramine, Benzhexol and Promethazine can

be used for treatment. Extrapyramidal Symptoms Condition Onset Treatment Acute muscle Dystonia Within 1-5 days of starting antipsychotic Administering antiparkinsonian agents such as diphenhydramine or benztropine intramuscularly. Parkinsonism Within 1 month Benzhexol and benztropine (NOT Levodopa) Akathisia (Most common EPS) 5–60 days Anti-anxiety medications DOC: Propranolol (C/I: Asthma) Diazepam Rabbit Syndrome Months or years Antiparkinsonian agents. Amantadine is preferred due to less adverse cognitive effects. Tardive Dyskinesia Late-onset adverse effects (after months or years) Occurs due to D2 receptor supersensitivity and can be permanent, even after discontinuing antipsychotic medication. Stop AP drugs & start Clozapine. If symptoms persist, add Dopamine depleters (VMAT2 inhibitors) Valbenazine Tetrabenazine: DOC for Huntington's disease. Change to clozapine (Option B): Clozapine is an atypical antipsychotic with a lower risk of extrapyramidal side effects (EPS), but switching to clozapine would not be the immediate treatment for acute dystonia. It should be considered for long-term management in patients who experience severe side effects with other antipsychotics, but it is not an emergency treatment for acute dystonia. Give Fluphenazine (Option C): Fluphenazine is another first-generation antipsychotic (similar to haloperidol). It may worsen extrapyramidal side effects, including acute dystonia. Therefore, it should not be given to a patient experiencing dystonia. Increase dose of haloperidol (Option D): Increasing the dose of haloperidol would worsen the dystonic symptoms and is not appropriate in the setting of acute dystonia.

Q. A group of people are travelling to the mountains, and a girl starts complaining of mountain sickness. What is the drug of choice?

- A. Promethazine
- B. Acetazolamide
- C. Dimenhydrinate
- D. Thiazide

✅ ***Correct Answer: 2***

🧠 Solution:
Correct Answer: B) Acetazolamide Explanation: The drug of choice for preventing and treating acute mountain sickness is acetazolamide. It is a carbonic anhydrase inhibitor that acts on PCT and leads to Na+/HCO3- excretion in urine. In Mountain sickness (acute mountain sickness or AMS), at high altitudes, lower oxygen levels lead to hyperventilation, which causes CO2 washout and respiratory alkalosis (alkaline blood suppresses CNS). Symptoms include headache, nausea, dizziness, fatigue, and shortness of breath. When Acetazolamide is taken, it produces metabolic acidosis and reduces hyperventilation. Promethazine (Option A) is an antihistamine commonly used for motion sickness, nausea, and vertigo. While it can relieve nausea and dizziness associated with mountain sickness, it does not address the underlying acclimatisation issues that cause AMS. Dimenhydrinate (Option C) is another antihistamine used for motion sickness and nausea. Like promethazine, it helps with symptoms but does not prevent or treat the root cause of mountain sickness. Thiazide (Option D) diuretics are primarily used for managing

hypertension and edema. They are not used for mountain sickness and have no role in altitude adaptation.

Subject: Physiology

Q. Which of the following oxygen-sensitive channels is present in peripheral chemoreceptors?

- A. K+
- B. Na+
- C. Ca++
- D. Cl-

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Potassium (K+) Explanation: The ion primarily involved in the function of O_2-sensitive channels in peripheral chemoreceptors is Potassium (K^+). These channels play a crucial role in oxygen sensing within the carotid bodies, which are the main chemoreceptor sites for detecting changes in blood oxygen levels. When oxygen levels drop, the O_2-sensitive potassium channels close, leading to cell depolarization and the subsequent release of neurotransmitters that signal the brain to increase respiration and blood pressure to maintain oxygen homeostasis Sodium (Na^+) (Option B): is not directly involved in the O2-sensitive channels. They play a different role in other cellular processes but are not the key ions for oxygen sensitivity in peripheral chemoreceptors. Calcium (Ca++) (Option C): is not directly involved in the O2-sensitive channels. Chloride (Cl^-) (Option D): does not play a direct role in the functioning of O2-sensitive channels in peripheral chemoreceptors.

Q. Which type of ion channel is affected by mutations in the CFTR gene?

- A. Chloride
- B. Sodium
- C. Potassium
- D. Calcium

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Chloride Explanation: The CFTR (Cystic Fibrosis Transmembrane Conductance Regulator) gene codes for a chloride ion channel. Mutations in this gene lead to a defective CFTR protein, which disrupts chloride ion transport across cell membranes, contributing to the symptoms of cystic fibrosis. Pathophysiology: CFTR Function: Encodes an ATP-gated chloride (Cl−) channel Lungs and GI Tract: Secretes Cl− Sweat Glands: Reabsorbs Cl− Mutation Effects: ΔF508 Mutation: Leads to misfolding of the CFTR protein Protein Misfolding: Results in improper trafficking and retention of the protein in the rough endoplasmic reticulum (RER) Outcome: Protein is absent from the cell

membrane Consequences of CFTR Dysfunction: Decreased Cl− Secretion: Reduced Cl− and H2O secretion into the lumen Compensatory Mechanisms: Increased Na+ reabsorption via epithelial sodium channels (ENaC) Increased H2O reabsorption Result: Abnormally thick mucus secreted in the lungs and GI tract Sweat Glands: Defective Cl− reabsorption Increased Na+ reabsorption leads to a more negative transepithelial potential difference

Subject: Psychiatry

Q. Atypical antipsychotic with the least metabolic side effects?

- A. Haloperidol
- B. Risperidone
- C. Ziprasidone
- D. Quetiapine

✅ *Correct Answer: 3*

🧠 Solution:
Correct Answer: C) Ziprasidone Explanation: Among the given options, Ziprasidone has the least metabolic side effects, with minimal impact outside the CNS, no significant weight gain, and no sustained prolactin elevation. Ziprasidone Class Atypical antipsychotic / 2nd generation antipsychotics Mechanism of action D2 and 5HT2A receptor antagonists Uses Schizophrenia Bipolar I disorder Acute treatment: Monotherapy of manic or mixed episodes Maintenance treatment: Adjunct to lithium or valproate. Adverse effects Most common side effects are somnolence, headache, dizziness, nausea, and lightheadedness. Prolongation of the QTc complex Less extrapyramidal side effects, hyperprolactinemia and more metabolic side effects. Haloperidol (Option A) is a first-generation antipsychotic (typical antipsychotic) effective for managing psychosis but is known for a higher risk of extrapyramidal symptoms (EPS) such as dystonia, akathisia, and tardive dyskinesia. Risperidone (Option B) is an atypical antipsychotic known for causing more extrapyramidal symptoms and hyperprolactinemia, as well as an increased stroke risk. It is used to treat schizophrenia, autism, acute mania, and bipolar disorder. It has more metabolic side effects than ziprasidone. Quetiapine (Option D) is an atypical antipsychotic approved for schizophrenia, unipolar depression, acute mania, and bipolar disorder. Its adverse effects include somnolence, headache, dizziness, constipation, weight gain, and elevated plasma triglycerides and cholesterol.

Q. What is the diagnosis for a patient who believes their bodily sensations or movements are controlled or influenced by an external agency?

- A. Delusion of nihilism
- B. Delusion of reference
- C. Othello syndrome
- D. Somatic passivity

PrepLadder

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Somatic passivity Explanation: Somatic Passivity (also known as Thought Alienation or Passivity Phenomenon) is the diagnosis of a patient who believes their bodily sensations or movements are controlled or influenced by an external agency. It is one of the hallmark symptoms of Schizophrenia. Schizophrenia’s First Rank Symptoms: Category Symptom Description Thought Alienation Phenomenon Thought Insertion A belief that others are placing thoughts into the patient’s mind. Thought Withdrawal A belief that thoughts are being removed from the patient’s mind. Thought Broadcasting A belief that others can know or access the patient’s thoughts. Made Phenomenon Made Volition A belief that actions are controlled by an external force. Made Affect A belief that external forces are altering the patient's emotions. Made Impulses Sudden urges or impulses that are perceived as implanted by others. Auditory Hallucinations Voices Arguing/Discussing The patient hears voices discussing or arguing about them, often in the third person. Example: The patient hears two voices arguing, one saying, “He’s a failure,” and the other replying, “No, he’s not.” Voices Commenting The patient hears a voice providing commentary on their actions, usually in the third person. Example: While cooking, a patient hears a voice say, “She’s burning the food,” reflecting their actions. Audible Thoughts The patient hears their own thoughts spoken aloud by a voice. Example: A patient thinks, “I need to go to the store,” and immediately hears a voice say the same phrase. Somatic Passivity Physical sensations are perceived as imposed by external agents. Example: A patient feels a burning sensation in their arm and believes it is caused by invisible rays from a satellite. Delusional Perception A normal perception is interpreted with a delusional belief Example: A patient sees a red car parked outside and believes it indicates the police are monitoring them for criminal activity. Delusion of nihilism (Option A) refers to the delusion where an individual denies the existence of their body, mind, loved ones, or the world, claiming they have no intelligence, that parts of their body are absent, or even believing they are dead or that the world has ended. It is seen in disorders such as schizophrenia and depression. Delusion of reference (Option B) is a condition in which the patient believes that someone is talking about him or spying on him. Othello syndrome (Option C) or Delusion of infidelity/ jealousy refers to a condition in which the patient believes that the partner or spouse is having an affair even though that is not true. Prolonged alcohol use is linked to this condition.

Subject: Radiology

Q. Which among the following is most radiosensitive?

- A. Testis
- B. Bone

- C. Nerve
- D. Muscle

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Testis Explanation: Radiosensitivity refers to the susceptibility of tissues or cells to damage from ionizing radiation. It is influenced by the Law of Bergonié and Tribondeau, which states that rapidly dividing, undifferentiated cells are more sensitive to radiation. Testis: Highly radiosensitive due to the presence of rapidly dividing spermatogonia in the germinal epithelium. Even low doses of radiation can impair spermatogenesis, making it the most radiosensitive tissue among the options. According to the Law of Bergonie: The more the cells are rapidly dividing, the more they are sensitive to radiation. M-phase (dividing phase) is the most radiosensitive phase S-phase (Synthesizing phase) is the most radioresistant phase Most radiosensitive tissue in the body is Bone marrow (rapidly dividing). Most radioresistant tissue in the body is neurons (non-dividing). Most radiosensitive cells in the blood are lymphocytes. The most radioresistant cell in the blood is the platelet. The most radioresistant organ in the body is the vagina. Bone (Option B): Bones, especially mature ones, are relatively radioresistant due to low mitotic activity. Nerve (Option C): Nerve cells are highly differentiated and do not undergo cell division, making them radioresistant. Muscle (Option D): Muscle cells are also highly differentiated and have low mitotic activity, making them radioresistant like nerve tissue.

Q. Radioisotope used in PET-CT scan?

- A. 18F-FDG
- B. lodine
- C. Radium
- D. Cesium-131

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) 18F-FDG Explanation: 18F-FDG (Fluorodeoxyglucose) is the most commonly used radiotracer in PET-CT scans. It is a glucose analog labeled with the radioactive isotope Fluorine-18. It accumulates in tissues with high glucose metabolism, such as cancer cells, inflammation, or infection, making it highly useful for diagnosing and staging cancers, monitoring treatment response, and detecting recurrent disease. Fluorodeoxyglucose (FDG) positron-emission tomography (PET-FDG) Uptake of 18F-FDG (Analogue of endogenous glucose) in large quantities by cancer cells as compared to normal cells Application: Quantification of tumor metabolic activity Diagnosis (lung cancer) and Staging of cancer Assessing distant metastasis More sensitive in primary lung and oesophageal cancer metastatic disease Assessment of response to treatment A decrease in FDG uptake after chemotherapy indicates that the tumor is responding to treatment Routine

surveillance following treatment- not commonly preferred. {{caption_text}} Not useful in the following situations: High Glycolytic Metabolism tissues: Central nervous system tumors. Inflammation vs. Cancer: Both conditions exhibit increased glucose metabolism. Movement disorders Coronary blood flow Warburg Effect Cancer cells prefer glycolysis over oxidative phosphorylation, even in the presence of oxygen. This leads to increased glucose uptake and lactate production, common in many cancers. 18F-fluorodeoxyglucose (18F-FDG), a glucose analog used in PET imaging, helps study this effect. Mechanisms of 18F-FDG Accumulation Mechanism Description Aerobic Glycolysis Cancer cells rely heavily on glycolysis, increasing glucose and 18F-FDG uptake, even with oxygen. Transport & Trapping GLUT-1 transporters mediate glucose entry. 18F-FDG is phosphorylated and trapped inside cells. Tumor Heterogeneity Differences in tumor subtype, size, and microvasculature affect 18F-FDG uptake. Clinical Implications of 18F-FDG Implication Details Prognostic Indicator Higher 18F-FDG uptake correlates with worse prognosis (e.g., shorter DFS in invasive ductal carcinoma). Reverse Warburg Effect Cancer-associated fibroblasts (CAFs) increase glycolysis in tumor cells via metabolic coupling. Treatment Monitoring PET imaging tracks changes in 18F-FDG uptake, reflecting therapy responses targeting glycolysis or mitochondria. Iodine (Option B): Radioactive iodine (e.g., I-131 or I-123) is mainly used in thyroid imaging and treatment of thyroid disorders Radium (Option C): Radium-223 is used in the treatment of bone metastases (e.g., in prostate cancer) Cesium-131 (Option D): Cesium-131 is used in brachytherapy for localized radiation delivery (e.g., in prostate cancer)

Q. Ideal thickness of lead aprons to be worn by workers working in radiology department?

- A. 0.5mm
- B. 1mm
- C. 0.75mm
- D. 2mm

✅ ***Correct Answer: 1***

🧠 Solution:

Correct Answer: A) 0.5mm Explanation: Lead aprons are used to protect from the radiation received during an invetigation The lead apron protects us from the scattered radiation that comes from the patient The minimum thickness of the lead apron recommended is 0.25 mm according to the Indian guidelines. 0.5 mm according to international guidelines In India, most commonly 0.5 mm thickness is preferred. Key Points on Lead Aprons and Radiation Protection Purpose of Lead Aprons: Used to protect healthcare workers and others from scattered radiation during medical investigations. Scatter radiation primarily arises from the patient and is caused by the Compton effect. Materials Used: Traditional lead aprons are heavy. Lightweight, lead-free aprons are now made using antimony and bismuth. Material Properties: Radiation shielding materials must have a high atomic weight to block high-energy radiation effectively. Thickness Guidelines: Indian Guidelines: Minimum lead thickness is 0.25 mm, with 0.5 mm preferred for better protection. International Guidelines: Recommend 0.5 mm lead thickness. Additional Protective Equipment: Lead gloves: Protect

hands during procedures like fluoroscopy. Thyroid shields: Protect the thyroid gland, especially during radiation exposure. Radiation-Induced Thyroid Cancer: Papillary carcinoma is the most common thyroid cancer associated with radiation exposure.

Subject: Surgery

Q. A 40-year-old man presents with gynecomastia. Ultrasound reveals a 1 cm solid mass within the body of the testis. Serum testosterone is 600 ng/dL, and estradiol is 35 pg/mL. What is the most likely diagnosis?

- A. Spermatocytic tumor
- B. Sertoli cell tumor
- C. Granulosa cell tumor
- D. Leydig cell tumor

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Leydig cell tumor Explanation: Leydig cell tumors are the most likely diagnosis in this case. These tumors often present with gynecomastia due to the production of estrogens, as they secrete both testosterone and estrogen. The patient's elevated serum sex hormones suggests Leydig cell tumors. Sex cord-stromal tumours have two major subtypes: Leydig cell and Sertoli cell tumour. Leydig cell tumour Sertoli cell tumour Hormonal involvement It often involves androgens, oestrogens, and corticosteroids. Hormonally silent. Conditions associated with Klinefelter syndrome. Cryptorchidism. Renal cell carcinoma. Carney complex. Peutz-Jeghers syndrome. Familial adenomatous polyposis. Malignancy 10% (in adults) 10% Gross Circumscribed nodules, usually < 5 cm in diameter. They have a distinctive golden brown, homogeneous appearance on cut surfaces. Firm, small nodules with a homogeneous grey-white to yellow cut surface. Histology The tumour cells resemble their normal counterparts. They are large in size and have round or polygonal cell outlines, abundant granular eosinophilic cytoplasm, and a round central nucleus. The cytoplasm frequently contains lipid droplets, vacuoles, or lipofuscin pigment and, most characteristically, rod-shaped Reinke crystalloids (25% of the tumours). The tumour cells are arranged in distinctive trabeculae that tend to form cord-like structures and tubules. Image {{caption_text}} {{caption_text}} Incorrect Options: Spermatocytic tumors (Option A) are typically benign and present with a painless testicular mass. They are usually diagnosed in older men (over 50 years of age) and are characterised by a slow-growing mass & do not secrete any hormones. Sertoli cell tumours (Option B) mostly present as painless testicular masses. They are hormonally silent but sometimes produce estrogen & are less commonly associated with elevated estradiol levels compared to Leydig cell tumors. The presence of gynaecomastia along with increased testosterone makes Leydig cell tumour more likely. Granulosa cell tumours (Option C) are more commonly seen in females and are extremely rare in males. They usually present as slow-growing and non-functioning testicular mass.

PrepLadder

Q. Which of the following is not an indication for splenectomy?

- A. Iatrogenic splenic trauma
- B. Thrombocytopenia
- C. Hairy cell leukemia
- D. Bone marrow failure

✅ *Correct Answer: 4*

🧠 Solution:
Correct Answer: D) Bone marrow failure Explanation: Bone marrow failure (Option D) is not typically an indication for splenectomy. Bone marrow failure syndromes like aplastic anemia, myelodysplastic syndromes, or other causes of bone marrow suppression usually require treatment to support bone marrow function (e.g., transfusions, medications, or stem cell transplantation), rather than removal of the spleen Indications for Splenecomy: Hodgkin Lymphoma & Non-Hodgkin Lymphoma Hairy Cell Leukemia (Option C) CLL & CML Splenic Marginal Zone Lymphoma Metastatic Splenic Tumors Splenic Cysts (True and Pseudocysts) Splenic Abscess Angiosarcoma (Hemangiosarcoma) Lymphangioma and Lymphangiosarcoma Traumatic Splenic Rupture (Option A) Hypersplenism (due to various hematologic conditions) Non-Hematologic Primary Tumors (e.g., splenic hemangiomas) Immune Thrombocytopenia (ITP) (Option B) Hereditary Spherocytosis & Elliptocytosis Pyruvate Kinase Deficiency (PKD) Glucose-6-phosphate dehydrogenase Deficiency (G6PD) Sickle Cell Disease Thalassemia Acute Splenic Sequestration Crisis (in sickle cell disease or sickle-beta thalassemia)

Q. A patient underwent surgery for pilonidal sinus, which type of flap is used in this surgery?

- A. Rhomboid flap
- B. Advanced flap
- C. Rotational flap
- D. Free flap

✅ *Correct Answer: 1*

🧠 Solution:
Correct Answer: A) Rhomboid flap Explanation: The Rhomboid flap is often used in pilonidal sinus surgery, especially when excision of the sinus results in a defect that requires tissue advancement to close. This flap allows for tension-free closure and ensures the area is adequately covered, helping to prevent recurrence of the sinus. Pilonidal sinuses are found in the natal cleft (the groove at the top of the buttocks), consisting of one or more skin openings connected to a subcutaneous track lined with granulation tissue, often containing hair. Acquired Condition: Pilonidal sinuses are now considered acquired rather than congenital. Causes: Friction and shearing forces between the skin folds can cause loose hairs to penetrate the skin. Movement of the skin folds may create suction, pulling hair into the skin and forming a chronically infected track, which can develop secondary tracks with

discharging openings. Clinical Presentation: Demographics: More common in men, typically presenting after puberty and before age 40, prevalent in individuals with dark, coarse hair. Symptoms: Intermittent pain, swelling, and discharge at the base of the spine. History of recurring abscesses, which may burst spontaneously or require incision. Treatment Options: Treatment Type Description Conservative Treatment For mild cases: cleaning, hair removal, and hygiene maintenance. Cauterization with silver nitrate or laser in less complex cases. Acute Abscess Treatment Drainage through a small longitudinal incision over the abscess. Thorough cleaning of the abscess cavity to remove granulation tissue and hair. Surgical Treatment Procedures include: Laying open sinus tracks (with/without marsupialisation) Complete excision (with/without primary closure) Off-midline closure techniques (Limberg, Z-plasty, Karydakis procedures). Bascom Procedure: Lateral incision to clean the sinus cavity, excise midline pits, and leave lateral wounds open to heal secondarily. Flap Procedures: Used if initial treatments fail or if the sinus recurs. Pilonidal sinus excision and repair by rhomboid flap: {{caption_text}} Off-midline closures are associated with lower recurrence rates and faster healing than midline closures.

Q. Which of the following structures does not form the boundary of Hesselbac's triangle?

- A. Inferior epigastric artery
- B. Vas deferens
- C. Rectus abdominis
- D. Inguinal ligament

✅ ***Correct Answer: 2***

🧠 Solution:
Correct Answer: B) Vas deferens Explanation: The vas deferens do not form a boundary of Hesselbach's triangle. It passes through the inguinal canal and is located posterior to the inguinal ligament, but it is not part of the triangle's boundaries. Hesselbach’s Triangle: A weak spot in the abdominal wall, where direct inguinal hernias occur. Covered only by the transversalis fascia and external oblique aponeurosis. Susceptible to herniation, especially in elderly patients or those with increased abdominal pressure. Boundaries: Lateral border: Inferior epigastric vessels (Option A) Medial border: Rectus abdominis muscle (Option C) Inferior border: Inguinal ligament (Poupart’s ligament) (Option D)

Q. Which nerve is most commonly injured during indirect inguinal hernia surgery?

- A. Femoral nerve
- B. Genitofemoral nerve
- C. Obturator nerve
- D. Ilioinguinal nerve

✅ ***Correct Answer: 4***

PrepLadder

🧠 Solution:
Correct Answer: D) Ilioinguinal nerve Explanation: The most commonly injured nerve during open inguinal hernia surgery is the ilioinguinal nerve, often leading to chronic pain as a complication. The most common nerve injured in: Open repair: Ilio-inguinal > Iliohypogastric > Genital branch of Genitofemoral nerve. Laparoscopy: Lateral Cutaneous nerve of thigh > Genito-femoral nerve. Landmarks in Laparoscopic Surgery: Triangle of Doom: Injury to Iliac vessels Triangle of Pain: Injury to Nerves causing postoperative pain Complications of Surgery: Immediate Complications: Bleeding/Hematoma: From subcutaneous or inferior epigastric vessels. Urinary Retention: May require catheterization. Femoral Nerve Blockade Early Postoperative Issues (within the first week): Pain, Bruising, Swelling: Common. Seroma Formation: Often resolves spontaneously; may need aspiration. Wound Infection: Less frequent; routine antibiotics not recommended. Testicular Infarction: Damage to the testicular artery during dissection or repair. Long-term Concerns: Chronic Pain: Nerve Injury: Damage to nerves such as the ilioinguinal or iliohypogastric nerves during surgery. Nerve Irritation: Chronic irritation by suture material or mesh. Psychological Factors Hernia Recurrence: Inadequate repair or weakness in the abdominal wall; mesh-related issues may also contribute.