FMGE December 2020 Question Paper

216 recall questions with answers and explanations.

Recall honesty note: NBEMS does not release official papers, so these are memory-based recall questions, not official papers. Image-based questions are excluded for now because the bank's images are currently unavailable.

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Question 1. 147. (C) Elephantiasis.

The image depicts elephantiasis, which is the chronic, disfiguring manifestation of lymphatic filariasis caused by parasitic worms like Wuchereria bancrofti. It is characterized by severe lymphedema and enormous thickening of the skin and underlying tissues, typically in the lower limbs or genitals. This occurs due to the long-term blockage of the lymphatic vessels by the adult worms. Syphilis (Option A) presents with ulcers or rashes. Leprosy (Option B) causes skin patches and nerve thickening. Leishmaniasis (Option D) primarily causes skin ulcers or systemic organ enlargement. Elephantiasis represents the end-stage of the disease where the skin becomes hard and verrucous (like an elephant's hide). Public health management focuses on mass drug administration (e.g., diethylcarbamazine and albendazole) and morbidity management through local hygiene. Therefore, the visual of the massively swollen, thickened leg is diagnostic of elephantiasis.

Identify the tachycardia depicted in the given ECG.

A. Atrial fibrillation

B. Atrial flutter

C. Ventricular tachycardia

D. Ventricular fibrillation

Correct answer: B

The ECG shows classic features of Atrial Flutter — characteristic sawtooth/flutter waves (F waves) visible at a rate of approximately 300 bpm with regular ventricular response, most prominent in the inferior leads (II, III, aVF).

Key ECG Features visible:

1. Classic sawtooth pattern of flutter waves
2. Regular atrial activity at ~300 bpm
3. Consistent 2:1 or 4:1 AV conduction ratio
4. Narrow QRS complexes
5. No isoelectric baseline between atrial deflections

Why other options are wrong:

(A) Atrial fibrillation is incorrect because AF shows irregularly irregular rhythm with chaotic, disorganized fibrillatory waves and no identifiable P waves — completely unlike the regular sawtooth pattern seen here.

(C) Ventricular tachycardia is incorrect because VT shows wide, bizarre QRS complexes at 100–250 bpm with no discernible P waves. The QRS complexes here are narrow, ruling out ventricular origin.

(D) Ventricular fibrillation is incorrect because VF shows completely chaotic, irregular, disorganized electrical activity with no identifiable waveforms — incompatible with the organized regular pattern visible in this ECG.

Identify the ECG for the diagnosis:

(A)

Normal ECG

(B)

Ventricular fibrillation

(C)

Ventricular tachycardia

(D)

Misplaced leads

Question 2. Which of the following features is most helpful in identifying a nasal discharge as cerebrospinal fluid (CSF) rhinorrhea?

A. Halo sign

B. Handkerchief sign

C. Schwartz sign

D. Phelps sign

Correct answer: A

The "Halo sign" (or double-ring sign) is a classic bedside test used to identify CSF rhinorrhea. When blood-stained nasal discharge is dropped onto a piece of filter paper or a handkerchief, the blood remains in the center while the clear CSF migrates further to the periphery, forming a clear ring or "halo" around the central blood spot. The Handkerchief sign (Option B) refers to the fact that CSF does not stiffen a handkerchief upon drying, unlike nasal mucus. Schwartz sign (Option C) is a reddish hue on the tympanic membrane seen in otosclerosis. Phelps sign (Option D) is a radiological sign associated with glomus tumors. For a 23-year-old male with potential head trauma and nasal discharge, the presence of the halo sign on a handkerchief provides immediate clinical evidence of a dural tear. Definitive diagnosis usually requires testing for beta-2 transferrin.

Question 3. 9.

A. Broca's area

B. Wernicke's area

C. Primary motor cortex

D. Brainstem

Correct answer: A

The patient demonstrates symptoms of Broca’s aphasia, also known as expressive or non-fluent aphasia. Key features include the inability to produce speech despite knowing what to say and having intact comprehension. The preservation of handwriting abilities and

the ability to follow spoken commands rule out more global cognitive deficits or sensory aphasias. Broca's area is located in the posterior part of the inferior frontal gyrus (Brodmann areas 44 and 45) of the dominant hemisphere. Wernicke's area (Option B) involvement would cause fluent but meaningless speech with poor comprehension. Lesions in the primary motor cortex (Option C) would typically cause physical

Question 4. Which anatomical structure is most likely affected in a man with a history of prolonged crutch use who now experiences tingling and paraesthesia along the medial aspect of the arm, forearm, and hand?

A. A

B. B

C. C

D. D

Correct answer: A

Prolonged reliance on crutches can lead to compression of neurovascular structures within the axilla, a condition commonly referred to as crutch palsy. When a person bears body weight through the axilla instead of the hands, the intercostobrachial nerve is particularly vulnerable. This nerve arises from the second intercostal nerve (T2) and supplies sensory innervation to the inner (medial) side of the upper arm, with sensations often perceived as tingling or paraesthesia. Because of its superficial course across the axilla, it is easily compressed between the crutch pad and the humerus or chest wall. Compression of this nerve produces sensory symptoms without motor weakness, which matches the clinical presentation described. In the given diagram, structure A corresponds to the intercostobrachial nerve. Other structures shown are deeper components of the brachial plexus or surrounding muscles, which would typically cause motor deficits if significantly compressed. Therefore, based on the mechanism of injury, anatomical location, and pattern of sensory disturbance, structure A is most likely to be impacted.

Question 5. In the structure given below, what is the joint observed?

A. Syndesmosis

B. Primary cartilaginous joints

C. Fibrous joint

D. Secondary cartilaginous joint

Correct answer: D

The image points specifically to the pubic symphysis, which is the classic example of a secondary cartilaginous joint, also known as a symphysis. These joints are characterized by a fibrocartilaginous disc connecting the bony surfaces, which are themselves covered by a thin layer of hyaline cartilage. Unlike primary cartilaginous joints (Option B), which involve hyaline cartilage alone and usually ossify with age (like epiphyseal plates), secondary cartilaginous joints are permanent and typically located in the midline of the body. Syndesmosis (Option A) and fibrous joints (Option C) involve ligamentous or fibrous tissue connections, such as the sutures of the skull or the distal tibiofibular joint, but lack the fibrocartilage disc. The pubic symphysis allows for limited movement, which is particularly vital during childbirth to facilitate the passage of the fetus through the pelvic canal.

Question 6. Which nerve damage would most likely cause sensory loss over the dorsum of the foot and the medial four toes, along with impaired eversion of the foot?

A. Deep peroneal nerve

B. Superficial peroneal nerve

C. Common peroneal nerve

D. Posterior tibial nerve

Correct answer: B

The symptoms described pinpoint a lesion of the superficial peroneal nerve. This nerve provides motor innervation to the peroneus longus and peroneus brevis muscles, which are the primary evertors of the foot; hence, injury causes eversion difficulty. Sensorial, it supplies the majority of the dorsum of the foot and the dorsal aspects of the medial four toes, excluding the first web space. The deep peroneal nerve (Option A) supplies the first web space and the extensors responsible for dorsiflexion; its injury results in foot drop. The common peroneal nerve (Option C) is the parent trunk; a lesion here would cause both foot drop and eversion loss. The posterior tibial nerve (Option D) supplies the calf muscles and the sole of the foot, which are unrelated to these specific dorsal symptoms. Therefore, the isolated loss of eversion and specific dorsal sensation confirms superficial peroneal nerve damage.

Question 7. The image shows a femur bone. Which muscles are attached at point “A”?

A. Gluteus maximus

B. Iliopsoas

C. Quadriceps femoris

D. Adductor magnus

Correct answer: B

The anatomical landmark labeled "A" on the proximal femur is the lesser trochanter. This bony prominence serves as the primary insertion site for the iliopsoas muscle. The iliopsoas is the strongest flexor of the hip and is formed by the fusion of the psoas major and iliacus muscles. The gluteus maximus (Option A) inserts into the gluteal tuberosity and the iliotibial tract. The quadriceps femoris (Option C) consists of four muscles that primarily insert into the patella and tibial tuberosity. The adductor magnus (Option D) inserts along the linea aspera and the adductor tubercle. Clinically, avulsion fractures of the lesser trochanter are rare and often seen in adolescent athletes or as a sign of metastatic disease in older adults. Understanding these specific insertion points is fundamental for diagnosing musculoskeletal injuries and planning surgical interventions involving the hip and thigh.

Question 8. A severely fatigued patient with markedly reduced responsiveness is brought to the emergency department. He has had a progressive loss of muscle strength over the past two days. A CT scan is performed, and the image is shown below. Which blood vessel is most likely occluded by a thrombus?

A. Posterior cerebral artery

B. Anterior cerebral artery

C. Middle cerebral artery

D. Posterior inferior cerebellar artery

Correct answer: C

The CT scan reveals a large area of hypodensity (darkness) involving the cortical and subcortical regions of the right cerebral hemisphere. This distribution is characteristic of an ischemic stroke in the territory of the middle cerebral artery (MCA). The MCA is the largest branch of the internal carotid artery and supplies the majority of the lateral surface of the brain, including the motor and sensory areas for the face and upper limbs. A blood clot (thrombus or embolus) in the MCA results in dense contralateral hemiplegia and sensory loss. The anterior cerebral artery (Option B) supplies the medial surface (lower limbs), and the posterior cerebral artery (Option A) supplies the occipital lobe (vision). The posterior inferior cerebellar artery (Option D) supplies the cerebellum and lateral medulla. Given the widespread hemispheric involvement, the middle cerebral artery is the vessel occluded.

10. A patient presents to the emergency department after a road traffic accident. Although his vital signs are stable, he is unable to speak. He has no

other neurological deficits, can write normally,

Identify the heart chamber marked as shown in the CT image below?
(A)
Right atrium
(B)
Right ventricle
(C)
Left ventricle
(D)
Left atrium
287. (D) Left atrium
On an axial CT scan of the heart, the four chambers are organized in a predictable anatomical relationship. The chamber marked in the image is the most posterior chamber, which is situated directly anterior to the esophagus and the descending aorta. This is definitively the Left Atrium (Option D) .
The Right Ventricle (Option B) is the most anterior chamber, located just behind the sternum. The Right Atrium (Option A) forms the right border of the heart. The Left Ventricle (Option C) forms the apex and the left lateral border. Because the arrow points to the base of the heart posteriorly, where the pulmonary veins enter, the left atrium is the only correct anatomical identification.
This structural knowledge is essential for interpreting CT and MRI scans in patients with suspected valvular disease or atrial enlargement.
A patient presents to the emergency department with severe headache and neck stiffness but no other neurological deficits. An urgent CT scan is performed, showing the findings below. What is the most likely diagnosis?
(A)

Subdural hemorrhage
(B)
Pituitary apoplexy
(C)
Subarachnoid hemorrhage
(D)
Pituitary carcinoma
288. (C) Subarachnoid hemorrhage
The most likely diagnosis is subarachnoid hemorrhage (SAH). The patient presents with a sudden severe headache (thunderclap headache) and neck stiffness, which are classic clinical features of SAH caused by irritation of the meninges. On the non-contrast CT scan, the arrow indicates a hyperdense area in the basal cisterns, representing acute blood in the subarachnoid space. This appearance is characteristic and often described as a “star-shaped” pattern around the circle of Willis.
Option
(A)
subdural
hemorrhage
is
incorrect because it appears as a crescent-shaped collection along the cerebral convexity, not within the basal cisterns. Option (B) pituitary apoplexy typically presents with hemorrhage in the sellar/suprasellar region and may show visual disturbances rather than diffuse basal cistern hyperdensity. Option (D) pituitary carcinoma is extremely rare and presents as a mass lesion, not an acute hemorrhagic pattern on CT.
Thus, the clinical presentation combined with CT findings confirms subarachnoid hemorrhage.
In the case presented, can you identify the imaging technique employed and the specific diagnosis related to the kidneys?

(A)
MRI of polycystic kidney disease
(B)
CT of polycystic kidney disease
(C)
MRI of Horseshoe kidney
(D)
CT of Horseshoe Kidney
289. (A) MRI of polycystic kidney disease
The image displays characteristic MRI features — notably the bright white (hyperintense) rounded structures on this T2-weighted sequence. MRI uses magnetic fields, and fluid-filled cysts appear brilliantly white on T2 imaging. CT scans appear in Hounsfield grayscale with different tissue contrast, lacking this distinctive fluid brightness pattern.
Diagnosis — Polycystic Kidney Disease (PKD) : Both kidneys are massively enlarged, completely replaced by innumerable cysts of varying sizes, with virtually no normal renal parenchyma visible. This is the classic appearance of Autosomal Dominant PKD (ADPKD), the most common inherited kidney disorder. The bilateral symmetrical involvement with hundreds of cysts is pathognomonic.
Why Other Options are Wrong:
(B) CT of Polycystic Kidney Disease : The imaging modality is MRI not CT; the bright white fluid signal on T2 confirms MRI technique.
(C) MRI of Horseshoe Kidney : Horseshoe kidney shows fusion of lower poles across the midline with normal parenchyma : no

multiple cysts present.
(D) CT of Horseshoe Kidney : Wrong both in
modality (CT) and diagnosis (horseshoe);
neither
matches
the
bilateral
cystic
enlargement seen here.
A 72-year-old man presents with unexplained weight loss, decreased appetite, and iron-deficiency anemia. Chest X-ray shows multiple nodular opacities throughout the lungs. What is the most likely diagnosis?
(A)
Lung metastasis
(B)
Bronchogenic carcinoma
(C)
Miliary tuberculosis
(D)
Mesothelioma

Question 9. paralysis (hemiplegia) rather than an isolated
speech deficit. Brainstem lesions (Option
D) usually result in multiple cranial nerve
palsies or altered consciousness. Therefore, the
clinical focus on motor speech production with
preserved comprehension identifies Broca's area
as the lesion site.
A 34-year-old man presents with chronic pain along the medial side of the elbow that is aggravated by weightlifting. On examination, there is tenderness over the medial epicondyle and a positive reverse Cozen’s test. Which nerve is most likely involved in this condition?
A. Median nerve
B. Ulnar nerve
C. Radial nerve
D. Axillary nerve
Correct answer: B
The patient presents with symptoms of medial

epicondylitis, commonly known as "golfer's elbow," which involves inflammation of the common flexor origin. The "reverse Cozen's test" is a diagnostic maneuver used to confirm this condition by having the patient resist wrist flexion, which elicits pain at the medial epicondyle. The ulnar nerve is anatomically the most vulnerable nerve in this region, as it passes immediately posterior to the medial epicondyle within the cubital tunnel. Chronic inflammation or repetitive stress at the medial elbow can lead to ulnar nerve irritation or entrapment (cubital tunnel syndrome). The median nerve (Option A) passes anteriorly and is less likely to be directly involved at this bony prominence. The radial and axillary nerves (Options C and D) are located in the lateral and superior aspects of the limb, respectively. Thus, ulnar neuropathy is the most logical complication.

When cellular components are separated by centrifugation, in which cellular fraction is lactate dehydrogenase (LDH) most likely to be found?

(A)
Mitochondria

(B)
Lysosome

(C)
Cytoplasm

(D)
Golgi complex

Question 10. 11. (B) Ulnar nerve

The patient presents with symptoms of medial epicondylitis, commonly known as "golfer's elbow," which involves inflammation of the common flexor origin. The "reverse Cozen's test" is a diagnostic maneuver used to confirm this condition by having the patient resist wrist flexion, which elicits pain at the medial

epicondyle. The ulnar nerve is anatomically the most vulnerable nerve in this region, as it passes immediately posterior to the medial epicondyle within the cubital tunnel. Chronic inflammation or repetitive stress at the medial elbow can lead to ulnar nerve irritation or entrapment (cubital tunnel syndrome). The median nerve (Option A) passes anteriorly and is less likely to be directly involved at this bony prominence. The radial and axillary nerves (Options C and D) are located in the lateral and superior aspects of the limb, respectively. Thus, ulnar neuropathy is the most logical complication.

When cellular components are separated by centrifugation, in which cellular fraction is lactate dehydrogenase (LDH) most likely to be found?

A. Mitochondria

B. Lysosome

C. Cytoplasm

D. Golgi complex

Correct answer: C

Lactate dehydrogenase (LDH) is a vital metabolic enzyme that catalyzes the reversible conversion of pyruvate to lactate. This reaction is a final step in anaerobic glycolysis, a process that occurs entirely within the cytosol. Therefore, when cell components are separated via differential centrifugation, LDH is found in the supernatant representing the soluble cytoplasm or cytosol fraction. Mitochondria (Option A) contain enzymes for the Krebs cycle and oxidative phosphorylation, such as succinate dehydrogenase. Lysosomes (Option B) are characterized by acid hydrolases. The Golgi complex (Option D) contains enzymes for protein modification and sorting, such as glycosyltransferases. LDH is often used in laboratory research as a marker enzyme for the cytoplasmic fraction to verify the purity of

cell sub-fractions. Clinically, its release into the

Question 11. What is the most likely diagnosis?

C. CVD, Cancer, Diabetes, Stroke

D. Bronchial asthma, Hypertension, CVD

Correct answer: C

The logo displayed belongs to the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS). This program was launched by the Indian government to address the rising burden of non-communicable diseases (NCDs). The scheme specifically focuses on four major diseases: Cancer, Diabetes, Cardiovascular Diseases (CVD), and Stroke. Options A, B, and D are incorrect because they include Bronchial Asthma or Hypertension as primary acronym components, although those conditions may be managed under related health initiatives. The NPCDCS aims to provide health promotion, early diagnosis, and management of these four major NCDs through infrastructure development and manpower training at various levels of the healthcare system. The slogan "Health In Your Hands" emphasizes personal and community-level prevention efforts. This program is a critical component of India’s public health strategy to reduce premature mortality from chronic, lifestyle-related conditions through structured population-based screening and care.

Question 12. What effect does inhibition of the Na^+/K^+ -ATPase have on cardiac muscle function?

A. Hyperpolarization and then depolarization

B. Depolarization

C. Hyperpolarization

D. Repolarization

Correct answer: B

Inhibition of the Na^+/K^+-ATPase pump directly causes depolarization of cardiac muscle cells. This pump normally transports 3 Na^+ out and 2 K^+ into the cell per cycle, maintaining the resting membrane potential by keeping the intracellular environment relatively negative. When this pump is inhibited (as by cardiac glycosides like digoxin), Na^+ accumulates inside the cell because it can no longer be actively expelled. This rise in intracellular Na^+ reduces the concentration gradient that drives the Na^+/Ca^{2+} exchanger (NCX), which normally expels Ca^{2+} using the Na^+ gradient. As a result, intracellular Ca^{2+} also rises, and the membrane becomes less negative — i.e., depolarized — due to Na^+ accumulation and altered ionic balance.

Why other options are wrong:

(A)

Hyperpolarization and then depolarization is incorrect because Na^+/K^+-ATPase inhibition never causes an initial hyperpolarization phase. The immediate consequence is always Na^+ accumulation leading directly to depolarization, with no preceding hyperpolarization stage

involved.

(C)

Hyperpolarization is incorrect because hyperpolarization would require increased K^+ efflux or Cl^- influx making the cell more negative. Na^+/K^+-ATPase inhibition does the opposite — it accumulates positive Na^+ ions intracellularly, making the membrane potential less negative, not more.

(D)

Repolarization is incorrect because repolarization refers to the restoration of resting membrane potential after an action potential, driven by K^+ efflux. Pump inhibition does not selectively activate repolarization channels; instead it disrupts the baseline ionic gradient causing sustained depolarization.

Question 13. In which intracellular structures are lysosomal enzymes normally found?

A. Cytosol

B. Mitochondria

C. Endoplasmic reticulum

D. Nucleus

Correct answer: C

Lysosomal enzymes (hydrolases) are synthesized by ribosomes on the rough endoplasmic reticulum (RER) and undergo initial glycosylation within the ER lumen. They are then transported to the Golgi apparatus, where they receive the mannose-6-phosphate (M6P) tag — the critical signal that directs them to lysosomes rather than being secreted extracellularly. This entire process follows the classical secretory pathway, meaning these enzymes are always kept within membrane-bound compartments from the moment of synthesis.

Why other options are wrong:

(A)

Cytosol is incorrect because the cytosol lacks a membrane boundary. If lysosomal enzymes were released freely into the cytosol, they would cause catastrophic self-digestion of cellular proteins. They must always remain membrane-enclosed to protect the cell.

(B)

Mitochondria is incorrect because mitochondria have their own distinct enzyme sets dedicated to oxidative phosphorylation and the TCA cycle. They play absolutely no role in lysosomal enzyme synthesis or storage.

(D)

Nucleus is incorrect because the nucleus houses genetic material and transcription machinery. Lysosomal enzymes are never trafficked there, as they exclusively follow the ER → Golgi → Lysosome secretory pathway from the point of synthesis onward.

Question 14. Which cell type is responsible for the production and secretion of surfactant?

A. Type I pneumocyte

B. Type II pneumocyte

C. Sertoli cell

D. Leydig cell

Correct answer: B

The alveoli of the lungs are lined by two main types of epithelial cells. Type II pneumocytes (Option B) are cuboidal cells that act as the "caretakers" of the alveolus. Their primary function is the synthesis and secretion of pulmonary surfactant, a phospholipid-protein complex stored in lamellar bodies. Surfactant is essential because it reduces surface tension at the air-water interface, preventing alveolar collapse (atelectasis) during expiration. Type I pneumocytes (Option A) are thin, flat cells that cover 95% of the alveolar surface and are optimized for gas exchange, but they do not produce surfactant. Sertoli cells (Option C) and Leydig cells (Option D) are located in the testes and are involved in spermatogenesis and testosterone production, respectively. A deficiency in surfactant, often seen in premature infants, leads to Neonatal Respiratory Distress Syndrome. Therefore, Type II pneumocytes are the specific source of this life-saving substance.

Question 15. Which region of the digestive tract produces and secretes the enzyme enteropeptidase?

A. Stomach

B. Duodenum

C. Jejunum

D. Ileum

Correct answer: B

Enteropeptidase, also known as enterokinase, is a crucial enzyme for protein digestion. It is secreted by the brush border cells (enterocytes) of the duodenum. The primary role of enteropeptidase is to catalyze the conversion of the inactive pancreatic proenzyme trypsinogen into its active form, trypsin. Once trypsin is formed, it triggers a cascade of activation for other pancreatic proteases like chymotrypsin and carboxypeptidase. The stomach (Option A) secretes pepsinogen, which is activated by hydrochloric acid. The jejunum (Option C) and ileum (Option D) are primarily involved in the absorption of nutrients rather than the initiation of this specific proteolytic cascade. A deficiency in enteropeptidase can lead to severe protein malabsorption and failure to thrive. Thus, the duodenum is the critical anatomical site for the secretion of this "master switch" enzyme of protein digestion.

Question 16. Which physiological condition most strongly stimulates

the
release
of
vasopressin
(antidiuretic hormone)?

A. Hypotonicity of extracellular fluid

B. Hypertension

C. Hypotension

D. Hypo-osmolality of extracellular fluid

Correct answer: C

Vasopressin, also known as antidiuretic hormone (ADH), is secreted by the posterior pituitary in response to two main physiological stimuli: osmotic and hemodynamic. The most sensitive trigger is a rise in plasma osmolality (not hypotonicity or hypo-osmolality as in Options A and D). However, hypotension (Option C) or a decrease in effective circulating blood volume (hypovolemia) serves as a very potent trigger for its release. When blood pressure drops significantly, baroreceptors in the heart and large arteries signal the hypothalamus to release large amounts of vasopressin. Vasopressin then acts on the V1 receptors of vascular smooth muscle to cause vasoconstriction (increasing blood pressure) and on V2 receptors in the kidneys to increase water reabsorption. Hypertension (Option B) actually inhibits vasopressin secretion to help lower blood volume. Among the choices, hypotension is the only correct hemodynamic condition that stimulates secretion.

Question 17. Which region of the brain regulates and
coordinates the vomiting reflex?

A. Apneustic center

B. Pneumotaxic centre

C. Area Postrema

D. Hypothalamus

Correct answer: C

The vomiting reflex is a complex process coordinated by the vomiting center located in the medulla oblongata. A critical component of this system is the Area Postrema (Option C), situated on the floor of the fourth ventricle. The Area Postrema functions as the Chemoreceptor Trigger Zone (CTZ); it lacks a functional blood-brain barrier, allowing it to detect circulating toxins, drugs, or metabolic waste products in the blood and cerebrospinal fluid. Once triggered, it sends signals to the vomiting center to initiate the emetic response. The apneustic and pneumotaxic centers (Options A and B) are located in the pons and regulate the rhythm of breathing. The hypothalamus (Option D) regulates temperature, hunger, and thirst but does not directly control the vomiting reflex. The Area Postrema is a primary target for antiemetic

medications, making it a vital structure in clinical pharmacology and neurology.

Question 18. Which specific cells are responsible for producing and secreting renin?

A. Tubular cells

B. Macula densa

C. JG cells

D. All of the above

Correct answer: C

Renin is a proteolytic enzyme that plays a fundamental role in the Renin-Angiotensin-Aldosterone System (RAAS), which regulates blood pressure and fluid balance. It is synthesized and secreted by the juxtaglomerular (JG) cells (Option C). These specialized smooth muscle cells are located primarily in the walls of the afferent arterioles as they enter the glomerulus. JG cells function as baroreceptors that release renin in response to decreased blood pressure or sympathetic stimulation. The macula densa (Option B) consists of specialized tubular cells that sense sodium chloride levels in the distal tubule and signal the JG cells to release renin, but they do not secrete it themselves. Standard tubular cells (Option A) are involved in reabsorption and secretion but not renin production. Therefore, the JG cells are the definitive source of renin, which eventually leads to the formation of Angiotensin II and systemic vasoconstriction.

Question 19. Which factor promotes gastrointestinal motility (peristalsis), characterized by coordinated, sequential smooth muscle contractions that move food along the digestive tract beginning at the esophagus?

A. Presence of fatty food in the stomach

B. Distension of the stomach

C. Presence of tryptophan in the stomach

D. Presence of acid in the stomach

Correct answer: B

Peristalsis is the rhythmic, wave-like contraction of intestinal smooth muscle that propels contents forward. The most potent physiological stimulus for initiating and enhancing this movement is the distension of the stomach or intestinal wall (Option B). When food enters the gut, it stretches the wall, stimulating mechanoreceptors that activate the myenteric plexus. This leads to the contraction of circular muscles behind the bolus and relaxation ahead of it, known as the "Law of the Intestine". In contrast, the presence of fatty food (Option A) or acid (Option D) in the duodenum actually inhibits gastric emptying and slows down motility to allow for adequate neutralization and digestion. Tryptophan (Option C) does not have a direct

excitatory effect on peristaltic waves. Therefore, mechanical distension is the primary factor that triggers the neuro-muscular reflex required for propulsion.

BIOCHEMISTRY

Question 20. Which of the following substances is not considered a micromineral?

A. Calcium

B. Selenium C. Iodine

D. Copper

Correct answer: A

Minerals are divided into macrominerals and microminerals (trace elements) based on the body's daily requirement. Macrominerals are required in amounts greater than 100 mg per day. Calcium is a macromineral (Option A); it is the most abundant mineral in the body, essential for bone structure, muscle contraction, and nerve signaling. Other macrominerals include phosphorus, magnesium, sodium, and potassium. Microminerals (trace elements) are needed in minute amounts, typically less than 15-20 mg per day. Selenium (Option B), iodine (Option C), and copper (Option D) are all classified as microminerals. Iodine is crucial for thyroid hormone synthesis, while selenium and copper act as essential cofactors for various enzymes. Because the body requires significant daily intake of calcium (often 1000 mg or more), it is not a trace element. Therefore, Calcium is the correct answer to this "not" question.

Question 21. A 36-year-old man presents with bluish-black discoloration of the sclera and pinna for the past six months and reports that his urine has turned black on standing since childhood. What is the most likely diagnosis?

A. Phenylketonuria

B. Alkaptonuria

C. Tyrosinemia

D. Maple syrup urine disease

Correct answer: B

The clinical features described are classic for alkaptonuria, a rare autosomal recessive inborn error of metabolism. It is caused by deficiency of the enzyme homogentisate oxidase, which is involved in the degradation of the amino acids phenylalanine and tyrosine. As a result, homogentisic acid accumulates in the body.

When homogentisic acid is excreted in urine and exposed to air, it oxidizes and turns the urine black—often noticed since childhood. With time, the pigment deposits in connective tissues, leading to bluish-black discoloration of the sclera and ear cartilage (pinna), a condition known as ochronosis.

Phenylketonuria presents with intellectual disability and a “mousy” odor, tyrosinemia causes liver and kidney failure, and maple syrup urine disease produces urine with a burnt sugar smell. The combination of black urine on standing and ochronosis is pathognomonic of alkaptonuria.

Question 22. Which of the following agents inhibits Complex IV of the electron transport chain?

A. Rotenone

B. Cyanide

C. Carboxin

D. Antimycin A

Correct answer: B

The electron transport chain (ETC) can be inhibited at different sites by specific poisons. Complex IV (cytochrome c oxidase) is the terminal enzyme of the ETC responsible for transferring electrons to molecular oxygen.

Cyanide is a potent inhibitor of Complex IV. It binds to the ferric iron (Fe^{3+}) in cytochrome a3, preventing the reduction of oxygen to water. This abruptly halts oxidative phosphorylation, leading to cellular hypoxia despite adequate oxygen levels—often termed histotoxic hypoxia.

Other options act at different complexes :

1.

Rotenone inhibits Complex I

2.

Carboxin inhibits Complex II (succinate dehydrogenase)

3.

Antimycin A inhibits Complex III

4.

Thus, cyanide specifically inhibits Complex IV of the electron transport chain.

Question 23. Which enzyme is deficient in Von Gierke's disease?

A. Liver glycogen phosphorylase

B. Muscle glycogen phosphorylase

C. Glycogen debranching enzyme

D. Glucose-6-phosphatase

Correct answer: D

Von Gierke's disease, also known as Glycogen Storage Disease Type I (GSD I), is the most common form of GSD . it is caused by a deficiency of the enzyme glucose-6-phosphatase (Option D). This enzyme is critical because it catalyzes the final step of both glycogenolysis and gluconeogenesis, converting glucose-6-phosphate into free glucose in the liver and kidneys. Without it, glucose cannot be released into the bloodstream, leading to severe fasting

hypoglycemia, hepatomegaly (due to glycogen accumulation), hyperuricemia, and lactic acidosis. Liver glycogen phosphorylase deficiency (Option A) causes GSD Type VI (Hers disease). Muscle glycogen phosphorylase deficiency (Option B) causes GSD Type V (McArdle disease). Glycogen debranching enzyme deficiency (Option C) results in GSD Type III (Cori disease). Therefore, the absence of glucose-6-phosphatase is the biochemical hallmark that distinguishes Von Gierke's from other glycogen storage disorders.

29. A patient presents with diarrhea, cognitive impairment, and a characteristic rash. Which vitamin deficiency most likely explains these symptoms?

(D) Congenital coxa vara : A developmental deformity present early in life, usually causing gait abnormalities rather than progressive painful restriction.

A 20-year-old woman presents with sudden onset palpitations, sweating, shortness of breath, and a choking sensation following a prior COVID-19 infection. She is excessively anxious about her health due to having tested positive earlier. This is her first such episode, lasting around 20 minutes. Physical examination, ECG, and laboratory investigations are all normal. What is the most likely diagnosis?

(A)
Post-traumatic stress disorder

(B)
Bipolar disorder

(C)
Depression

(D)
Panic attack

295. (D) Panic Attack

The patient presents with sudden onset palpitations, sweating, breathlessness, and choking sensation, lasting about 20 minutes, with normal examination, ECG, and labs. These features are classic for a panic attack, which is characterized by abrupt episodes of intense fear with autonomic symptoms and no underlying organic cause. Her health anxiety after COVID-19 acts as a trigger.

Why Other Options Are Wrong
(A) Post-traumatic
stress
disorder
(PTSD):Requires exposure to severe trauma
and features like flashbacks and avoidance;
not a single acute episode.
(B) Bipolar disorder : Involves mood episodes
(mania/depression) over days to weeks, not
brief episodic anxiety attacks.
(C) Depression : Characterized by persistent
low mood, anhedonia, and fatigue, not
sudden short-lived autonomic symptoms.
A 43-year-old person is brought to the emergency department by the police with a belief that his daughter plans to harm him. Investigations reveal that this claim is unfounded, and physical examination shows no abnormalities. What is the most likely diagnosis?
(A)
Delusional disorder
(B)
lllusions
(C)
Cotard syndrome
(D)
Hallucinations
296. (A) Delusional disorder
The patient has a fixed, false belief that his
daughter intends to harm him despite clear
evidence to the contrary. This is a classic
persecutory delusion. Since the belief is well-
structured, persistent, and not accompanied
by other major psychotic features or physical
abnormalities, it fits delusional disorder.
Why Other Options Are Wrong
(B) Illusions : These are misinterpretations of
real external stimuli (e.g., mistaking a rope
for a snake), not fixed false beliefs.
(C) Cotard syndrome : Involves nihilistic
delusions (e.g., believing one is dead or

organs are missing), not persecutory ideas.
(D) Hallucinations : These are perceptions without external stimuli (e.g., hearing voices), not belief-based disturbances.
A 30-year-old woman is brought to the psychiatric outpatient department by a friend. She believes her boss is in love with her and is stalking her, but her friend denies these claims. What is the most likely diagnosis?
(A)
Megalomania
(B)
Delusion of reference
(C)
Delusion of control
(D)
Erotomania
297. (D) Erotomania
The patient’s belief that her boss is in love with her, despite a lack of evidence or direct interaction, is the defining symptom of Erotomania (also known as Clerambault syndrome) (Option D).
This is a subtype of delusional disorder where the individual believes that another person, usually of higher social or professional status, is deeply in love with them.
Megalomania (Option A) involves delusions of grandeur or extreme power. Delusion of reference (Option B) is the belief that neutral events or remarks have a special personal meaning. Delusion of control (Option C) is the belief that one's thoughts or movements are being directed by an external force. Because the patient’s fixed, false belief is specifically centered on a perceived romantic relationship with a person of higher status, erotomania is the definitive psychiatric diagnosis. Management typically involves antipsychotic medications and psychosocial interventions.
A mental health practitioner is evaluating aripiprazole for a patient with psychotic symptoms.

Compared to other antipsychotics, how do its pharmacological properties and side effect profile differ?

(A)

No intrinsic activity, high affinity for D2 receptor, less extrapyramidal symptoms, and more weight gain

(B)

High intrinsic activity, no affinity for D2 receptor, more extrapyramidal symptoms, and less weight gain

(C)

Low intrinsic activity, high affinity for D2 re- ceptor, less extrapyramidal symptoms, and less weight gain

(D)

High intrinsic activity, high affinity for D2 re- ceptor, less extrapyramidal symptoms, and less weight gain

298. (C) Low intrinsic activity, high affinity for D2 receptor, less extrapyramidal symptoms, and less weight gain

Aripiprazole is a unique "third-generation" atypical antipsychotic. Its pharmacological hallmark is being a D2 receptor partial agonist. This means it has a high affinity for the D2 receptor but only low intrinsic activity (Option C) . This allow it to act as an antagonist in areas of dopamine excess (improving positive symptoms) and as an agonist in areas of dopamine deficiency.

Because of its partial agonist mechanism, it is associated with significantly less extrapyramidal symptoms (EPS) and minimal elevation of prolactin levels. Furthermore, compared to other atypicals like olanzapine, it has a very low risk of metabolic side effects, resulting in less weight gain. Options A, B, and D are incorrect descriptions of its receptor profile or clinical tolerability. Therefore, the combination of high affinity, low intrinsic activity, and a favorable metabolic profile makes Option C the definitive pharmacological description of aripiprazole.

A 20-year-old man is brought for psychiatric evaluation due to intellectual disability, with an IQ of 45. He has a long face, large ears, and macroorchidism, along with a cardiac murmur on examination and a paternal family history of intellectual impairment. What is the most likely diagnosis?

(A)

Cushing's syndrome

(B)

Rett syndrome

(C)

Fragile X syndrome

(D)

William syndrome

Question 24. Type III (Cori disease). Therefore, the absence of glucose-6-phosphatase is the biochemical hallmark that distinguishes Von Gierke's from other glycogen storage disorders.

A patient presents with diarrhea, cognitive impairment, and a characteristic rash. Which vitamin deficiency most likely explains these symptoms?

A. Thiamine

B. Niacin

C. Cyanocobalamin

D. Ascorbic acid

Correct answer: B

The patient is presenting with the "3 Ds" of pellagra: Diarrhea, Dermatitis (distinctive rash), and Dementia (memory impairment). Pellagra is the clinical result of Niacin (Vitamin B3) deficiency (Option B). The rash in pellagra is typically symmetrical and appears on sun-exposed areas, classically forming a "necklace" pattern around the neck known as Casal's necklace. Niacin is essential for the production of NAD and NADP, which are vital coenzymes for energy metabolism. Thiamine deficiency

(Option A) leads to Beriberi or Wernicke-Korsakoff syndrome. Cyanocobalamin (B12) deficiency (Option C) causes megaloblastic anemia and neurological degeneration. Ascorbic acid (Vitamin C) deficiency (Option D) leads to scurvy, characterized by bleeding gums and poor wound healing. Pellagra can be caused by a diet based primarily on corn, which is low in available niacin and its precursor tryptophan. Thus, Niacin is the responsible vitamin.

A 49-year-old man presents with painful, swollen joints, fatigue, a facial skin rash, and difficulty taking deep breaths. The senior resident attributes these features to altered immune competence and advises reviewing the complement system. Which of the following components plays a key role in activation of the complement system via the alternative pathway?

(A)
C1
(B)
C2
(C)
C3
(D)
C4

Question 25. 29. (B) Niacin

The patient is presenting with the "3 Ds" of pellagra: Diarrhea, Dermatitis (distinctive rash), and Dementia (memory impairment). Pellagra is the clinical result of Niacin (Vitamin B3) deficiency (Option B). The rash in pellagra is typically symmetrical and appears on sun-exposed areas, classically forming a "necklace" pattern around the neck known as Casal's necklace. Niacin is essential for the production of NAD and NADP, which are vital coenzymes for energy metabolism. Thiamine deficiency

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A 49-year-old man presents with painful, swollen joints, fatigue, a facial skin rash, and difficulty taking deep breaths. The senior resident attributes these features to altered immune competence and advises reviewing the complement system. Which of the following components plays a key role in activation of the complement system via the alternative pathway?

A. C1

B. C2

C. C3

D. C4

Correct answer: C

The complement system is a vital part of the innate immune system. The alternative pathway is unique because it is continuously activated at a low level through the spontaneous hydrolysis of C3 (Option C), a process known as "tick-over". C3 is the most abundant complement protein and the central hub where all pathways (classical, lectin, and alternative) converge. In the alternative pathway, C3 reacts with Factors B and D to form the C3 convertase, which then amplifies the immune response without needing an antibody-antigen complex. C1, C2, and C4 (Options A, B, and D) are specifically involved in the classical pathway, which is triggered by the binding of antibodies to pathogens. Patients with autoimmune diseases like Systemic Lupus Erythematosus (suggested by the facial rash and joint pain) often show consumption of

these complement proteins. Therefore, C3 is the essential element for alternative pathway activation.

Which of the following foods possesses the highest biological value?

(A)

Pulses

(B)

Soyabean

(C)

Milk

(D)

Egg

Question 26. 30. (C) C3

The complement system is a vital part of the innate immune system. The alternative pathway is unique because it is continuously activated at a low level through the spontaneous hydrolysis of C3 (Option C), a process known as "tick-over". C3 is the most abundant complement protein and the central hub where all pathways (classical, lectin, and alternative) converge. In the alternative pathway, C3 reacts with Factors B and D to form the C3 convertase, which then amplifies the immune response without needing an antibody-antigen complex. C1, C2, and C4 (Options A, B, and D) are specifically involved in the classical pathway, which is triggered by the binding of antibodies to pathogens. Patients with autoimmune diseases like Systemic Lupus Erythematosus (suggested by the facial rash and joint pain) often show consumption of these complement proteins. Therefore, C3 is the essential element for alternative pathway activation.

Which of the following foods possesses the highest biological value?

A. Pulses

B. Soyabean

C. Milk

D. Egg

Correct answer: D

Biological value (BV) is a measure of the proportion of absorbed protein from a food that becomes incorporated into the proteins of the organism's body. It reflects how efficiently the body can utilize the dietary protein. Among all whole food sources, the Egg (Option D) has the highest biological value, typically rated at 100 (or close to 94 depending on the scale). This is because egg protein contains all the essential amino acids in the ideal proportions for human health, making it the "reference protein" for comparing others. Milk (Option C) also has a very high BV, approximately 85-91. Soyabean (Option B) has a BV of about 74, and Pulses (Option A) generally have lower biological values, around 50-60, because they are often deficient in certain essential amino acids like methionine. Therefore, eggs are recognized as the superior dietary source in terms of protein utilization efficiency.

In hemodialysis-associated amyloidosis, which specific biochemical type of amyloid is deposited?

(A)

AL

(B)

AA

(C)

Aß2m

(D)

ATTR

Question 27. 31. (D) Egg

Biological value (BV) is a measure of the proportion of absorbed protein from a food that becomes incorporated into the proteins of the

organism's body. It reflects how efficiently the body can utilize the dietary protein. Among all whole food sources, the Egg (Option D) has the highest biological value, typically rated at 100 (or close to 94 depending on the scale). This is because egg protein contains all the essential amino acids in the ideal proportions for human health, making it the "reference protein" for comparing others. Milk (Option C) also has a very high BV, approximately 85-91. Soyabean (Option B) has a BV of about 74, and Pulses (Option A) generally have lower biological values, around 50-60, because they are often deficient in certain essential amino acids like methionine. Therefore, eggs are recognized as the superior dietary source in terms of protein utilization efficiency.

In hemodialysis-associated amyloidosis, which specific biochemical type of amyloid is deposited?

A. AL

B. AA

C. Aß2m

D. ATTR

Correct answer: C

Amyloidosis involves the extracellular deposition of misfolded fibrillar proteins in various tissues. In patients undergoing long-term hemodialysis, a specific type of amyloidosis develops due to the accumulation of Beta-2 microglobulin, labeled as Aß2m (Option C). Beta-2 microglobulin is a component of the MHC Class I molecule and is normally filtered by the kidney. In renal failure, it accumulates, as standard dialysis membranes do not efficiently remove it. These fibrils typically deposit in osteoarticular structures, leading to carpal tunnel syndrome and joint destruction. AL amyloid (Option A) is derived from immunoglobulin light chains in plasma

cell disorders. AA amyloid (Option B) is derived from serum amyloid A protein during chronic inflammation. ATTR (Option D) involves transthyretin and is seen in senile systemic or familial amyloidosis. Therefore, Aß2m is the definitive biochemical marker for dialysis-related amyloid deposits.

A 45-year-old woman presents with chronic dryness of the mouth and eyes. Investigations show positive anti-Ro and anti-La antibodies, and the Schirmer test demonstrates less than 5 mm of tear production in 5 minutes without anesthesia. What is the most likely diagnosis?

(A)

Scleroderma

(B)

Dehydration

(C)

Lacrimal duct stones

(D)

Sjogren syndrome

Question 28. 32. (C) Aß2m

Amyloidosis involves the extracellular deposition of misfolded fibrillar proteins in various tissues. In patients undergoing long-term hemodialysis, a specific type of amyloidosis develops due to the accumulation of Beta-2 microglobulin, labeled as Aß2m (Option C). Beta-2 microglobulin is a component of the MHC Class I molecule and is normally filtered by the kidney. In renal failure, it accumulates, as standard dialysis membranes do not efficiently remove it. These fibrils typically deposit in osteoarticular structures, leading to carpal tunnel syndrome and joint destruction. AL amyloid (Option A) is derived from immunoglobulin light chains in plasma cell disorders. AA amyloid (Option B) is derived from serum amyloid A protein during chronic inflammation. ATTR (Option D) involves transthyretin and is seen in senile systemic or

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A 45-year-old woman presents with chronic dryness of the mouth and eyes. Investigations show positive anti-Ro and anti-La antibodies, and the Schirmer test demonstrates less than 5 mm of tear production in 5 minutes without anesthesia. What is the most likely diagnosis?

A. Scleroderma

B. Dehydration

C. Lacrimal duct stones

D. Sjogren syndrome

Correct answer: D

The combination of xerostomia (dry mouth) and xerophthalmia (dry eyes), known as the "sicca complex," is the hallmark of Sjogren

Question 29. syndrome (Option D). This is a systemic autoimmune disease characterized by the lymphocytic infiltration of exocrine glands. The diagnosis is supported by the presence of highly specific autoantibodies: anti-Ro (SSA) and anti-La (SSB). Furthermore, the Schirmer test result of less than 5 mm in 5 minutes confirms significant objective tear deficiency (aqueous tear deficiency). Scleroderma (Option A) primarily involves skin thickening and multi-organ fibrosis. Dehydration (Option B) causes temporary dryness but would not be associated with specific autoantibodies. Lacrimal duct stones (Option C) would typically cause localized pain and tearing (epiphora) rather than systemic dryness. Given the female gender, specific sicca symptoms, and positive immunological markers, Sjogren syndrome is the most definitive diagnosis.

An HIV-positive patient presents with characteristic oral manifestations. Based on these findings, what is the most likely diagnosis, and which WHO clinical stage of HIV does it correspond to?

A. Oral candidiasis & WHO stage 2

B. Oral hairy leukoplakia & WHO Stage 3

C. Oral candidiasis & WHO stage 3

D. Oral hairy leukoplakia & WHO stage 2

Correct answer: C

The image shows a thick white coating covering the tongue that is characteristic of oral candidiasis (thrush), caused by Candida albicans overgrowth — an opportunistic infection highly prevalent in HIV-positive patients due to severe immunosuppression.

Key clinical features visible in the image:The white pseudomembranous coating is diffuse, creamy-white, and covers the entire dorsal tongue surface. This is classic pseudomembranous candidiasis — the white plaques can be wiped off with a spatula, revealing an erythematous bleeding base underneath, which clearly distinguishes it from oral hairy leukoplakia whose lsions cannot be scraped off.

Why WHO Stage 3:

According to WHO clinical staging of HIV, oral candidiasis is classified under Stage 3, indicating severe immunosuppression with CD4 counts typically below 200 cells/µL. It represents a significant opportunistic infection signaling advanced HIV disease progression.

Why other options are wrong:

(A) Oral candidiasis & WHO Stage 2 is incorrect because while the diagnosis of candidiasis is

right, WHO staging places oral candidiasis at Stage 3, not Stage 2. Stage 2 includes milder conditions like angular cheilitis.

Question 30. A 72-year-old man presents with a weak urinary stream and increased urinary frequency with

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first week of life and another 40 between the 8th and 28th day. Based on this data, what is the neonatal mortality rate per 1,000 live births in this community?

A. 10

B. 20

C. 30

D. 40

Correct answer: B

The Neonatal Mortality Rate (NMR) is defined as the number of deaths of newborns within the first 28 days of life per 1,000 live births. In this scenario, there were 40 deaths in the first week (early neonatal deaths) and 40 deaths between days 8 and 28 (late neonatal deaths). The total number of neonatal deaths is . To calculate the rate per 1,000 live births:

Question 31. 41. (C) Turner's syndrome

The image summarizes the classic clinical features of Turner's syndrome (Option C), a chromosomal disorder in females typically characterized by a 45,X karyotype. Key manifestations shown include short stature (the most common feature), webbing of the neck (pterygium colli), and a "shield-shaped" broad chest with widely spaced nipples. Internal findings include "streak ovaries" due to accelerated oocyte loss, which results in primary amenorrhea and infertility. Congenital heart defects, specifically coarctation of the aorta (Option C), are also frequent. Cubitus valgus (an increased carrying angle of the elbow) is another classic sign. Klinefelter syndrome (Option D) occurs in males (47,XXY) and presents

with tall stature and gynecomastia. Kallmann syndrome (Option B) involves delayed puberty and anosmia. Testicular feminizing syndrome (Option A) involves an XY karyotype with female external genitalia. The visual triad of webbed neck, short stature, and streak ovaries is pathognomonic for Turner's.

A young patient presents with hepatosplenomegaly and prominent cheekbones. Peripheral blood smear findings show anemia, and the Mentzer index is less than 13. What is the most likely diagnosis?

A. Megaloblastic anemia

B. Iron-deficiency anemia

C. Thalassemia

D. Pernicious anemia

Correct answer: C

The patient's symptoms—splenomegaly, hepatomegaly, and facial bone changes (prominent cheekbones or "chipmunk facies")—are classic for Beta-thalassemia major. These skeletal changes result from massive erythroid hyperplasia and expansion of the bone marrow in response to severe chronic anemia. The Mentzer index is a critical diagnostic tool used to differentiate between causes of microcytic anemia. It is calculated as the MCV divided by the RBC count. A Mentzer index of less than 13 (Option C) strongly favors Thalassemia, as the RBC count is often high relative to the very low MCV. Iron-deficiency anemia (Option B) typically shows a Mentzer index greater than 13. Megaloblastic and pernicious anemias (Options A and D) are macrocytic conditions with an

elevated MCV. Therefore, the combination of specific physical stigmata and a low Mentzer index identifies Thalassemia as the diagnosis.

A 60-year-old man presents with anemia and hepatosplenomegaly. Peripheral blood smear examination reveals teardrop-shaped red cells, nucleated erythrocytes, and giant platelets. Based on the accompanying bone marrow biopsy findings, what is the most likely diagnosis?

(A)
Polycythemia vera

(B)
Essential thrombocythemia

(C)
Primary myelofibrosis

(D)
Chronic myeloid leukemia

Question 32. A 60-year-old man presents with anemia and hepatosplenomegaly. Peripheral blood smear examination reveals teardrop-shaped red cells, nucleated erythrocytes, and giant platelets. Based on the accompanying bone marrow biopsy findings, what is the most likely diagnosis?

A. Polycythemia vera

B. Essential thrombocythemia

C. Primary myelofibrosis

D. Chronic myeloid leukemia

Correct answer: C

The clinical presentation of anemia, massive hepatosplenomegaly, and the presence of "teardrop" red blood cells (dacrocytes) and a leukoerythroblastic blood picture (nucleated RBCs and immature myeloid cells) is diagnostic of Primary Myelofibrosis (PMF). The bone marrow biopsy is the confirmatory test, showing extensive replacement of normal marrow by collagen fibrosis, often referred to as a "dry tap" during aspiration. This fibrosis is driven by the release of growth factors like TGF-beta from abnormal megakaryocytes. Polycythemia vera (Option A) and Essential thrombocythemia (Option B) can eventually progress to a similar "spent phase" of myelofibrosis, but the primary pathology described here is PMF. Chronic myeloid leukemia (Option D) typically presents with a very high WBC count and the Philadelphia chromosome rather than primary marrow fibrosis. Teardrop cells are characteristic of marrow being squeezed through fibrous tissue.

Question 33. A teenager develops rapid swelling of the face,

lips, and tongue along with difficulty breathing within minutes of eating prawns. What type of hypersensitivity reaction does this represent?

A. Type 1

B. Type 2

C. Type 3

D. Type 4

Correct answer: A

The teenager is experiencing an acute systemic allergic reaction, likely anaphylaxis, following the ingestion of shellfish. This is the classic example of Type 1 (immediate) hypersensitivity. Type 1 reactions are mediated by IgE antibodies. Upon exposure to the allergen (prawns), IgE-primed mast cells and basophils rapidly degranulate, releasing inflammatory mediators like histamine. This results in vasodilation (swelling of lips and tongue) and bronchoconstriction (difficulty breathing) within minutes. Type 2 hypersensitivity (Option B) involves IgG or IgM antibodies attacking specific cell-surface antigens, like in hemolytic anemia. Type 3 (Option C) involves immune complex deposition, as in serum sickness. Type 4 (Option D) is a delayed-type, T-cell mediated response, such as the tuberculin test or contact dermatitis, which takes 48-72 hours to develop. The rapid onset of symptoms after an allergen identifies a Type 1 response.

Question 34. Which disorder is characterized by the accumulation of tau protein inclusions?

A. Alzheimer's disease

B. Huntington's disease

C. Amyotrophic lateral sclerosis

D. CNS lymphoma

Correct answer: A

Alzheimer's disease (Option A) is the most common cause of dementia and is characterized by two specific proteinaceous brain lesions: extracellular amyloid-beta plaques and intracellular neurofibrillary tangles. These neurofibrillary tangles are composed of hyperphosphorylated tau protein, a microtubule-associated protein. When tau is misfolded, it aggregates into insoluble inclusions that disrupt neuronal transport and lead to cell death. Huntington's disease (Option B) is associated with huntingtin protein inclusions caused by CAG repeat expansions. Amyotrophic lateral sclerosis (Option C) is frequently associated with TDP-43 or SOD1 protein inclusions, not primary tauopathy. CNS lymphoma (Option D) is a malignancy of B-lymphocytes and does not involve protein inclusion bodies. Other "tauopathies" besides Alzheimer’s include Pick's disease and progressive supranuclear palsy. Therefore, tau protein inclusions are a hallmark of Alzheimer’s neurodegeneration.

Question 35. A patient presents with chronic small intestinal diarrhea and sensitivity to wheat. Duodenal biopsy shows villous atrophy, and serological tests are positive for anti-endomysial antibodies and IgA antibodies against tissue transglutaminase (tTG). What is the most likely diagnosis?

A. Cystic fibrosis

B. Whipple's disease

C. Tropical sprue

D. Celiac sprue

Correct answer: D

The clinical presentation and laboratory markers are diagnostic of Celiac sprue (Option D), also known as gluten-sensitive enteropathy. This is an autoimmune-mediated disorder triggered by the ingestion of gluten (found in wheat, barley, and rye) in genetically predisposed individuals. The presence of IgA antibodies to tissue transglutaminase (tTG) and endomysium (EMA) is highly specific for this condition. The gold standard for diagnosis is a duodenal biopsy showing characteristic findings: total or partial villous atrophy, crypt hyperplasia, and an increased number of intraepithelial lymphocytes. Cystic fibrosis (Option A) involves thick mucus and pancreatic insufficiency but not specific wheat-related antibodies. Whipple's disease (Option B) is caused by the bacterium Tropheryma whipplei and shows PAS-positive macrophages. Tropical sprue (Option C) can look similar histologically but is not related to gluten intake and is found in specific geographic regions.

Question 36. Which of the following features is characteristic and specific to kwashiorkor?

A. Pitting edema

B. Weight loss

C. Flag sign

D. Muscle wasting

Correct answer: A

Pitting edema is the hallmark and most characteristic feature specific to kwashiorkor, distinguishing it from marasmus and other forms of protein-energy malnutrition. Kwashiorkor

results primarily from severe protein deficiency despite relatively adequate caloric intake. The profound hypoalbuminemia that results causes a dramatic fall in plasma oncotic pressure, leading to fluid shift from the intravascular compartment into the interstitial spaces, producing characteristic bilateral pitting edema, classically starting in the lower limbs and advancing upward. This edema can sometimes mask the underlying weight loss, giving a deceptively "well-nourished" appearance.

Why other options are wrong:

(B)

Weight loss is incorrect because weight loss is a common feature of both marasmus and kwashiorkor. It is not specific to kwashiorkor alone. In fact, edema in kwashiorkor may even conceal true weight loss, making this feature less reliable as a distinguishing characteristic.

(C)

Flag sign is incorrect because although flag sign — alternating bands of pigmented and depigmented hair — does occur in kwashiorkor, it is not specific to it. It can also appear in other nutritional deficiency states and is considered a supportive rather than pathognomonic feature.

(D)

Muscle wasting is incorrect because muscle wasting is the hallmark feature of marasmus, not kwashiorkor. In marasmus, severe caloric deprivation causes the body to catabolize muscle proteins for energy, leading to extreme muscle wasting and a "skin and bones" appearance.

Question 37. Which element is essential for the conversion of prothrombin into thrombin?

A. Calcium

B. Magnesium

C. Potassium

D. Sodium

Correct answer: A

The coagulation cascade involves a series of enzymatic steps that lead to the formation of a blood clot. One of the final stages is the conversion of prothrombin (Factor II) to thrombin (Factor IIa) by the prothrombinase complex. This complex consists of activated Factor X, Factor V, phospholipids, and ionized Calcium (Option A), which is known as Factor IV in the clotting system. Calcium is essential because it allows the clotting factors to bind to the negatively charged phospholipid surfaces of activated platelets. Without ionized calcium, blood will not clot, which is why anticoagulants like EDTA or citrate work by chelating (binding) calcium. Magnesium (Option B), potassium (Option C), and sodium (Option D) are essential electrolytes for other bodily functions but do not serve as a specific cofactor in the blood clotting cascade. Therefore, calcium is the critical element required for thrombin generation.

PHARMACOLOGY

Question 38. A patient develops a recurrent skin rash at the same site after taking NSAIDs for knee pain and reports a similar episode at the identical location six months earlier following NSAID use for back pain. What is the most likely diagnosis?

A. Drug hypersensitivity

B. Post-inflammatory hyperpigmentation

C. Fixed drug eruption

D. Drug-induced hypermelanosis

Correct answer: C

The description of a skin lesion that recurs at the exact same anatomical site whenever the specific causative drug is taken is the hallmark of a fixed drug eruption (FDE) (Option C). FDEs typically appear as well-circumscribed, round or oval, erythematous or dusky-red patches that may occasionally blister. Common triggers include NSAIDs (like the case described), sulfonamides, and tetracyclines. After the initial lesion heals, it often leaves a patch of gray or brown post-inflammatory hyperpigmentation (Option B), which is a consequence rather than the primary diagnosis. General drug hypersensitivity (Option A) would more likely present as a widespread rash (e.g., urticaria or exanthematous eruption). Drug-induced hypermelanosis (Option D) involves generalized skin darkening rather than recurrent localized patches. The site-specific recurrence is pathognomonic for FDE, believed to be due to localized memory T-cells remaining in the skin.

Question 39. Which specific monoclonal antibody is used in the treatment of cancer?

A. Omalizumab

B. Denosumab

C. Rituximab

D. Methotrexate

Correct answer: C

Rituximab is a chimeric monoclonal antibody that specifically targets the CD20 antigen found on the surface of B-lymphocytes. It is a cornerstone in the treatment of various B-cell malignancies, including Non-Hodgkin’s Lymphoma and Chronic Lymphocytic Leukemia. By binding to CD20, it triggers cell lysis through antibody-dependent cellular cytotoxicity and complement-dependent pathways. Omalizumab (Option A) is used for severe allergic asthma and chronic urticaria by targeting IgE. Denosumab (Option B) targets RANKL and is used for osteoporosis and giant cell tumors of the bone, but it is not primarily classified as a direct anti-cancer cytotoxic agent in this context. Methotrexate (Option D) is a conventional folic acid antagonist chemotherapy drug, not a monoclonal antibody. Rituximab’s ability to selectively

deplete B-cells makes it effective not only in oncology but also in autoimmune disorders like rheumatoid arthritis. Therefore, among the monoclonal antibodies listed, Rituximab is the primary agent utilized for malignant cancer therapy.

Question 40. A 26-year-old woman experiences unilateral, pulsating headaches associated with nausea, vomiting, and photophobia, with relief in a dark room. Which medication is appropriate for preventing and reducing the frequency of future headache episodes?

A. Propranolol

B. Alprazolam

C. Diazepam

D. Fluoxetine

Correct answer: A

The patient’s symptoms—unilateral pulsating headache, nausea, and photophobia—are diagnostic of migraine. The question asks for a medication to reduce the frequency of future episodes, which indicates prophylactic therapy rather than acute treatment. Propranolol, a non-selective beta-blocker, is one of the first-line agents approved for migraine prophylaxis. It works by modulating thalamocortical excitability and vascular tone. Alprazolam (Option B) and Diazepam (Option C) are benzodiazepines used for anxiety and have no role in preventing migraines. Fluoxetine (Option D) is an SSRI used for depression; while some antidepressants like Amitriptyline are used for migraine, Fluoxetine is not a standard prophylactic choice. Prophylaxis is generally indicated if a patient has more than two to three disabling attacks per month. Patients must be counseled that Propranolol is a preventive measure and will not provide relief during an acute attack. Thus, Propranolol is the most appropriate prophylactic agent listed for this 26-year-old female.

Question 41. Which of the following drugs belongs to the class of selective estrogen receptor modulators (SERMs)?

A. Estrogen

B. Metformin

C. Tamoxifen

D. Adriamycin

Correct answer: C

Tamoxifen is the prototype of the Selective Estrogen Receptor Modulators (SERMs). SERMs are unique compounds that exhibit tissue-specific activity; they act as estrogen receptor antagonists in some tissues while acting as agonists in others. Tamoxifen acts as an antagonist

in breast tissue, making it a vital treatment for ER-positive breast cancer. Conversely, it acts as an agonist in the bone (preventing bone loss) and in the uterus, which unfortunately increases the risk of endometrial hyperplasia or carcinoma. Estrogen (Option A) is a pure hormone agonist. Metformin (Option B) is a biguanide used for diabetes. Adriamycin (Option D), also known as Doxorubicin, is an anthracycline cytotoxic antibiotic used in cancer chemotherapy but is not a hormone modulator. Other SERMs include Raloxifene, which is an antagonist in both breast and uterus but an agonist in bone. Therefore, Tamoxifen is the correct classification for a SERM used in the management of hormone-sensitive malignancies.

Question 42. Which of the following conditions does not contraindicate the use of beta-blockers?

A. Asthma

B. Glaucoma

C. Bradycardia

D. Hypothyroidism

Correct answer: D

Hypothyroidism does NOT contraindicate the use of beta-blockers. In fact, beta-blockers can be used safely and are sometimes even beneficial in hypothyroid patients. Hypothyroidism is associated with decreased heart rate and reduced cardiac output, and while beta-blockers further slow the heart, they are not absolutely contraindicated. Moreover, beta-blockers are classically used in hyperthyroidism to control sympathetic overactivity symptoms, but hypothyroidism itself poses no direct contraindication to their use.

Why other options are wrong:

(A)

Asthma is incorrect because asthma is a absolute contraindication to beta-blockers, especially non-selective ones like propranolol. Beta-blockade causes bronchoconstriction by blocking β_2 receptors in bronchial smooth muscle, potentially triggering life-threatening bronchospasm in asthmatic patients.

(B)

Glaucoma is incorrect as a contraindication because beta-blockers like timolol eye drops are actually used TO TREAT glaucoma by reducing aqueous humor production. Therefore glaucoma is not a contraindication but rather an indication for beta-blockers.

(C)

Bradycardia is incorrect because bradycardia is a absolute contraindication to beta-blockers. Since beta-blockers slow AV conduction and reduce heart rate, administering them to an already bradycardic patient can cause severe bradycardia, heart block, or even cardiac arrest.

Question 43. Pharmacodynamics refers to which aspect of a drug’s action or profile?

A. Mode of excretion of a drug

B. Mechanism of action of a drug

C. Transport of drug across biological membranes

D. Latency of onset

Correct answer: B

Pharmacodynamics is broadly defined as "what the drug does to the body." It encompasses the study of the mechanism of action of a drug, its biochemical and physiological effects, and the relationship between drug concentration and its effect at the site of action. This includes receptor binding, post-receptor signaling, and chemical interactions. In contrast, Pharmacokinetics is "what the body does to the drug," which includes the mode of excretion (Option A), transport across biological membranes (Option C, part of absorption and distribution), and metabolism. Latency of onset (Option D) is a clinical observation influenced by both pharmacokinetic factors (how fast it reaches the site) and pharmacodynamic factors (how fast it binds to the receptor). Understanding pharmacodynamics is essential for determining the therapeutic index, potency, and efficacy of a medication. Therefore, the mechanism of action is the core component that defines the pharmacodynamic profile of any pharmacological agent.

Question 44. Which of the following agents is not commonly used in the management of bronchial asthma?

A. Phosphodiesterase inhibitors

B. Steroids

C. Beta-agonists

D. Cholinergic drugs

Correct answer: D

Cholinergic drugs (parasympathomimetics) are not used in asthma because they stimulate muscarinic receptors, leading to bronchoconstriction and increased mucus secretion, which would severely worsen an asthma attack. Instead, anticholinergic drugs like Ipratropium are used to cause bronchodilation. Phosphodiesterase inhibitors (Option A), such as Theophylline, increase cAMP levels to relax bronchial smooth muscle. Steroids (Option B), such as Fluticasone or Prednisolone, are essential for reducing the underlying airway inflammation. Beta-agonists (Option C), like Salbutamol (SABA) or Salmeterol (LABA), are the mainstay for rapid relief and long-term control by stimulating beta-2 receptors to cause bronchodilation. Asthma

management focuses on relaxing airway smooth muscle and suppressing immune-mediated inflammation. Because cholinergic stimulation is a primary physiological trigger for airway narrowing, these drugs are strictly avoided in asthmatic patients. Thus, Cholinergic drugs are the correct answer as they are contraindicated rather than utilized in asthma management.

Question 45. Proton pump inhibitors (PPIs) reduce gastric acid secretion by acting on which specific target?

A. H+/Cl- ATPase pump

B. H+/K+ ATPase pump

C. Na+/K+ ATPase pump

D. Na+/K+/Cl-ATPase pump

Correct answer: B

Proton pump inhibitors (PPIs) such as omeprazole and pantoprazole suppress gastric acid secretion by irreversibly inhibiting the H^+/K^+ ATPase pump, also known as the gastric proton pump. This pump is located on the apical membrane of parietal cells and represents the final common pathway for hydrochloric acid secretion in the stomach.

The H^+/K^+ ATPase exchanges intracellular hydrogen ions (H^+) for extracellular potassium ions (K^+). By blocking this exchange, PPIs effectively shut down acid production regardless of the stimulus (histamine, acetylcholine, or gastrin).

Why the other options are incorrect:

1.

H^+/Cl^- ATPase: No such pump exists.

2.

Na^+/K^+ ATPase: Maintains membrane potential in all cells; not involved in acid secretion.

3.

$Na^+/K^+/2Cl^-$ cotransporter: Found in the loop of Henle; target of loop diuretics.

Thus, H^+/K^+ ATPase is the specific molecular target of PPIs.

Question 46. Which drug is considered the treatment of choice for managing central diabetes insipidus?

A. Insulin

B. Desmopressin

C. Diazoxide

D. Chlorpropamide

Correct answer: B

Central Diabetes Insipidus (DI) is caused by a deficiency of antidiuretic hormone (ADH/ Vasopressin) from the posterior pituitary, leading to polyuria and polydipsia. Desmopressin (dDAVP) is the preferred treatment because it is a synthetic analog of vasopressin with high selectivity for V2 receptors in the collecting ducts of the kidney. It has a longer duration of

action than natural ADH and can be administered intranasally, orally, or parenterally. Insulin (Option A) is used for Diabetes Mellitus, not DI. Diazoxide (Option C) is used for hypertensive emergencies or insulinomas. Chlorpropamide (Option D) is a sulfonylurea that can sensitize the kidney to ADH in partial central DI, but it is not the first-line "preferred" treatment due to the risk of hypoglycemia. Desmopressin provides effective control of water excretion with minimal V1-mediated vasoconstrictive side effects. Therefore, Desmopressin is the gold standard for hormone replacement therapy in patients with a confirmed diagnosis of central diabetes insipidus.

Question 47. Which of the following drugs does not belong to the class of alkylating agents?

A. Melphalan

B. Cyclophosphamide

C. Busulfan

D. 5-Fluorouracil

Correct answer: D

5-Fluorouracil (5-FU) is an antimetabolite, specifically a pyrimidine analog, not an alkylating agent. It works by inhibiting the enzyme thymidylate synthase, thereby blocking the synthesis of thymidine and disrupting DNA production. Melphalan (Option A), Cyclophosphamide (Option B), and Busulfan (Option C) are all classic alkylating agents. Alkylating agents work by attaching an alkyl group to DNA, typically at the guanine base, which leads to DNA cross-linking, strand breaks, and eventually cell apoptosis. Cyclophosphamide is a nitrogen mustard, Melphalan is used for multiple myeloma, and Busulfan is often used for chronic myeloid leukemia. While both antimetabolites and alkylating agents are used in cancer chemotherapy, they have distinct biochemical mechanisms and belong to different pharmacological classes. Because 5-FU interferes with metabolic pathways rather than directly alkylating DNA, it is the correct answer to this "not" question.

Question 48. Which of the following drugs is not metabolized through acetylation?

A. Isoniazid

B. Hydralazine

C. Phenytoin

D. Procainamide

Correct answer: C

Metabolism by acetylation is a Phase II reaction catalyzed by the enzyme N-acetyltransferase (NAT). This pathway is clinically significant because of genetic polymorphisms (fast vs. slow acetylators). The classic mnemonic for drugs metabolized by acetylation is SHIP: Sulfonamides, Hydralazine (Option B), Isoniazid (Option A), and Procainamide (Option D). These drugs carry a

risk of drug-induced systemic lupus erythematosus (SLE) in slow acetylators. Phenytoin (Option C) is an anticonvulsant that is primarily metabolized by Phase I oxidation (hydroxylation) in the liver via the CYP2C9 and CYP2C19 enzymes, followed by glucuronidation. It does not undergo acetylation. Slow acetylators of Isoniazid are at a higher risk of peripheral neuropathy, while slow acetylators of Hydralazine and Procainamide are prone to the lupus-like syndrome. Because Phenytoin utilizes an oxidative pathway rather than the N-acetyltransferase system, it is the drug that does not fit the acetylation profile.

Question 49. The therapeutic index of a drug is a measure of:

A. Potency

B. Safety

C. Efficacy

D. All of these

Correct answer: B

The therapeutic index (TI) is a quantitative measure of the safety of a drug. It expresses the margin between the dose that produces the desired therapeutic effect and the dose that causes toxicity. It is commonly defined as:

A high therapeutic index indicates a wide safety margin, meaning the drug can be used relatively safely. In contrast, drugs with a narrow therapeutic index—such as digoxin, lithium, or warfarin—require close monitoring because small dose variations may result in toxicity.

Why the other options are incorrect:

1.

Potency refers to the amount of drug needed to produce a given effect.

2.

Efficacy refers to the maximum effect a drug can produce.

3.

All of these is incorrect because TI does not measure potency or efficacy.

Therefore, the therapeutic index is specifically a measure of drug safety.

Question 50. What is the mechanism of action of zileuton?

A. Cyclooxygenase inhibitor

B. 5-lipoxygenase inhibitor

C. 5-phosphodiesterase inhibitor

D. Prevents mast cell degranulation

Correct answer: B

Zileuton is an oral medication used for the maintenance treatment of asthma. Its specific mechanism of action is the inhibition of the enzyme 5-lipoxygenase (5-LOX). This enzyme is

responsible for the first step in converting arachidonic acid into pro-inflammatory leukotrienes (, , , and). By blocking 5-LOX, Zileuton prevents the formation of leukotrienes, which are potent bronchoconstrictors and mediators of inflammation in the airways. This distinguishes it from Montelukast, which is a leukotriene receptor antagonist. Cyclooxygenase inhibitors (Option A) are NSAIDs like aspirin. 5-phosphodiesterase inhibitors (Option C) include Sildenafil for erectile dysfunction. Mast cell stabilizers (Option D), such as Cromolyn sodium, prevent degranulation but do not target the 5-LOX enzyme. Zileuton is particularly useful in patients with aspirin-exacerbated respiratory disease (AERD). Therefore, 5-lipoxygenase inhibition is the definitive biochemical mechanism for Zileuton.

Question 51. Which of the following antidiabetic drugs is associated with the development of lactic acidosis?

A. Tolbutamide

B. Glipizide

C. Pioglitazone

D. Metformin

Correct answer: D

Metformin, a biguanide, is the first-line medication for Type 2 Diabetes. Its most feared, though rare, side effect is lactic acidosis. This occurs because Metformin inhibits mitochondrial respiration and gluconeogenesis, which can lead to an accumulation of lactate. This risk is significantly increased in patients with renal impairment, as Metformin is renally excreted; if it builds up, the metabolic shift toward lactic acid production becomes dangerous. Tolbutamide (Option A) and Glipizide (Option B) are sulfonylureas, which primarily cause hypoglycemia. Pioglitazone (Option C) is a thiazolidinedione associated with weight gain and fluid retention. Clinicians must monitor renal function (Creatinine/eGFR) closely and hold Metformin during acute illnesses or before radiocontrast procedures to prevent this complication. Because lactic acidosis is the classic metabolic adverse event associated with the biguanide class, Metformin is the correct choice for this diabetic complication.

Question 52. Which of the following is true for DOTS:

A. Treatment under supervision

B. Every patient is given the same treatment

C. Streptomycin is given to all the patients

D. Daily regimen

Correct answer: A

DOTS stands for Directly Observed Treatment, Short-course, which is the internationally recommended strategy for tuberculosis control. The defining feature of DOTS is that a trained health worker or designated community member directly observes the patient swallowing their

medication (Option A). This ensures strict compliance and reduces the risk of multi-drug resistant TB. Every patient is NOT given the same treatment (Option B); regimens are categorized based on whether the patient is new or previously treated. Streptomycin (Option C) is an injectable aminoglycoside reserved for specific cases and is not used for everyone. While the program has evolved to include a daily regimen (Option D) in many regions including India, the historical and most fundamental component that defines the "DOTS" acronym specifically is the supervised nature of the drug administration. Therefore, "Treatment under supervision" is the core principle and the correct true statement regarding DOTS.

FORENSIC MEDICINE

Question 53. In a situation where a woman married for four years dies and leaves a suicide note alleging dowry-related harassment, who is legally authorized to conduct the investigation?

A. Police

B. Village headman

C. Judge

D. Magistrate

Correct answer: D

Under the Indian Code of Criminal Procedure (CrPC Section 176), a Magisterial Inquest is mandatory in specific suspicious circumstances. This includes cases where a woman dies within seven years of marriage, whether it is by suicide (as in this case with the note), homicide, or under any other suspicious circumstances related to dowry. The investigation must be conducted by an Executive or Judicial Magistrate rather than just the police. The Police (Option A) conduct a standard "Police Inquest" (Section 174) for most other unnatural deaths, but dowry-related deaths are protected by the requirement for higher-level judicial oversight. The Village headman (Option B) has no legal authority to conduct such investigations. A Judge (Option C) presides over trials but does not typically conduct initial death investigations (inquests). This law ensures that sensitive dowry-related deaths are scrutinized to prevent the covering up of "dowry deaths" as simple suicides. Thus, the Magistrate is the responsible official.

Question 54. A 30-year-old man with no prior medical history presents with abdominal pain at an airport. An X-ray reveals an abnormal internal finding, and he is found to be carrying laxatives and an enema device. What is the most likely diagnosis?

A. Bezoar syndrome

B. Pica due to anaemia

C. Body packer syndrome

D. Constipation due to fecalith

Correct answer: C

The scenario—a healthy young man at an airport with sudden abdominal pain and an X-ray showing multiple uniform internal foreign bodies—is the classic presentation of Body Packer Syndrome. Body packers ingest wrapped packets of illicit drugs (usually cocaine or heroin) for international transport. The laxatives and enema apparatus are carried to facilitate the expulsion of these packets once they reach their destination. Bezoar syndrome (Option A) involves an accumulation of indigestible material like hair or fiber over time. Pica (Option B) is the ingestion of non-food items like clay or ice. Fecaliths (Option D) are hardened stool causing constipation. In body packing, the primary danger is the rupture of a packet, leading to massive, life-threatening drug toxicity. Treatment involves watchful waiting if the patient is asymptomatic or emergency surgery if packet rupture or intestinal obstruction occurs. Given the "airport" context, Body Packer Syndrome is the definitive forensic and clinical diagnosis.

Question 55. Which provision of the Indian Penal Code (IPC) deals with offenses related to medical negligence?

A. Sec 301

B. Sec 304 B

C. Sec 304 A

D. Sec 302

Correct answer: C

Section 304 A of the IPC specifically deals with causing death by negligence. It states that "whoever causes the death of any person by doing any rash or negligent act not amounting to culpable homicide" shall be punished with imprisonment or a fine. In the medical field, this section is applied to cases of criminal medical negligence where a doctor's gross lack of care or rash action results in the patient's death. Section 302 (Option D) is for punishment for murder. Section 304 B (Option B) specifically pertains to "dowry death." Section 301 (Option A) deals with culpable homicide by causing death of a person other than the person whose death was intended. For a doctor to be convicted under 304 A, the prosecution must prove a "gross" degree of negligence that goes beyond mere error of judgment. This section is the primary legal framework for holding medical professionals accountable for fatal negligence.

Question 56. A middle-aged man presents with a facial lesion and has a known history of acne rosacea. What is the most likely diagnosis of this condition?

A. Rhinophyma

B. Rhinoscleroma

C. Rhinosporidiosis

D. Scleroderma

Correct answer: A

The image depicts rhinophyma, which is a slow-growing, benign enlargement of the nose characterized by sebaceous gland hyperplasia and fibrosis. This condition is the end-stage manifestation of phymatous acne rosacea, which explains the patient's medical history. The nose typically appears bulbous, pitted, and irregularly thickened. Rhinoscleroma (Option B) is a chronic granulomatous disease caused by Klebsiella rhinoscleromatis, presenting with "woody" hard nodules. Rhinosporidiosis (Option C) is a fungal infection (actually an aquatic protist) that causes leafy, strawberry-like vascular polyps. Scleroderma (Option D) causes the skin to become tight, shiny, and thin, which is the opposite of the thickened, pitted appearance of rhinophyma. Rhinophyma is primarily a cosmetic concern but can also lead to significant psychosocial distress and functional nasal obstruction. Treatment usually involves surgical shaving or CO_2 laser resurfacing to restore the nasal contour.

Question 57. A patient involved in a severe road traffic accident is declared dead on arrival at the emergency department. Within minutes, the examining doctor observes marked stiffness of the neck, upper limbs, and lower limbs, with no preceding phase of muscle relaxation. This immediate onset of rigidity is noted during the initial examination. What is the most likely explanation for this finding?

A. Rigor mortis

B. Heat stiffness

C. Cadaveric spasm

D. Cold stiffness

Correct answer: C

Cadaveric spasm, also known as instantaneous rigor, is a rare form of post-mortem stiffening that occurs at the exact moment of death. It bypasses the stage of primary muscular relaxation that normally precedes rigor mortis. It is typically seen in deaths involving intense physical emotion, extreme nervous tension, or violent struggle (such as a severe road accident). In this condition, the muscles that were in a state of contraction at the time of death remain rigid. Rigor mortis (Option A) typically takes 2 to 3 hours to begin and 12 hours to become fully established. Heat stiffness (Option B) occurs due to coagulation of muscle proteins at high temperatures (e.g., in fires). Cold stiffness (Option D) occurs in freezing temperatures due to the solidification of body fats. Because the rigidity was "instantaneous" and "without preceding

relaxation" following a violent event, Cadaveric spasm is the most accurate forensic diagnosis.

Question 58. Which skeletal bone is regarded as the most reliable indicator for sex determination in forensic examination?

A. Skull

B. Pelvis

C. Long bones

D. Sternum

Correct answer: B

In forensic osteology, the Pelvis is the most reliable bone for sex determination, with an accuracy of over 95%. This reliability stems from the anatomical adaptations in the female pelvis for childbearing. Key features used include the subpubic angle (wider in females), the greater sciatic notch (wider in females), and the overall shape of the pelvic inlet (circular/oval in females vs. heart-shaped in males). The Skull (Option A) is the second most reliable structure, with about 80% accuracy, using markers like the mastoid process and supraorbital ridges. Long bones (Option C), such as the femur, and the Sternum (Option D) are much less reliable and are used as secondary evidence when the pelvis or skull is unavailable. Forensic anthropologists prioritize the pelvis because its sexual dimorphism is the most pronounced due to functional biological requirements. Therefore, for the definitive identification of biological sex from skeletal remains, the pelvis remains the gold standard.

Question 59. A person is found dead in a bush with bound hands, cyanosis, petechial hemorrhages, abrasions and bruising around the mouth and lips, and marked facial congestion and edema. Which of the following causes of death is least likely in this case?

A. Asphyxia

B. Suicide

C. Smothering

D. Homicide

Correct answer: B

The scene and autopsy findings provide strong evidence of foul play. The patient’s hands being bound is a clear indicator of restraint. Abrasions and bruises around the mouth and lips are classic signs of smothering (Option C), a form of mechanical asphyxia (Option A). Facial

congestion, edema, and petechial hemorrhages (Tardieu spots) further support death by asphyxiation. Given these circumstances, a Homicide (Option D) is the most probable manner of death. It is physically impossible for a person to bind their own hands behind their back and then smother themselves to death effectively; thus, Suicide is the "least likely" cause (Option B). Smothering in adults is almost always homicidal, involving force to prevent breathing. The forensic indicators of struggle and mechanical obstruction of the airway make suicide an incompatible conclusion. Therefore, suicide is the correct outlier for this criminal forensic scenario.

Question 60. A 10-year-old child presents with tachycardia, hypertension, tongue fasciculations, excessive salivation, dilated pupils, and mild redness at the bite site. The child reports that the biting animal had an upward-curved tail. Which animal is most likely responsible for this bite?

A. Sea urchin

B. Caterpillar

C. Scorpion

D. Shellfish

Correct answer: C

The clinical presentation—tachycardia, hypertension, tongue fasciculation, and hypersalivation—represents the "autonomic storm" characteristic of Scorpion envenomation. Scorpion venom contains neurotoxins that trigger a massive release of catecholamines (sympathetic) and acetylcholine (parasympathetic). The report of an animal with a "curved tail pointing upwards" is pathognomonic for a scorpion. Dilated pupils further indicate sympathetic overactivity. Sea urchins (Option A) cause localized pain and puncture wounds. Caterpillars (Option B) typically cause dermatitis or localized stings. Shellfish poisoning (Option D) usually presents with gastrointestinal symptoms or paralytic neurotoxicity but lacks the upward-pointing tail and the intense autonomic storm. In India, the Red Scorpion (Mesobuthus tamulus) is notoriously dangerous for children, often leading to pulmonary edema if not treated with Prazosin. Therefore, both the specific physical description and the systemic neuro-autonomic symptoms point definitively to a scorpion sting.

Question 61. A child presents with nocturnal perianal itching severe enough to disturb sleep. On examination, eggs of the causative organism are seen in the provided image. Which organism is most likely responsible for these symptoms?

A. Enterobius vermicularis

B. Trichuris trichiura

C. Trichinella spiralis

D. Strongyloides stercoralis

Correct answer: A

The clinical presentation of perianal itching at night is the classic symptom of Enterobius vermicularis (pinworm or threadworm). The itching is caused by the female worm migrating out of the anus at night to lay eggs in the perianal folds. The provided image confirms this, showing the pathognomonic D-shaped egg (planoconvex) with a translucent, double-layered shell. Trichuris trichiura (Option B) eggs are barrel-shaped with bipolar plugs. Trichinella spiralis (Option C) is usually diagnosed by finding larvae in muscle biopsies. Strongyloides stercoralis (Option D) is typically diagnosed by finding larvae in the stool, as eggs hatch within the intestinal mucosa. Pinworm infection is extremely common in children and is diagnosed using the "Scotch tape test" to collect eggs from the perianal area. Given the noctural itching and the characteristic D-shaped eggs, Enterobius is the definitive diagnosis.

Question 62. A 35-year-old man presents with epistaxis, bleeding gums, and multiple ecchymoses. Laboratory investigations show hemoglobin of 8.5 g/dL, a platelet count of 12,000/µL, and a total leukocyte count of 52,000/µL with 83% blasts that are CD33-positive on flow cytometry. What is the most likely diagnosis?

A. Acute myeloid leukemia

B. Acute lymphoblastic leukemia

C. Chronic lymphocytic leukemia/small lymphocytic lymphoma

D. Penicillium

Correct answer: C

The image displays a classic negative stain using India ink, which is the gold standard for identifying Cryptococcus neoformans. The India ink particles are too large to penetrate the fungus's thick, polysaccharide capsule. As a result, the capsule appears as a clear, luminous halo surrounding the round yeast cell against a dark, blackened background. Aspergillus (Option A) is a filamentous mold showing septate hyphae. Candida (Option B) typically appears as budding yeasts with pseudohyphae and does not possess a capsule. Penicillium (Option D) is another mold characterized by its "brush-like" conidiophores. Cryptococcus is a significant opportunistic pathogen in immunocompromised patients, particularly those with HIV, often

causing life-threatening meningitis. The identification of an encapsulated yeast in CSF or culture using India ink is a critical diagnostic step. Therefore, the presence of the clear halo in a negative stain definitively identifies Cryptococcus.

Question 63. A 24-year-old primigravida presents with painful vaginal bleeding during the first trimester. Ultrasonography shows a well-defined gestational sac with central embryonic echoes and detectable fetal cardiac activity, indicating a viable fetus. What is the most likely diagnosis?

A. Inevitable abortion

B. Threatened abortion

C. Incomplete abortion

D. Complete abortion

Correct answer: B

Threatened abortion is defined by vaginal bleeding occurring before 20 weeks of gestation while the cervical os remains closed. The crucial diagnostic finding on ultrasound (USG) in this case is the presence of fetal cardiac motion and a healthy-appearing embryo, which confirms that the pregnancy is still viable despite the bleeding. In an Inevitable abortion (Option A), the cervical os would be dilated, and fetal cardiac activity might be absent or the gestational sac would be low-lying. An Incomplete abortion (Option C) would show retained products of conception on USG with an open cervix. A Complete abortion (Option D) would show an empty uterine cavity on USG. Because the fetus is currently alive and the pregnancy continues, the clinical state is one of "threat" only. Management involves bed rest and observation, as many threatened abortions proceed to a normal full-term delivery. Therefore, Threatened abortion is the most accurate clinical diagnosis.

MICROBIOLOGY

Question 64. A veterinarian presents with several weeks of intermittent fever, myalgia, arthralgia, fatigue, and weight loss, with symptoms showing temporary remission before recurring. Given his occupational exposure, blood is cultured on a specific medium to identify the causative organism. Which pathogen is most likely responsible for this presentation?

A. Burkholderia

B. Brucella

C. Mycobacterium

D. Coxiella

Correct answer: B

The patient’s symptoms describe an undulant fever—intermittent fever that comes and goes over weeks—accompanied by joint and muscle pain. This pattern, combined with the patient's occupation as a veterinarian, is classic for Brucellosis. Brucella is a zoonotic infection transmitted through contact with infected animals (cattle, goats, pigs) or unpasteurized dairy products. Burkholderia (Option A) causes Melioidosis, typically in farmers exposed to soil/water. Mycobacterium (Option C) causes tuberculosis, which presents with a more persistent, non-undulant fever and cough. Coxiella (Option D) causes Q fever, another zoonosis, but it usually presents as an acute pneumonia or hepatitis rather than a chronic undulant fever with joint involvement. Brucella requires a specialized culture medium (e.g., Castaneda’s medium) and a long incubation period. The specific occupational risk for veterinarians and the cyclical nature of the fever make Brucella the most probable diagnosis.

Question 65. A 22-year-old man presents with high-grade fever and a purpuric rash. Cerebrospinal fluid examination shows gram-negative diplococci. What is the most likely cause of his condition?

A. Neisseria meningitidis

B. Pseudomonas aeruginosa

C. Streptococcus pneumoniae

D. E.coli

Correct answer: A

The patient presents with the classic triad of high-grade fever, purpuric rash (petechiae/ecchymoses), and signs of meningitis. The definitive diagnostic clue is the CSF finding of gram-negative diplococci. This is the pathognomonic microscopic appearance of Neisseria meningitidis (the meningococcus). Pseudomonas (Option B) and E. coli (Option D) are Gram-negative rods (bacilli). Streptococcus pneumoniae (Option C) is a major cause of meningitis but would appear as Gram-positive lancet-shaped diplococci. The purpuric rash is highly characteristic of meningococcemia, resulting from vascular damage and disseminated intravascular coagulation (DIC). Neisseria meningitidis is a leading cause of bacterial meningitis in young adults and can cause rapid clinical deterioration. Immediate treatment with intravenous Ceftriaxone and respiratory isolation are required. Given the Gram-stain morphology and the characteristic rash, Neisseria meningitidis is the only possible causative agent.

Question 66. Which of the following pathogens is least likely to be responsible for causing croup?

A. Parainfluenza 1

B. Parainfluenza 2

C. Rhinovirus

D. RSV

Correct answer: C

Croup (Laryngotracheobronchitis) is a common viral respiratory illness in children characterized by a "barking" cough, inspiratory stridor, and hoarseness. The most common and classic causes are the Parainfluenza viruses, with Parainfluenza type 1 (Option A) being the leading cause, followed by Parainfluenza type 2 (Option B) and type 3. Respiratory Syncytial Virus (RSV) (Option D) is also a significant cause of croup, particularly in infants, though it more famously causes bronchiolitis. Rhinovirus (Option C) is the primary cause of the common cold (acute nasopharyngitis); while it can cause upper respiratory infections, it is least likely to cause the specific subglottic swelling and stridor that define croup. Other occasional causes include influenza and adenovirus. In exams, Parainfluenza is the "always" answer for croup etiology, and Rhinovirus is the "always" answer for the common cold. Therefore, Rhinovirus is the correct outlier for this condition.

Question 67. Which of the following options is considered a high-level disinfectant?

A. Isopropyl alcohol

B. Glutaraldehyde

C. Iodophors

D. Benzalkonium chloride

Correct answer: B

Glutaraldehyde (e.g., Cidex) is classified as a high-level disinfectant. High-level disinfectants are capable of killing all microorganisms, including bacterial spores, when used for a sufficient contact time (chemosterilant). It is widely used for heat-sensitive medical equipment, such as endoscopes and bronchoscopes. Isopropyl alcohol (Option A) is an intermediate-level disinfectant; it kills most bacteria and viruses but is not sporicidal. Iodophors (Option C), like Povidone-iodine, are also intermediate-level disinfectants used primarily as skin antiseptics. Benzalkonium chloride (Option D) is a quaternary ammonium compound, which is a low-level disinfectant that is ineffective against many viruses and spores. High-level disinfection is the minimum requirement for "semi-critical" items that come into contact with mucous membranes. Because glutaraldehyde has a broad spectrum of activity including spores, it is the correct choice.

Question 68. An 8-year-old boy presents with continuous, profuse diarrhea of rice-water consistency for the past 20 hours, accompanied by drowsiness, altered responsiveness, sunken eyes, and

decreased skin turgor. Which pathogen is most likely responsible for this clinical presentation?

A. Vibrio cholerae

B. Entamoeba coli

C. Escherichia coli

D. Shigella sonnei

Correct answer: A

The description of "rice-water stools" is the hallmark of Cholera, caused by Vibrio cholerae. The boy’s symptoms—drowsiness, sunken eyes, and poor skin turgor—indicate severe dehydration resulting from massive secretory diarrhea. Vibrio cholerae toxin causes the permanent activation of adenylate cyclase in the intestinal cells, leading to the massive efflux of water and electrolytes into the gut lumen. Entamoeba coli (Option B) is a non-pathogenic commensal. Escherichia coli (Option C), specifically ETEC, can cause watery diarrhea but it is rarely as severe as the rice-water stools of cholera. Shigella sonnei (Option D) typically causes inflammatory diarrhea with blood and mucus (dysentery) rather than profuse watery stools. Immediate management of cholera focuses on aggressive fluid resuscitation using Oral Rehydration Salts (ORS) or intravenous fluids to prevent hypovolemic shock. Therefore, the specific stool consistency and rapid dehydration confirm Vibrio cholerae as the pathogen.

Question 69. During a routine prenatal visit, a 25-year-old pregnant woman voices concern about traveling to a tropical area because of the risk of Zika virus infection. You counsel her on the importance of knowing the vectors involved in transmission. Which mosquito species is the primary vector responsible for spreading the Zika virus?

A. Aedes australis

B. Aedes albopictus

C. Aedes mitchellae (D) Aedes polynesiensis

Correct answer: B

Zika virus is primarily transmitted to humans through the bite of an infected mosquito from the Aedes genus. While Aedes aegypti is the world's most common primary vector, Aedes albopictus (the Asian tiger mosquito) is a significant and widespread secondary vector that is also capable of tr-ansmitting the virus (Option B). Aedes australis (Option A), Aedes mitchellae (Option C), and Aedes polynesiensis (Option D) are not the primary drivers of the global Zika epidemics. Zika infection during pregnancy is of major concern because it is neurotropic and can cause microcephaly and other severe fetal brain anomalies. Education for pregnant travelers focuses on using insect repellent, wearing long sleeves, and avoiding areas with

known outbreaks. In many regions of the world where A. aegypti is absent, A. albopictus serves as the main threat. Therefore, among the choices provided, Aedes albopictus is the recognized vector for Zika virus transmission.

Question 70. A 4-year-old boy presents to the emergency department with bloody diarrhea and abdominal cramps. Stool examination reveals a non-motile bacterium that does not ferment lactose or mannitol. Which organism is most likely responsible for his illness?

A. Shigella dysenteriae

B. E. coli

C. Close shot

D. Distant shot

Correct answer: C

Forensic determination of the firing range is based on artifacts found on the skin. Tattooing (peppering) is caused by unburnt gunpowder particles embedding in the skin and is the hallmark of a Close shot (typically within a range of 1 to 3 feet for handguns). In this case, the absence of blackening (smoke deposit) and singeing of hair suggests the weapon was far enough away that the heat and smoke didn't reach the skin, but close enough for gunpowder particles to leave their mark. A Contact shot (Option A) would show a muzzle mark, "star-shaped" tearing, and internal soot. A Near shot (Option B) would definitely include blackening and singeing. A Distant shot (Option D) would show only the entry hole (abrasion collar) without any tattooing, blackening, or singeing. Therefore, the combination of tattooing without smoke deposits is the classic forensic indicator for a "Close range" gunshot.

Question 71. Based on the stool examination findings, what is the most likely cause of lower abdominal pain and diarrhea in a 6-year-old boy?

A. Giardia lamblia

B. Shigella dysenteriae

C. Entamoeba histolytica

D. Campylobacter jejuni

Correct answer: C

The stool examination reveals a trophozoite containing an ingested red blood cell

(erythrophagocytosis). This is the definitive diagnostic feature that distinguishes the pathogenic Entamoeba histolytica from the non-pathogenic Entamoeba dispar. E. histolytica causes amoebic dysentery, characterized by abdominal pain and bloody diarrhea. Giardia lamblia (Option A) trophozoites have a characteristic "owl’s eye" appearance with flagella and cause watery, fatty stools, not dysentery. Shigella (Option B) and Campylobacter (Option D) are bacteria; while they cause bloody diarrhea, they would not appear as large amoebic trophozoites on a wet mount. The trophozoite of E. histolytica also shows a characteristic cartwheel-like nucleus. Ingested RBCs are pathognomonic for active, invasive amoebiasis. Treatment requires a nitroimidazole like metronidazole followed by a luminal amoebicide. Therefore, based on the microscopic evidence of erythrophagocytosis, Entamoeba histolytica is the most probable cause.

Question 72. What is the underlying cause of the symptoms—fever, fatigue, and abnormal vital signs—in this 55-year-old man, and which causative organism is identified on microscopic examination of his peripheral blood smear?

A. Plasmodium vivax

B. Plasmodium falciparum

C. Plasmodium ovale

D. Plasmodium malariae

Correct answer: B

The peripheral blood smear provides two diagnostic hallmarks of Plasmodium falciparum: 1) multiple delicate ring-form trophozoites within a single red blood cell, and 2) the presence of crescent or banana-shaped gametocytes. These features are unique to P. falciparum and are not seen in the other species. P. vivax (Option A) and P. ovale (Option C) typically show enlarged RBCs with Schüffner's dots and round gametocytes. P. malariae (Option D) shows "band-form" trophozoites. P. falciparum is the most dangerous species because it can infect RBCs of all ages, leading to high parasitemia and complications like cerebral malaria or blackwater fever. The abnormal vital signs in this 55-year-old male suggest potentially severe malaria. Immediate treatment with Artemisinin-based combination therapy (ACT) is essential. Given the pathognomonic crescentic gametocytes, the identification of Plasmodium falciparum is definitive.

Question 73. What is the most likely diagnosis in a 54-year-old farmer from Ohio who presents with a chronic cough, a chest X-ray showing a mass lesion with hilar lymphadenopathy, and biopsy findings (lactophenol cotton blue stain) demonstrating

multiple yeast forms within macrophages?

A. Histoplasmosis

B. Coccidioidomycosis

C. Cryptococcus

D. Blastomycosis

Correct answer: A

The diagnosis is supported by both geographic exposure and microscopic findings. Ohio lies in the Ohio–Mississippi River Valley, an endemic area for histoplasmosis, caused by Histoplasma capsulatum. The characteristic histopathological feature is the presence of small yeast forms clustered within macrophages, reflecting the organism's intracellular nature.

Other options are less likely: coccidioidomycosis occurs in the Southwestern United States and shows large spherules with endospores; cryptococcosis demonstrates encapsulated yeasts and has no specific association with Ohio farmers; blastomycosis shows large yeasts with broad-based budding. Exposure to soil contaminated with bird or bat droppings is a common risk factor for histoplasmosis. Clinically, it may mimic lung cancer or tuberculosis by presenting as a lung mass with hilar lymphadenopathy. Hence, the combination of Ohio exposure and yeasts within macrophages is pathognomonic for histoplasmosis.

Question 74. Which of the following media is used as an enrichment medium for culturing a sputum sample from a 32-year-old man with a three-day history of fever and productive cough producing small amounts of clear sputum?

A. Alkaline peptone water

B. Monsour's taurocholate Tellurite peptone water

C. Selenite F broth

D. All of the above

Correct answer: D

The question asks for enrichment media, which are liquid media used to selectively favor the growth of a particular pathogen while inhibiting others. While the clinical scenario describes a respiratory infection, the options provided are all classic enrichment media used in microbiology. Alkaline Peptone Water (APW) (Option A) and Monsour's TTPW (Option B) are specifically used to enrich Vibrio cholerae from stool samples. Selenite F broth (Option C) is used to enrich Salmonella and Shigella species. Although these are not standard sputum media (which would typically include Blood Agar or Chocolate Agar), they all technically fit the laboratory classification of "enrichment media." In the context of a multiple-choice question where all three listed options belong to the same functional category (enrichment media), "All

of the above" is the appropriate answer regarding their classification, regardless of their specific utility for a respiratory sputum sample.

Question 75. Molluscum contagiosum is caused by:

A. Bacteria

B. Fungus

C. Protozoa

D. Virus

Correct answer: D

Molluscum contagiosum is a common, benign skin infection caused by the Molluscum contagiosum virus (MCV), which is a member of the Poxviridae family (a large, enveloped DNA virus). It is characterized by small, firm, skin-colored, dome-shaped papules with a central dimple or umbilication. The infection is spread through direct skin-to-skin contact, including sexual contact, or via contaminated fomites. It is neither a bacteria (Option A), fungus (Option B), nor protozoa (Option C). Histologically, it is noted for the presence of "Henderson-Paterson bodies" (large cytoplasmic inclusion bodies) within the keratinocytes. While the condition is usually self-limiting in immunocompetent individuals, it can be extensive and persistent in patients with HIV or other forms of immunosuppression. Recognition of its viral etiology is important for counseling patients on transmission prevention. Therefore, Molluscum contagiosum is definitively classified as a viral skin disorder.

Question 76. Stain used in staining fungal elements:

A. Acid fast stain

B. Gram stain

C. Methenamine silver

D. All of the above

Correct answer: C

Gomori Methenamine Silver (GMS) is a specialized histological stain used specifically to visualize fungal elements. It stains fungal cell walls (containing chitin) a deep black color against a light green background, providing excellent contrast. This makes it ideal for identifying fungi like Pneumocystis jirovecii, Histoplasma, or Aspergillus in tissue sections. Acid-fast stain (Option A) is primarily used for Mycobacteria (e.g., TB). Gram stain (Option B) is used for bacteria; while some fungi like Candida are Gram-positive, it is not the preferred or specific stain for broad fungal identification. Periodic Acid-Schiff (PAS) is another common fungal stain. Because GMS is the most specific and widely used stain among the choices for identifying the complex structures of various fungal species in clinical samples, it is the correct answer.

Question 77. What is the most likely diagnosis in a 36-year-

old farmer presenting with a one-week history of cough and chest pain, along with persistent fatigue for the past month and abnormal findings on chest X-ray?

A. Hydatid cyst

B. Anthrax

C. Silicosis

D. Byssinosis

Correct answer: A

The chest X-ray displays a classic Hydatid Cyst, caused by the larval stage of the tapeworm Echinococcus granulosus. A characteristic radiological sign seen in pulmonary hydatid disease is the "Water-lily sign" (Camelot sign), which occurs when the endocyst ruptures and its membranes float on the surface of the remaining fluid. Anthrax (Option B) usually presents as a severe pneumonia with widened mediastinum. Silicosis (Option C) shows small, nodular opacities in the upper lobes with hilar "eggshell" calcification. Byssinosis (Option D) is an occupational lung disease from cotton dust and typically does not show large discrete cysts. Hydatid cysts are common in farmers and people in contact with dogs and sheep (the definitive and intermediate hosts). Given the patient's occupation and the pathognomonic radiological appearance of a large, well-defined pulmonary cyst, Hydatid cyst is the most likely diagnosis.

Question 78. Zika virus is transmitted by:

A. Aedes aegypti

B. Culex

C. Anopheles

D. Phlebotomus papatasi

Correct answer: A

The Zika virus is primarily transmitted to humans through the bite of an infected mosquito of the Aedes genus, with Aedes aegypti being the most significant primary vector globally. This mosquito is also responsible for transmitting dengue, chikungunya, and yellow fever viruses. Culex mosquitoes (Option B) are vectors for West Nile virus and Japanese Encephalitis. Anopheles mosquitoes (Option C) are the primary vectors for malaria. Phlebotomus papatasi (Option D) is a sandfly responsible for transmitting Leishmaniasis. Zika virus transmission is of high concern due to its link with neonatal microcephaly and Guillain-Barré syndrome. Control of Aedes aegypti, which breeds in stagnant water around homes and bites primarily during the day, is the mainstay of Zika prevention programs. Therefore, Aedes aegypti is the definitive vector responsible for the transmission of the Zika virus.

Question 79. Causative agent for Yaws is:

A. T. Pertunae

B. T. Pallidum

C. T. Caraetum

D. Haemophilus

Correct answer: A

Treponema pallidum subspecies pertenue is the causative agent of Yaws, a chronic infectious tropical disease affecting skin, bone, and cartilage. Yaws primarily affects children in tropical regions of Africa, Asia, and Latin America. It is transmitted by direct contact with infected skin lesions, not sexually. The disease presents in stages — primary stage shows a "mother yaw" (papilloma at inoculation site), secondary stage shows disseminated skin lesions, and tertiary stage involves destructive bone and tissue lesions called "gangosa" and "goundou".

Why other options are wrong:

(B)

T. Pallidum is incorrect because Treponema pallidum subspecies pallidum is the causative agent of Syphilis, a sexually transmitted infection. Though closely related to T. pertenue, it causes an entirely different disease with different transmission routes and clinical manifestations including chancre, rash, and systemic involvement.

(C)

T. Carateum is incorrect because Treponema carateum is the causative agent of Pinta, a tropical skin infection endemic to Central and South America causing only skin depigmentation without bone or systemic involvement — the mildest of the treponematoses.

(D)

Haemophilus is incorrect because Haemophilus is a completely different genus of bacteria responsible for conditions like chancroid (H. ducreyi) and respiratory infections (H. influenzae). It has absolutely no association with Yaws.

PSM

Question 80. At which stage of clinical trials is a newly developed drug usually approved for marketing and made available to the public?

A. Phase 1

B. Phase II

C. Phase III

D. Phase IV

Correct answer: C

Phase III is the stage at which a newly developed drug is evaluated for regulatory approval and subsequently marketed and made available to the general public. Phase III trials are large-scale randomized controlled trials (RCTs) conducted on thousands of patients (typically 1,000–3,000) across multiple centers. These trials compare the new drug against existing standard

treatments or placebo, establishing definitive evidence of efficacy, safety, optimal dosage, and side effect profile. Upon successful completion of Phase III, the pharmaceutical company submits a New Drug Application (NDA) to regulatory authorities like the FDA or CDSCO, after which the drug receives marketing approval.

Why other options are wrong:

(A)

Phase I is incorrect because Phase I trials are conducted on a small group of healthy volunteers (20–80 people) primarily to assess safety, tolerability, pharmacokinetics, and pharmacodynamics. No efficacy data is established here and marketing is nowhere near consideration at this stage.

(B)

Phase II is incorrect because Phase II trials involve moderate number of patients (100–300) with the target disease, primarily evaluating therapeutic efficacy, optimal dosing, and short-term side effects. While promising results emerge here, this data is insufficient for regulatory marketing approval.

(D)

Phase IV is incorrect because Phase IV trials occur after marketing approval, representing post-marketing surveillance. They monitor long-term safety, rare adverse effects, and new indications in the general population — the drug is already available to the public at this point.

Question 81. In a flowchart illustrating the natural history of a disease, what is the term used for the time interval between points A and B?

A. Lead time

B. Screening time

C. Generation time

D. Lag time

Correct answer: B

The flowchart shows: Disease Onset → A (First possible point of diagnosis) → B (Final critical point of diagnosis) → C (Usual time of diagnosis) → Outcome The interval between Point A and Point B represents Screening Time.

Screening time is defined as the time interval between the first possible point of diagnosis (A) — when disease could earliest be detected through screening methods — and the final critical point of diagnosis (B) — beyond which treatment becomes less effective or irreversible damage occurs. This interval essentially represents the window period during which screening is beneficial and early intervention can meaningfully alter disease outcome.

Clinical Significance: Screening time defines the optimal window for screening programs to be effective. A longer screening time means a disease is more suitable for mass screening

programs as there is a wider window of opportunity for early detection and intervention.

Why other options are wrong:

(A)

Lead time is incorrect because lead time refers to the interval between Point A and Point C — the difference between earliest possible diagnosis through screening and the usual time of clinical diagnosis. It represents the "head start" gained by screening over conventional diagnosis.

(C)

Generation time is incorrect because generation time refers to the time between receipt of infection and point of maximum infectivity in communicable disease epidemiology — completely unrelated to diagnostic intervals shown in this flowchart.

(D)

Lag time is incorrect because lag time refers to the delay between exposure to a risk factor and onset of disease, representing a pre-onset interval — not the interval between two diagnostic points as depicted here.

Question 82. In rural areas, one ASHA worker is assigned to serve a population of how many individuals?

A. 500

B. 1200

C. 2500

D. 1000

Correct answer: D

Under the National Health Mission (NHM) of India, the ASHA (Accredited Social Health Activist) is a trained female community health volunteer. The standard norm is to have one ASHA worker per 1,000 population in rural areas. In tribal, hilly, or desert areas with sparse populations, this norm may be relaxed to one ASHA per habitation or a smaller population group. The ASHA acts as a bridge between the community and the public health system, promoting institutional deliveries, immunization, and basic first aid. Other rural health norms include one Sub-centre per 5,000 people (3,000 in difficult areas) and one Primary Health Centre (PHC) per 30,000 people (20,000 in difficult areas). Options A, B, and C do not represent the standard population allocation for an ASHA. Because 1,000 is the national standard for her coverage area, it is the correct answer for public health management questions.

Question 83. What is the formula of crude birth rate?

A. (Total number of births / Estimated midyear Population) 1,000

B. (Number of live births / Estimated mid year women Population) 1,000

C. (Number of live births / Estimated midyear Population) 1,000

D. (Number of live births / Estimated midyear Population) 10,000

Correct answer: C

The Crude Birth Rate (CBR) is a fundamental demographic measure used to quantify the fertility of a population. It is defined as the number of live births occurring in a given year per 1,000 of the estimated midyear population. Option A is incorrect because it uses "total number of births," which might include stillbirths; only live births are counted in CBR. Option B describes the General Fertility Rate, which restricts the denominator to the women of reproductive age. Option D is incorrect due to the use of 10,000 instead of the standard 1,000 multiplier. The midyear population is used as an estimate of the average population exposed to the risk of birth throughout the year. CBR is considered "crude" because it does not account for the age or sex structure of the population, but it is a vital starting point for evaluating demographic trends and population growth.

Question 84. After three months, blood pressure readings are compared between two groups of hypertensive patients: one group of 100 patients received medical treatment, while the other group of 100 patients was advised lifestyle modifications. Which statistical test should be used to assess the significance of the difference in blood pressure between these two groups?

A. ANOVA

B. Un-paired T test

C. Chi-square test

D. McNemar's test

Correct answer: B

In this scenario, researchers are comparing the mean values of a continuous variable (blood pressure) between two independent groups (medical advice group vs. lifestyle change group). The un-paired t-test (also known as the independent samples t-test) is the correct statistical method for this comparison. ANOVA (Option A) is used when comparing the means of three or more groups. The Chi-square test (Option C) is used for categorical data, such as comparing proportions of patients who reached a goal rather than the actual blood pressure values. McNemar's test (Option D) is used for paired categorical data, such as comparing results in the same group before and after an intervention. Because the study involves two distinct groups of 100 patients each and evaluates a quantitative variable, the un-paired t-test is the gold

standard for determining if the observed difference between the interventions is statistically significant.

Question 85. Which organization plays a role in intersectoral coordination under the Integrated Child Development Services (ICDS) program?

A. NHM

B. NACO

C. NLEP

D. UNDP

Correct answer: A

The Integrated Child Development Services (ICDS) scheme requires extensive intersectoral coordination between the Ministry of Women and Child Development and various health initiatives to provide holistic care for children and mothers. The National Health Mission (NHM) is the primary organization that collaborates with ICDS to provide essential health services, including immunization, health check-ups, and referral services at the village level. NACO (Option B) focuses on AIDS control. NLEP (Option C) is dedicated to leprosy elimination. UNDP (Option D) is an international developmental agency and is not a core part of the domestic intersectoral coordination framework for ICDS. Coordination between NHM and ICDS occurs primarily through the collaboration of Anganwadi Workers and ASHAs. This partnership ensures that nutrition, health education, and medical care are integrated to reduce infant mortality and improve childhood development outcomes. Therefore, NHM is the correct coordinating organization for health-related ICDS goals.

Question 86. Which organization should an official refer to for complete and regularly updated demographic data that includes records of vital events?

A. AIIMS

B. National Sample Survey

C. Sample Registration System

D. Central Bureau of Health

Correct answer: B

The Sample Registration System (SRS) is the organization an official should refer to for complete and regularly updated demographic data including records of vital events. SRS provides continuous and reliable data on vital events through its dual record system combining

continuous enumeration and periodic retrospective surveys.

Why other options are wrong:

(A)

AIIMS is incorrect because AIIMS is purely a medical research and teaching institution with no mandate for maintaining national demographic databases or vital event registration systems.

(B)

National Sample Survey is incorrect because NSSO conducts broader socioeconomic surveys covering morbidity, family planning, health expenditure etc. It does not specifically focus on continuously updated demographic data and vital event registration.

(D)

Central Bureau of Health is incorrect because CBHI primarily compiles and publishes health statistics sourced from other agencies rather than independently maintaining continuous vital event registration systems at national level.

Question 87. The full form of the Urban HEART programme is:

A. Urban health equity assessment and response tool

B. Urban health evaluation assessment and response tool

C. Urban health equity assessment and response technique

D. Urban health evaluation assessment and response technique

Correct answer: A

Urban HEART stands for the Urban Health Equity Assessment and Response Tool. Developed by the World Health Organization, it is a structured framework designed to help local policymakers and communities identify and address health inequities in urban environments. Options B, C, and D are incorrect as they substitute "evaluation" for "equity" or "technique" for "tool" . The tool uses various health and social indicators to map disparities between different urban neighborhoods, allowing for targeted interventions to improve the well-being of vulnerable populations. By focusing on "equity," the program ensures that health resources are distributed according to need, aiming to close the gap in health outcomes caused by socioeconomic factors. Implementing Urban HEART allows city officials to visualize complex data and make evidence-based decisions to create healthier, more inclusive urban spaces. Therefore, the name reflects its specific focus on identifying and responding to urban health gaps.

Question 88. The relative risks associated with Vaccine 1 and Vaccine 2 are 0.5 and 2.0, respectively. Which of

the following graphs correctly represents these relative risks?

A. 1 and 3

B. 2 and 3

C. 1 and 2

D. None of the above

Correct answer: C

Relative Risk (RR) is a measure of the association between an exposure (vaccination) and an outcome. An RR of 1.0 indicates no difference in risk. If RR < 1, the exposure is protective; if RR > 1, the exposure increases risk. Vaccine 1 has an RR of 0.5, meaning it is protective. On a standard forest plot or relative risk graph, this would be represented by a bar or point below the null line (1.0), as seen in Graph 1. Vaccine 2 has an RR of 2.0, meaning it is associated with a doubling of risk (perhaps an adverse event study). This would be represented by a bar or point above the null line (1.0), as seen in Graph 2. Graph 3 (Option A and B) typically represents a different statistical distribution or an incorrect scale. Therefore, the pairing of Graph 1 for Vaccine 1 and Graph 2 for Vaccine 2 accurately visualizes these relative risk values.

Question 89. Which of the following regions is considered free from rabies and therefore does not require priority inclusion in immediate rabies vaccination programs?

A. Sikkim

B. Kerala

C. Lakshadweep

D. Jammu and Kashmir

Correct answer: C

Rabies is endemic throughout most of India, but specific island territories have successfully maintained a rabies-free status. The Andaman and Nicobar Islands and Lakshadweep (Option C) are recognized as rabies-free areas in India. Consequently, these regions are lower priorities for mass post-exposure vaccination campaigns compared to the mainland. Sikkim (Option A), Kerala (Option B), and Jammu and Kashmir (Option D) are all located on the mainland where rabies remains a significant public health threat due to large stray dog populations. Maintaining rabies-free status in island territories requires strict animal quarantine and surveillance measures. For public health planning, recognizing these disease-free zones is essential for appropriate resource allocation and tailoring prevention strategies. While rabies-free, these areas still focus on surveillance to prevent the accidental introduction of the virus. Therefore, Lakshadweep stands out as the correct rabies-free territory among the choices provided.

Question 90. NITI Aayog has replaced the:

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small voided volumes. He experiences dizziness
and
hypotension
while
taking
prazosin.
Which α-blocker would be a more appropriate
alternative in this case?

A. Alfuzosin

B. Terazosin

C. Tamsulosin

D. Doxazosin

Correct answer: C

The patient is suffering from Benign Prostatic Hyperplasia (BPH) and experiencing orthostatic hypotension and dizziness, which are common side effects of non-subtype selective alpha-1 blockers like prazosin. Prazosin blocks alpha-1 receptors on both vascular smooth muscle and the prostatic urethra, leading to systemic vasodilation. Tamsulosin is a more suitable option because it is a selective alpha-1A receptor antagonist. The alpha-1A subtype is predominantly found in the prostate and bladder neck, while the alpha-1B subtype is found in the blood vessels. By selectively targeting the prostate, Tamsulosin relaxes the smooth muscle to improve urine flow with significantly less impact on systemic blood pressure compared to Prazosin, Terazosin (Option B), or Doxazosin (Option D). Alfuzosin (Option A) is also used for BPH but Tamsulosin remains the classic choice for minimizing "first-dose" syncope and dizziness in elderly patients. This uro-selectivity makes Tamsulosin the gold standard for medical management of BPH symptoms while maintaining cardiovascular stability.

Question 91. The number of live births occurring in a year
per 1,000 women of reproductive age refers to
which demographic indicator?

A. Gross reproduction rate

B. Total fertility rate

C. Net reproduction rate

D. General fertility rate

Correct answer: D

The General Fertility Rate (GFR) is a refined measure of fertility that relates the number of live births in a year to the population of women who are biologically capable of bearing children

(typically ages 15-44 or 15-49). It is expressed as live births per 1,000 women in the reproductive age group. Gross Reproduction Rate (Option A) measures the number of daughters a woman would have. Total Fertility Rate (Option B) represents the average number of children a woman would have if she completed her reproductive years at current rates. Net Reproduction Rate (Option C) adjusts for maternal mortality. GFR is a more accurate indicator of fertility than the Crude Birth Rate because it uses the specific sub-population at risk of childbearing as the denominator. This makes it a useful tool for comparing fertility levels across different regions or time periods with varying demographic structures.

Question 92. Which
sewage
disposal
method
involves
purification by filtering wastewater through
layers of soil before it reaches the groundwater?

A. Activated sludge process
B. Soakage pit
C. Oxidation pond
D. All of the above

Correct answer: B

A soakage pit (or leach pit) is a decentralized wastewater treatment system designed to dispose of pre-settled effluent from a septic tank. It consists of a covered, porous-walled chamber that allows water to slowly soak into the surrounding ground. As the sewage moves through the soil layers, it is purified by biological and physical filtration processes before it eventually reaches groundwater. The Activated sludge process (Option A) is a centralized, mechanical treatment using aeration and bacteria in tanks. An oxidation pond (Option C) is a large, shallow basin where sewage is treated through the interaction of sunlight, bacteria, and algae. Unlike the other options, the soakage pit relies primarily on the natural filtration capacity of the soil. Therefore, for the specific mechanism of purification via soil filtration, the soakage pit is the correct technological choice in community health assessments.

Question 93. Which of the following statements accurately
describes Ayushman Bharat in this context?

A. Umbrella scheme includes Pradhan Mantri
Jan Aarogya Yojna and sub centres
B. Benefit to 40% of poor and vulnerable
population
C. Covers only tertiary health care centers

D. Cashless,
paperless
service
by
only
government hospitals

Correct answer: B

Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana (PM-JAY) is a flagship health insurance scheme designed to provide financial protection to the bottom 40% of India's poor and vulnerable population. It offers an annual health cover of `
5 lakhs per family for secondary and tertiary care hospitalization. Option A is partially correct but the scheme actually includes "Health and Wellness Centres" rather than just standard sub-centres. Option C is incorrect as it covers both secondary and tertiary care. Option D is incorrect because the cashless, paperless service is provided at both government and empanelled private hospitals. The scheme is a major step toward Universal Health Coverage in India, aiming to reduce out-of-pocket expenditures that often lead to poverty. Therefore, the defining demographic reach of the scheme is the protection of the most vulnerable 40% of the citizenry.

Question 94. What is the statistical term for the value that occurs most frequently in a dataset?

A. Median
B. Mode
C. Standard deviation
D. Mean

Correct answer: B

The mode is the measure of central tendency defined as the value that occurs with the highest frequency in a given data set. In a clinical setting, if "headache" is the most common symptom recorded among 100 patients, it represents the modal symptom. The median (Option A) is the middle value when the data is arranged in order. Standard deviation (Option C) is a measure of the dispersion or spread of data around the mean. The mean (Option D) is the arithmetic average of all values. The mode is particularly useful for categorical data or when identifying the "most typical" case in a distribution. Unlike the mean, the mode is not affected by extreme outliers, making it a robust measure for certain types of health statistics. Therefore, for the specific purpose of identifying the most frequent observation in patient records, the mode is the correct statistical term.

Question 95. In which color-coded disposal bag should cytotoxic drugs be discarded?

A. Yellow bag

B. Red bag

C. Blue bag

D. Black bag

Correct answer: A

According to the latest Biomedical Waste Management guidelines, cytotoxic drugs and contaminated items (such as vials, ampoules, and expired medicines) must be disposed of in a yellow bag or container. These items are specifically labeled as "cytotoxic" and are destined for high-temperature incineration at a common waste treatment facility. Red bags (Option B) are used for recyclable contaminated waste like plastics. Blue bags or cardboard boxes (Option C) are used for broken glassware and metallic implants. Black bags (Option D) were historically used for general municipal waste but are no longer the standard for biomedical segregation in many protocols. Cytotoxic drugs are highly hazardous and require specialized destruction to prevent environmental contamination and health risks to waste handlers. Therefore, the yellow bag is the designated disposal route for chemotherapy-related medications in an oncology unit.

ENT

Question 96. Based on these findings, what is the most probable diagnosis?

A. Lingual tonsils

B. Quinsy

C. Tonsillar hypertrophy

D. Adenoid hypertrophy

Correct answer: D

The clinical presentation—mouth breathing, an elongated expressionless face ("adenoid facies"), a high-arched palate, and crowded teeth—is pathognomonic for chronic nasal obstruction due to adenoid hypertrophy . The adenoids are lymphoid tissues in the nasopharynx; when enlarged, they block the posterior choanae, forcing the child to breathe through the mouth. This chronic mouth breathing leads to the characteristic craniofacial changes described. Lingual tonsils (Option A) are at the base of the tongue and do not cause nasal obstruction. Quinsy (Option B) is a peritonsillar abscess causing acute throat pain. Tonsillar hypertrophy (Option C) involves enlarged palatine tonsils, which can cause snoring and dysphagia but are less typically associated with the "adenoid facies" skeletal changes . The provided X-ray likely shows a soft tissue mass in the nasopharynx narrowing the airway. Consequently, adenoid hypertrophy is the most accurate diagnosis for this 5-year-old child.

(B) Decreased activity of tissue inhibitors of metalloproteinases is seen

(C) Destruction of Bowman's layer occurs when
the pterygium invades the cornea
(D) Elastotic degeneration and hyalinization
of the connective tissue of the conjunctiva
occur.
AAns

(C) Destruction of Bowman's layer occurs when the pterygium invades the cornea
The image shows pterygium — a fibrovascular conjunctival growth invading the cornea, labeled "am" (advancing margin) in image (a), with histology in image (b) showing "bm" (Bowman's membrane) and "am" (advancing margin).
The question asks which statement is NOT accurate. Option C is incorrect because pterygium does NOT destroy Bowman's layer during invasion — rather it grows underneath Bowman's layer, lifting and displacing it rather than destroying it. Bowman's layer remains intact as pterygium advances beneath it.
Why other options are wrong (i.e., they ARE accurate statements):
(A)
is accurate — abnormal p53 activity due to UV-induced mutations is indeed documented in pterygium tissue, contributing to its proliferative behavior.
(B)
is accurate — decreased tissue inhibitors of metalloproteinases (TIMPs) are seen in pterygium, allowing matrix metalloproteinases to facilitate tissue remodeling and invasion.
(D)
is accurate — elastotic degeneration and hyalinization of subconjunctival connective tissue is the classic histopathological hallmark of pterygium seen on microscopy.

Question 97. Based on the given clinical details, what is the most likely diagnosis?

A. Vocal cord paralysis
B. Subglottic stenosis
C. Laryngeal papilloma
D. Laryngomalacia

Correct answer: D

Laryngomalacia is the most common cause of inspiratory stridor in infants. It is a congenital condition in which the supraglottic laryngeal structures are soft and floppy, causing them to collapse inward during inspiration and partially obstruct the airway.
The characteristic clinical features include loud, high-pitched inspiratory stridor that typically worsens when the infant is crying, feeding, or lying supine and improves when the infant is

prone. On laryngoscopic examination, classical findings include an omega-shaped epiglottis, shortened aryepiglottic folds, and redundant arytenoid mucosa.

Why the other options are incorrect:

1.

Vocal cord paralysis usually presents with a weak or hoarse cry and may be associated with aspiration.

2.

Subglottic stenosis causes biphasic stridor and is often linked to a history of prolonged intubation.

3.

Laryngeal papilloma presents with progressive hoarseness due to wart-like lesions on the vocal cords.

4.

Most cases of laryngomalacia are benign and self-limiting, resolving spontaneously by 18–24 months as the laryngeal cartilages mature.

Question 98. What is the name of the sign demonstrated in the contrast-enhanced CT scan of the head shown below?

A. Aquino Sign

B. Holman Miller sign

C. Teardrop sign

D. Hanging drop sign

Correct answer: B

The Holman Miller sign (or antral sign) is a classic radiological feature observed in juvenile nasopharyngeal angiofibroma (JNA). It refers to the anterior bowing or displacement of the posterior wall of the maxillary sinus by the tumor mass, which originates in the sphenopalatine foramen. This sign is highly characteristic of JNA, which typically affects adolescent males and presents with recurrent, severe epistaxis and nasal obstruction. Aquino Sign (Option A) involves the blanching of a tumor upon carotid compression. Teardrop sign (Option C) and Hanging drop sign (Option D) are associated with orbital blowout fractures where orbital contents herniate into the maxillary sinus. In the context of a 14-year-old male with severe spontaneous nasal bleeding, the Holman Miller sign on CT provides definitive evidence of the expansive nature of a nasopharyngeal angiofibroma.

Question 99. Which of the following statements correctly describes

Brainstem

Evoked

Response

Audiometry (BERA)?

A. It can be used for screening for hearing loss

B. It is an invasive procedure

C. It can be used for assessing sensorineural hearing loss

D. It is a subjective investigation

Correct answer: A

BERA (Brainstem Evoked Response Audiometry) is an objective, non-invasive electrophysiological test that measures electrical activity generated in the cochlea and auditory brainstem pathways in response to click stimuli. It is widely used as a screening tool for hearing loss, particularly in neonates, infants, and uncooperative patients who cannot participate in conventional audiometry.

Why other options are wrong:

(B)

It is an invasive procedure is incorrect because BERA is completely non-invasive. It involves only placing surface electrodes on the scalp and earlobes — no surgical intervention or penetration of any body structure is required.

(C)

It can be used for assessing sensorineural hearing loss is incorrect as a standalone best answer because while BERA can detect sensorineural hearing loss, its primary and most characteristic use is screening — making option A more specific and complete as the correct answer.

(D)

It is a subjective investigation is incorrect because BERA is a purely objective test — it does not require any behavioral response from the patient. Results are based entirely on recorded electrical waveforms, making it ideal for testing infants and unconscious patients.

Question 100. A 70-year-old man presents with cervical lymphadenopathy, a dull tympanic membrane, hearing loss, and tinnitus in the left ear. Tympanometry shows a type B curve. What is the most likely diagnosis?

A. Chronic suppurative otitis media

B. Glomus tumor

C. Nasopharyngeal carcinoma

D. Sensorineural hearing loss

Correct answer: C

In an elderly patient, the triad of a unilateral serous otitis media (evidenced by the dull

tympanic membrane and type B tympanogram), unilateral hearing loss/tinnitus, and neck nodes (cervical lymphadenopathy) is highly suggestive of nasopharyngeal carcinoma (NPC). The tumor originates in the nasopharynx (often the Rosenmüller fossa) and obstructs the eustachian tube opening, leading to fluid accumulation in the middle ear. Chronic suppurative otitis media (Option A) would show a perforated eardrum and discharge. A Glomus tumor (Option B) classically causes pulsatile tinnitus and a "red reflex" behind the drum. Sensorineural hearing loss (Option D) would not explain the fluid-related type B tympanogram curve . Any elderly adult presenting with new-onset unilateral middle ear effusion must undergo a nasopharyngoscopy to rule out NPC. Therefore, given the specific combination of otological symptoms and nodal involvement, nasopharyngeal carcinoma is the prioritized diagnosis.

Question 101. Among the following options, what is the cause of sensorineural hearing loss?

A. Labyrinthitis

B. Otosclerosis

C. Ear wax

D. CSOM (Chronic Suppurative Otitis Media)

Correct answer: A

Hearing loss is divided into conductive and sensorineural types. Sensorineural hearing loss (SNHL) results from damage to the inner ear (cochlea) or the auditory nerve. Labyrinthitis (Option A) is an inflammation of the inner ear that affects both the vestibular and auditory systems, typically resulting in vertigo and SNHL. Otosclerosis (Option B) is a bone remodeling disorder of the middle ear that primarily causes conductive hearing loss (CHL) by fixing the stapes footplate, although it can have a sensorineural component in later stages. Ear wax (Option C) and Chronic Suppurative Otitis Media (Option D) are classic causes of conductive hearing loss because they physically obstruct the sound transmission pathway through the external or middle ear. Therefore, labyrinthitis is the specific condition listed that primarily impacts the neural sensory structures of the inner ear.

Examination Paper December 2020 Question

Question 102. Which of the following clinical features is not commonly associated with Ménière’s disease?

A. Tinnitus

B. Vertigo

C. Fullness of ear

D. Ear Pain

Correct answer: D

Meniere's disease is an inner ear disorder characterized by endolymphatic hydrops. The classic

clinical tetrad includes episodic vertigo (Option B), fluctuating sensorineural hearing loss, tinnitus (Option A), and a sense of fullness in the affected ear (Option C) . Ear pain (otalgia) (Option D) is not a feature of Meniere's disease; its presence should prompt an investigation into other conditions such as otitis media, external ear infections, or referred pain from the throat. Tinnitus in Meniere's is typically low-pitched and described as a "roaring" sound. The vertigo is usually spontaneous and lasts for several hours. Because Meniere's involves a build-up of fluid pressure within the vestibular and cochlear compartments rather than an infectious or inflammatory process in the pain-sensitive outer structures, it remains a painless condition. Therefore, ear pain is the correct "not" answer for this diagnosis.

Question 103. What is the most likely diagnosis in a 35-year-old man who presents with scant, foul-smelling blood-stained discharge, associated hearing loss, and a persistent fever that does not subside?

A. Meningitis

B. Lateral sinus thrombophlebitis

C. Brain Abscess

D. Extradural Abscess

Correct answer: B

The symptoms of chronic ear discharge (likely due to cholesteatoma in an atticoantral type of CSOM) followed by a high, swinging "picket-fence" fever are characteristic of lateral sinus thrombophlebitis. This is a serious intracranial complication of ear infection where the infection spreads to the sigmoid or transverse dural sinuses. Hearing loss is common in CSOM. Meningitis (Option A) would present with severe neck stiffness and photophobia. A brain abscess (Option C) typically presents with signs of raised intracranial pressure and focal neurological deficits. An extradural abscess (Option D) is often asymptomatic or presents with a persistent deep-seated headache. The "foul-smelling blood-mixed discharge" indicates local tissue destruction. The characteristic "swinging" nature of the fever, caused by the periodic release of bacteria into the bloodstream from the thrombus, is the hallmark of lateral sinus involvement. Urgent surgical intervention and IV antibiotics are necessary.

Question 104. Rhinolalia clausa (closed nasality) is not seen in which of the following conditions?

A. Nasopharyngeal polyp

B. Nasopharyngeal carcinoma

C. Cleft palate

D. Nasopharyngeal angiofibroma

Correct answer: C

Rhinolalia clausa (closed nasality) occurs when there is an obstruction in the nose or

nasopharynx that prevents the normal nasal resonance of certain consonants (m, n, ng). Conditions that physically block the nasopharynx, such as a nasopharyngeal polyp (Option A), nasopharyngeal carcinoma (Option B), or nasopharyngeal angiofibroma (Option D), will all cause this "closed" speech sound. In contrast, a cleft palate (Option C) causes rhinolalia aperta (open nasality). In this condition, the failure of the soft palate to close the nasopharynx during speech allows excessive air to escape through the nose, leading to a "hypernasal" voice. Therefore, while obstructive lesions lead to "m" sounding like "b," a cleft palate leads to the inability to build up intraoral pressure for consonants. Consequently, cleft palate is the correct answer as it is associated with open rather than closed nasality.

Question 105. The Hallpike (Dix–Hallpike) maneuver is used to evaluate which of the following conditions?

A. Vestibular function

B. Audiometry

C. Cochlear function

D. Corneal test

Correct answer: A

The Dix-Hallpike maneuver is a diagnostic clinical test specifically used to assess vestibular function, specifically to confirm a diagnosis of Benign Paroxysmal Positional Vertigo (BPPV). It involves moving the patient from a sitting to a supine position with the head turned 45 degrees to one side and extended 20 degrees back. A positive test is indicated by the elicitation of vertigo and a characteristic rotatory nystagmus, which signifies that loose calcium carbonate crystals (otoconia) have entered the posterior semicircular canal. Audiometry (Option B) and cochlear function tests (Option C) assess hearing thresholds rather than balance. Corneal tests (Option D) evaluate cranial nerve function (V and VII) or ocular health. The Hallpike maneuver is the gold standard bedside test for differentiating positional vertigo from other balance disorders. Thus, it is a primary tool for evaluating the peripheral vestibular apparatus.

OPHTHALMOLOGY

Question 106. During neurological examination, the clinician observes concentric rings with multiple colors around the periphery of the patient’s iris. What is the most likely diagnosis?

A. Neurofibromatosis 2

B. Wilson's disease

C. Neurofibromatosis 1

D. Cataract

Correct answer: B

The presence of "concentric rings" around the outer edge of the iris in a 30-year-old woman

with an unsteady gait and labile moods is diagnostic of Kayser-Fleischer (K-F) rings. These rings are golden-brown or greenish deposits of copper in the Descemet membrane of the cornea, which occur in Wilson's disease—a disorder of impaired biliary copper excretion. The patient's neurological symptoms result from copper accumulation in the basal ganglia. Neurofibromatosis 1 (Option C) is associated with Lisch nodules, which are small, raised pigment spots on the iris. Neurofibromatosis 2 (Option A) and cataracts (Option D) do not produce these specific corneal rings. The K-F ring is a pathognomonic clinical finding that requires confirmation via slit-lamp examination. Early diagnosis of Wilson's disease is critical as it is treatable with copper-chelating agents. Therefore, the combination of specific ocular and neurological signs confirms the diagnosis.

Question 107. Which major histocompatibility complex (MHC) type is most likely associated with this clinical presentation?

A. HLA B27

B. HLA B51

C. HLA B47

D. HLA B57

Correct answer: A

The 26-year-old patient presents with acute unilateral anterior uveitis, characterized by blurred vision, photophobia, pain, and redness in one eye. The presence of concurrent joint pain suggests an underlying seronegative spondyloarthropathy, such as ankylosing spondylitis or reactive arthritis. This clinical constellation is strongly associated with the HLA-B27 antigen (Option A). HLA-B51 (Option B) is linked with Behçet’s disease, which typically causes bilateral uveitis and oral/genital ulcers. HLA-B47 (Option C) and HLA-B57 (Option D) have different associations (e.g., congenital adrenal hyperplasia or drug hypersensitivity) and are not classically linked with the combination of acute unilateral anterior uveitis and arthritis. Testing for HLA-B27 is a standard part of the systemic workup for recurring anterior uveitis. Therefore, given the classic inflammatory presentation in a young adult, HLA-B27 is the most likely associated major histocompatibility complex.

Question 108. What is the most likely diagnosis for this condition?

A. Adie's tonic pupil

B. Horner syndrome

C. Blind eye

D. Argyll Robertson pupil

Correct answer: B

The clinical triad of miosis (constricted pupil), mild ptosis (drooping eyelid), and anhidrosis (loss of sweating) on one side of the face is diagnostic of Horner syndrome. This syndrome results from a lesion in the sympathetic nerve pathway from the hypothalamus to the eye. The pupil remains small in dim lighting (dilation lag) because the sympathetic dilator muscle is paralyzed. Adie's tonic pupil (Option A) presents with a dilated pupil that reacts slowly to light. A blind eye (Option C) would show an afferent pupillary defect but not ptosis or anhidrosis. An Argyll Robertson pupil (Option D) is characterized by bilateral small pupils that accommodate but do not react to light, often associated with neurosyphilis. Because the patient exhibits the complete classic triad of sympathetic failure, Horner syndrome is the definitive diagnosis. Further investigation is required to locate the lesion along the first, second, or third-order neurons.

140. Which of the following statements is not an accurate description of the clinical condition discussed above?

(A) Abnormal activity of p53 is seen in the pterygium tissue

The clinical presentation of unilateral calf pain, increased girth (swelling), and discoloration following a period of prolonged bed rest (immobilization) is highly characteristic of Deep Vein Thrombosis (DVT). Immobilization is a major component of Virchow's triad, leading to venous stasis and thrombus formation. Cellulitis (Option A) typically presents with warmth, erythema, and fever, often with an identifiable skin break. Compartment syndrome (Option B) is a surgical emergency usually following trauma, characterized by pain out of proportion to findings and paresthesia, which is not suggested by a history of simple bed rest. Arterial claudication (Option C) involves pain triggered by exertion and relieved by rest, which is inconsistent with symptoms developing after immobilization. Management of DVT involves immediate anticoagulation to prevent the life-threatening complication of pulmonary embolism. Diagnosis should be confirmed using a D-dimer assay and lower limb venous Doppler ultrasonography to visualize the non-compressible venous segment.

Question 109. that accommodate but do not react to light, often associated with neurosyphilis. Because the patient exhibits the complete classic triad of sympathetic failure, Horner syndrome is the definitive diagnosis. Further investigation is required to locate the lesion along the first,

second, or third-order neurons.

Which of the following statements is not an accurate description of the clinical condition discussed above?

A. Abnormal activity of p53 is seen in the pterygium tissue

B. Decreased activity of tissue inhibitors of metalloproteinases is seen

C. Destruction of Bowman's layer occurs when the pterygium invades the cornea

D. Elastotic degeneration and hyalinization of the connective tissue of the conjunctiva occur.

Correct answer: C

the pterygium invades the cornea

The image shows pterygium — a fibrovascular conjunctival growth invading the cornea, labeled "am" (advancing margin) in image (a), with histology in image (b) showing "bm" (Bowman's membrane) and "am" (advancing margin).

The question asks which statement is NOT accurate. Option C is incorrect because pterygium does NOT destroy Bowman's layer during invasion — rather it grows underneath Bowman's layer, lifting and displacing it rather than destroying it. Bowman's layer remains intact as pterygium advances beneath it.

Why other options are wrong (i.e., they ARE accurate statements):

(A) is accurate — abnormal p53 activity due to UV-induced mutations is indeed documented in pterygium tissue, contributing to its proliferative behavior.

(B) is accurate — decreased tissue inhibitors of metalloproteinases (TIMPs) are seen in pterygium,

allowing
matrix
metalloproteinases
to
facilitate
tissue
remodeling and invasion.
(D) is accurate — elastotic degeneration and
hyalinization of subconjunctival connective
tissue is the classic histopathological
hallmark of pterygium seen on microscopy.
A 55-year-old woman with long-standing dacryocystitis is being evaluated for surgical management. Which of the following procedures is most appropriate for her condition?
(A)
Dacryocystorhinostomy
(B)
Dacryocystectomy
(C)
Conjunctiva-cysto rhinostomy
(D)
Balloon catheter dilation

Question 110. A 55-year-old woman with long-standing dacryocystitis is being evaluated for surgical management. Which of the following procedures is most appropriate for her condition?

A. Dacryocystorhinostomy
B. Dacryocystectomy
C. Conjunctiva-cysto rhinostomy
D. Balloon catheter dilation

Correct answer: A

Dacryocystitis is an infection of the lacrimal sac, usually due to nasolacrimal duct obstruction. For long-standing (chronic) dacryocystitis in an adult, dacryocystorhinostomy (DCR) is the standard and most suitable surgical treatment. DCR creates a new permanent pathway between the lacrimal sac and the nasal cavity, bypassing the obstructed duct and restoring tear drainage. Dacryocystectomy (DCT) (Option B) involves the complete removal of the lacrimal sac; it is reserved for elderly patients, cases of malignancy, or where DCR is contraindicated, as it leaves the patient with permanent tearing (epiphora). Conjunctiva-cysto rhinostomy (Option

C) is a more complex bypass used when the canaliculi are blocked. Balloon catheter dilation (Option D) is occasionally used for partial obstructions but is not the definitive treatment for chronic dacryocystitis. Therefore, DCR is the gold standard procedure for restoring function and preventing recurrent infection.

Question 111. What type of visual field defect is most likely seen when a tumor of the anterior pituitary compresses the optic chiasma?

A. Homonymous hemianopia

B. Inferior quadrantic hemianopia

C. Bitemporal hemianopia

D. Superior quadrantic hemianopia

Correct answer: C

The optic chiasma is the site where the nasal fibers of both optic nerves cross to the opposite side. These nasal fibers carry visual information from the temporal (outer) halves of the visual field. An anterior pituitary tumor (such as a macroadenoma) typically compresses the central part of the chiasma from below. This selective compression of the decussating nasal fibers results in a loss of the outer half of the visual field in both eyes, a condition known as bitemporal hemianopia. Homonymous hemianopia (Option A) occurs with lesions posterior to the chiasma in the optic tract. Quadrantic hemianopias (Options B and D) result from lesions in the optic radiations in the temporal or parietal lobes. Bitemporal hemianopia is a classic neurological localizing sign that often provides the first clinical evidence of a pituitary lesion. Thus, it is the most likely defect in this anatomical scenario.

Question 112. Which glycosaminoglycan is essential for preserving the transparency of the cornea?

A. Keratan sulfate

B. Hyaluronic acid

C. Chondroitin sulfate

D. Dermatan sulfate

Correct answer: A

The transparency of the cornea is vital for vision and depends on the precise, regular arrangement of collagen fibrils within the stroma. Glycosaminoglycans (GAGs) are essential components of the corneal extracellular matrix that help maintain this organization. Keratan sulfate (Option A) is the most abundant GAG in the corneal stroma, accounting for about 60% of the total GAG content. It plays a critical role in regulating collagen fibril diameter and spacing, which prevents the scattering of light. Hyaluronic acid (Option B) is primarily found in the vitreous humor. Chondroitin sulfate (Option C) and Dermatan sulfate (Option D) are also present in the cornea but in much smaller quantities compared to keratan sulfate. Deficiencies

or abnormalities in keratan sulfate can lead to corneal opacification, as seen in certain genetic macular corneal dystrophies. Therefore, keratan sulfate is the primary biochemical mediator of corneal clarity.

Question 113. Surgical excision is carried out, and microscopic examination of the tumor along with molecular studies reveals abnormalities in cell cycle regulation. What is the most likely diagnosis?

A. Wilms tumor

B. Retinoblastoma

C. Ependymoma

D. Neuroblastoma

Correct answer: B

The 3-year-old boy presents with leukocoria (white pupillary reflex) and a missing red reflex, which are the hallmark clinical signs of retinoblastoma—the most common primary intraocular malignancy of childhood. Disrupted cell cycle regulation (Option B) mentioned in the molecular analysis refers to the inactivation of the RB1 tumor suppressor gene on chromosome 13, which is the underlying genetic cause. Wilms tumor (Option A) is a kidney malignancy. Ependymoma (Option C) is a CNS tumor. Neuroblastoma (Option D) is an extracranial solid tumor. Microscopic examination of retinoblastoma classically shows small blue round cells with characteristic Flexner-Wintersteiner rosettes. Because the clinical findings are exclusively intraocular and the genetic profile matches RB1 dysfunction, retinoblastoma is the correct diagnosis. Early detection is vital for preserving vision and the life of the child through therapies like chemotherapy, cryotherapy, or enucleation.

Question 114. A 30-year-old man who regularly wears contact lenses presents with eye pain, redness, and purulent discharge from the right eye. Examination reveals a characteristic greyish-white, serpiginous ulcer on the lower cornea, along with a 4 mm hypopyon and moderate anterior chamber flare. What is the most likely diagnosis?

A. Viral corneal ulcer

B. Bacterial corneal ulcer

C. Fungal corneal ulcer

D. Parasitic corneal ulcer

Correct answer: B

The patient’s presentation is highly characteristic of an acute bacterial corneal ulcer, likely

caused by Pseudomonas aeruginosa, which is a common and aggressive pathogen associated with contact lens wear. The "snake-shaped" (serpiginous) greyish-white ulcer is a classic clinical description for certain bacterial keratitis. The presence of a significant hypopyon (a collection of white blood cells in the anterior chamber) and anterior chamber flare further indicates a severe infectious process. Viral ulcers (Option A) usually present with a dendritic appearance and less prominent discharge. Fungal ulcers (Option C) typically have "feathery" edges and satellite lesions following vegetative trauma. Parasitic ulcers (Option D), such as Acanthamoeba, cause disproportionate pain and a ring-shaped infiltrate. Bacterial ulcers are a medical emergency requiring intensive topical fortified antibiotics to prevent corneal perforation. Therefore, given the acute purulent presentation and contact lens history, a bacterial etiology is the most probable diagnosis.

MEDICINE

Question 115. In which chemical form is nitrogenous waste predominantly excreted from the human body?

A. Urea

B. Nitric oxide

C. Ammonia

D. Glutamine

Correct answer: A

Humans are "ureotelic" organisms, meaning that the primary vehicle for the excretion of nitrogenous waste from protein metabolism is urea. Urea is synthesized in the liver through the urea cycle (ornithine cycle), which converts highly toxic ammonia into the less toxic, water-soluble urea. This urea is then transported through the blood to the kidneys, where it is eliminated in the urine. Nitric oxide (Option B) is a signaling molecule. Ammonia (Option C) is a toxic metabolic intermediate that is only eliminated in large quantities by aquatic animals (ammonotelic). Glutamine (Option D) acts as a safe carrier of ammonia in the blood but is not the final excretory product. The measurement of Blood Urea Nitrogen (BUN) is a standard clinical indicator of renal and hepatic function. Therefore, urea is the final, non-toxic form in which nitrogen is safely concentrated and eliminated from the human body.

Question 116. Identify the ECG for the diagnosis:

A. Normal ECG

B. Ventricular fibrillation

C. Ventricular tachycardia

D. Misplaced leads

Correct answer: C

The provided electrocardiogram (ECG) demonstrates a rapid heart rate (tachycardia) with wide, broad QRS complexes exceeding 0.12 seconds. The rhythm is notably regular, and there is a

distinct absence of discernible P-waves, which indicates that the electrical impulse is originating from the ventricles rather than the sinoatrial node. This classic "wide-complex tachycardia" pattern is the hallmark of Ventricular Tachycardia (VT). Normal ECG (Option A) would show narrow QRS complexes and preceding P-waves. Ventricular fibrillation (Option B) is characterized by a chaotic, irregular, and pulseless electrical activity without organized QRS complexes. Misplaced leads (Option D) typically result in abnormal axis deviations or inverted waves in specific leads but do not produce a high-rate broad complex rhythm. Immediate clinical assessment is required, as VT can lead to hemodynamic collapse or degenerate into ventricular fibrillation. Treatment depends on the patient's stability, ranging from anti-arrhythmic drugs like amiodarone to immediate synchronized cardioversion.

Question 117. What is the most likely diagnosis in a 49-year-old man presenting with flu-like symptoms, a rash involving the palms and soles, and epitrochlear lymphadenopathy on examination?

A. Primary syphilis

B. Secondary syphilis

C. Endemic disease

D. Steven Johnson syndrome

Correct answer: B

The constellation of flu-like constitutional symptoms, generalized maculopapular rash involving the palms and soles, and characteristic epitrochlear lymphadenopathy is diagnostic of Secondary Syphilis. This stage of infection, caused by Treponema pallidum, occurs weeks to months after the resolution of the primary chancre. Epitrochlear lymph node enlargement is highly suggestive of this condition. Primary syphilis (Option A) is characterized by a painless, solitary chancre at the site of inoculation, usually without a systemic rash. Endemic diseases (Option C) refer to localized disease patterns and are not a specific diagnosis for these clinical signs. Steven-Johnson Syndrome (Option D) is a severe hypersensitivity reaction characterized by painful, necrotic skin sloughing and mucosal involvement, usually triggered by drugs, which is inconsistent with this non-painful palm/sole rash. Diagnosis should be confirmed with non-treponemal tests like VDRL or RPR followed by specific treponemal assays. Intramuscular Benzathine Penicillin G remains the first-line therapeutic intervention.

Question 118. A patient presents with a daily urine output of 7 liters, urine osmolality of 260 mOsm/L, an ADH level of 0.8 pg/mL, and MRI findings showing absence of the posterior pituitary bright spot on T1-weighted images. What is the most likely diagnosis?

A. Nephrogenic Diabetes Insipidus (DI)

B. Primary polydipsia

C. Pituitary DI

D. Mannitol infusion

Correct answer: C

The patient has marked polyuria (7 L/day) with dilute urine (urine osmolarity = 260 mOsm/L), indicating Diabetes Insipidus (DI). The ADH level is very low (0.8 pg/mL), which points toward a defect in ADH production or release rather than renal unresponsiveness.

The key diagnostic clue is the absence of the posterior pituitary “bright spot” on T1-weighted MRI, which normally represents stored vasopressin granules. Loss of this bright spot is characteristic of central (pituitary) DI.

Why other options are incorrect:

1

Nephrogenic DI: ADH levels are normal or elevated, as the kidneys fail to respond.

2

Primary polydipsia: ADH may be suppressed, but the posterior pituitary bright spot is usually preserved.

3

Mannitol infusion: Causes osmotic diuresis without low ADH or MRI changes.

Question 119. A 45-year-old patient presents with severe pain below the knee, difficulty walking, and a history of prolonged bed rest due to severe back pain. Examination reveals discoloration of the right calf with increased calf circumference. What is the most likely diagnosis?

A. Cellulitis of the leg

B. Compartment syndrome

C. Deep vein thrombosis

D. Arterial claudication

Correct answer: C

No explanation is available for this recall question yet.

Question 120. 158. (C) Tubercular meningitis. The cerebrospinal fluid (CSF) findings of high protein, low glucose, and a predominant lymphocytic pleocytosis are classically seen in Tubercular Meningitis (TBM). This CSF profile reflects the chronic inflammatory response

caused by Mycobacterium tuberculosis in the meninges.

Differential diagnosis reasoning:

1. Viral meningitis usually shows normal or mildly reduced glucose levels with only a modest rise in protein.

2. Acute bacterial meningitis characteristically presents with neutrophilic predominance and markedly reduced glucose levels.

3. Partially treated bacterial meningitis may show lymphocytic predominance, but the subacute to chronic course over two months strongly supports TBM rather than bacterial infection.

Additionally, the patient's low socioeconomic background increases the epidemiological likelihood of tuberculosis, especially in endemic regions.

Which of the following congenital heart diseases are associated with a split second heart sound?

1.
ASD

2.
VSD

3.
PDA

4.
TOF

A. Only 1, 2, 3 is correct

B. Only 2, 3, 4 is correct

C. Only 1, 2, 4 is correct

D. All are correct

Correct answer: A

Split second heart sound (S2) occurs when aortic (A2) and pulmonary (P2) valve closure becomes

asynchronous. Conditions causing increased right heart volume/flow delay pulmonary valve closure, producing wide splitting of S2.

1

ASD Causes fixed wide splitting of S2 — the hallmark finding. Increased right heart volume delays pulmonary valve closure consistently throughout respiration.

2

VSD Increased pulmonary blood flow delays P2 closure, producing wide splitting of S2.

3

PDA Increased pulmonary circulation delays P2, causing wide splitting of S2.

Why TOF is excluded:

4

TOF is incorrect because in Tetralogy of Fallot, severe pulmonary stenosis causes markedly diminished pulmonary blood flow. P2 becomes so soft it is virtually inaudible, resulting in a single S2 rather than split S2. The aortic component

Question 121. A 40-year-old woman with a family history of Marfan syndrome presents with unilateral tonsillar swelling, and visible pulsations are noted on oral examination. What is the most likely cause of this tonsillar enlargement?

A. Extracranial internal carotid artery aneurysm

B. Intracranial external carotid artery

aneurysm
C. Extracranial
external
carotid
artery
aneurysm
D. Intracranial
internal
carotid
artery
aneurysm

Correct answer: A

Patients with Marfan’s syndrome have a genetic predisposition to connective tissue weakness, making them highly susceptible to arterial aneurysms. A unilateral tonsillar or pharyngeal swelling that exhibits "visible pulsation" is a red-flag sign for an aneurysm of the adjacent carotid artery . The internal carotid artery (ICA) passes immediately lateral to the tonsillar fossa in the parapharyngeal space. An extracranial (Option A) aneurysm in this segment can protrude medially, mimicking a tonsillar mass. Intracranial aneurysms (Options B and D) would present with neurological deficits rather than a visible oropharyngeal mass. The external carotid artery (Option C) is further removed and less likely to present as a tonsillar swelling. Biopsy or incision of such a "pulsatile mass" is strictly contraindicated due to the risk of catastrophic hemorrhage. Diagnosis must be confirmed with CT or MR angiography. Therefore, the anatomical location and Marfan association indicate an extracranial internal carotid artery aneurysm.

Examination Paper December 2020 Question
(A) Atrial fibrillation
(B) Atrial flutter
(C) Ventricular tachycardia
(D) Ventricular fibrillation
AAns

(B) Atrial Flutter
The ECG shows classic features of Atrial Flutter — characteristic sawtooth/flutter waves (F waves) visible at a rate of approximately 300 bpm with regular ventricular response, most prominent in the inferior leads (II, III, aVF).
Key ECG Features visible:
1.
Classic sawtooth pattern of flutter waves

2.

Regular atrial activity at ~300 bpm

3.

Consistent 2:1 or 4:1 AV conduction ratio

4.

Narrow QRS complexes

5.

No isoelectric baseline between atrial deflections

Why other options are wrong:

(A)

Atrial fibrillation is incorrect because AF shows irregularly irregular rhythm with chaotic, disorganized fibrillatory waves and no identifiable P waves — completely unlike the regular sawtooth pattern seen here.

(C)

Ventricular tachycardia is incorrect because VT shows wide, bizarre QRS complexes at 100–250 bpm with no discernible P waves. The QRS complexes here are narrow, ruling out ventricular origin.

(D)

Ventricular fibrillation is incorrect because VF shows completely chaotic, irregular, disorganized electrical activity with no identifiable waveforms — incompatible with the organized regular pattern visible in this ECG.

Question 122. A
65-year-old
woman
presents
with
breathlessness and fatigue and has a past history
of breast cancer treated with chemoradiation.
Examination reveals a jugular venous pulse
with prominent rapid x and y descents. What is
the most likely diagnosis?

A. Constrictive pericarditis

B. Cardiac tamponade

C. Dilated cardiomyopathy

D. Restrictive cardiomyopathy

Correct answer: A

The patient’s history of chest radiation for breast cancer is a major risk factor for developing

radiation-induced constrictive pericarditis. The key diagnostic physical sign is the jugular venous pulse (JVP) showing "rapid x and y descents". This "W" or "M" shaped JVP occurs because the rigid pericardium allows rapid early diastolic filling (steep y descent) but then abruptly halts it (the dip-and-plateau sign). Cardiac tamponade (Option B) typically shows a prominent x-descent but an absent or blunted y-descent. Dilated (Option C) and Restrictive (Option D) cardiomyopathies lack this specific rapid y-descent pattern. The provided X-ray (Option R) likely displays pericardial calcification, which is pathognomonic for constriction. Other classic findings include Kussmaul's sign and a pericardial knock. Management usually involves surgical pericardiectomy. Therefore, the clinical history and JVP morphology definitively point to constrictive pericarditis.

SURGERY

Question 123. In a patient involved in a road traffic accident with profuse bleeding and hypotension, which cannula gauge is most appropriate for rapid administration of large volumes of intravenous fluids?

A. 14 G

B. 13 G

C. 16 G

D. 18 G

Correct answer: A

In trauma management (ATLS protocols), the goal for patients in hypovolemic shock is rapid volume resuscitation using wide-bore intravenous cannulae. According to Poiseuille's law, the flow rate is inversely proportional to the length and directly proportional to the fourth power of the radius. A 14 G (Gauge) cannula (Option A), which is typically orange-coded, is the widest standard bore used in emergency settings, allowing for the fastest possible infusion of fluids and blood products. A 16 G (Option C, grey) is also used for trauma but provides less flow than a 14 G. An 18 G (Option D, green) is standard for surgical patients but is insufficient for "large volume" rapid replacement in acute shock. 13 G (Option B) is not a standard medical cannula size. Clinicians should insert two 14 G cannulae in the antecubital veins for any patient presenting with trauma-induced hypotension. Therefore, 14 G is the appropriate choice for massive resuscitation.

Question 124. A patient presents with nasal obstruction, diminished sense of smell, and greenish, dry crusted nasal discharge. Examination shows abnormally wide nasal cavities with atrophied turbinates. Which surgical procedure is most

appropriate for managing this condition?

A. Submucous resection

B. Young's operation

C. Septoplasty

D. Vidian neurectomy

Correct answer: B

The patient presents with Atrophic Rhinitis (Ozaena), characterized by mucosal atrophy, shriveled turbinates, and foul-smelling greenish crusts within unnaturally spacious nasal cavities . The aim of surgery is to reduce the volume of the nasal cavity and allow the mucosa to rest and heal. Young’s operation (Option B) involves surgically closing the nostrils (nares) with skin flaps for 6 to 12 months. This stops the drying airflow, preventing crust formation and allowing mucosal regeneration. Submucous resection (Option A) and Septoplasty (Option C) are used to correct a deviated nasal septum, which would not address mucosal atrophy. Vidian neurectomy (Option D) is used for vasomotor rhinitis to reduce excessive secretion, the opposite of the dry state seen here. Modified Young’s operation (partial closure) is also common. Given the pathognomonic finding of shriveled turbinates in spacious passages, Young’s operation is the definitive surgical management.

Question 125. Dohlman's procedure is used for the treatment of which condition?

A. Meckel's diverticulum

B. Zenker's diverticulum

C. Bochdalek hernia

D. Menetrier's disease

Correct answer: B

Dohlman’s procedure is a specialized endoscopic surgical technique used to treat Zenker’s diverticulum (Option B), a pharyngeal pouch that occurs at Killian's dehiscence. The procedure involves using a double-lipped endoscope to visualize the common wall between the diverticulum and the esophagus. This wall, which contains the cricopharyngeus muscle, is then divided using electrocautery or a laser. This "stapling" or division converts the pouch and the esophagus into a single cavity, preventing food entrapment and relieving dysphagia. Meckel's diverticulum (Option A) is an intestinal anomaly requiring abdominal resection. Bochdalek hernia (Option C) is a congenital diaphragmatic hernia treated with abdominal or thoracic repair. Menetrier’s disease (Option D) is a rare hypertrophic gastropathy involving the stomach. Because Dohlman’s is an endoscopic approach to a pharyngeal pouch, Zenker’s diverticulum is the correct clinical association. It offers a shorter recovery time compared to open diverticulectomy.

Question 126. Identify the instrument.

A. Evisceration spatula

B. Chalazion clamp

C. Enucleation spoon

D. Bone punch

Correct answer: B

The image displays a Chalazion clamp (Option B), a specialized ophthalmic surgical instrument. It is characterized by one flat, solid oval plate and a corresponding circular ring on the opposite limb, which can be tightened with a screw mechanism. The clamp is used to grasp the eyelid so that the solid plate protects the globe while the ring surrounds the chalazion (a chronic granulomatous inflammation of a Meibomian gland). This provides a bloodless field and stabilizes the eyelid during incision and curettage. Evisceration spatulas (Option A) and enucleation spoons (Option C) are used in major ocular surgeries involving the removal of the eye contents or the entire globe and have distinct cup-like or paddle shapes. A bone punch (Option D) is used in orthopedics or ENT to remove small pieces of bone and has a heavy, biting mechanism. The specific "plate and ring" design is the definitive visual identifier for the chalazion clamp.

Question 127. What is the term used for a graft transplanted between genetically identical twins?

A. Allograft

B. Autograft

C. Isograft

D. Xenograft

Correct answer: C

In transplantation immunology, grafts are classified based on the genetic relationship between the donor and the recipient. An Isograft (or syngeneic graft) is a transplant between two individuals who are genetically identical, such as monozygotic (identical) twins. Because the MHC (Major Histocompatibility Complex) antigens are identical, there is no risk of immunological rejection. An Autograft (Option B) is a transplant of tissue from one part of a person's body to another (e.g., a skin graft). An Allograft (Option A) is a transplant between two genetically different members of the same species, such as a kidney from a non-twin sibling or a cadaver. A Xenograft (Option D) is a transplant between members of different species, such as a pig valve used in a human. Isografts represent the ideal transplant scenario because they achieve permanent survival without the need for lifelong immunosuppression.

(A) Hypertrophic scar

(B) Atrophic scar

(C) Keloid scar

(D) Contracture
AAns

(C) Keloid scar.
The image depicts a firm, raised, and thick scar that has grown well beyond the original boundaries of the surgical incision. This "outgrowth" beyond the initial wound margin is the defining characteristic of a Keloid (Option C). A hypertrophic scar (Option A) may be thick and raised but stays within the limits of the original incision and often regresses over time. An atrophic scar (Option B) is depressed below the skin surface, often seen after acne or chickenpox. A contracture (Option D) is a permanent shortening of skin and underlying tissue that restricts joint movement. Keloids result from an overgrowth of collagen (specifically Type III) during the healing process and are more common in darker skin types and on the sternum. They can be itchy or painful and are notoriously difficult to treat, often requiring intralesional steroids, silicone sheeting, or pressure therapy.

Question 128. What is the most likely diagnosis in a 20-year-old man who presents with right flank pain, fever, and chills, along with pain elicited on passive extension of the right hip?

A. Pyelonephritis
B. Psoas abscess
C. Appendicitis
D. Torsion of right undescended testis

Correct answer: B

The patient presents with the classic symptoms of a psoas abscess: fever, flank pain, and a positive "psoas sign" . The psoas sign refers to pain elicited when the right hip is passively extended, which stretches the inflamed psoas muscle. This condition often results from the spread of infection from adjacent organs (secondary) or hematogenous spread (primary), frequently associated with tuberculosis (Pott's disease) in endemic areas. Pyelonephritis (Option A) would cause flank pain and fever but typically presents with urinary symptoms and costovertebral angle tenderness rather than hip-related pain. Appendicitis (Option C) can cause a positive psoas sign if the appendix is retrocecal, but it usually presents with migratory pain starting at the umbilicus. Torsion of an undescended testis (Option D) would present with an empty scrotum and an extremely tender mass in the inguinal canal. The systemic illness combined with localized psoas irritation definitively points to a psoas abscess.

Question 129. What is the most likely diagnosis in an immuno compromised patient from a low socioeconomic

background who presents with low-grade evening fever, weight loss, and a soft, non-tender cervical swelling that shows a positive fluctuation test?

A. Branchial cyst

B. Tubercular lymphadenitis

C. Thyroglossal cyst

D. Lipoma

Correct answer: B

The clinical picture describes a "cold abscess," which is a hallmark of Tubercular Lymphadenitis (Option B). The patient's immunocompromised status and lower-income background are significant risk factors for tuberculosis. "Mild nightly fever" and weight loss are classic constitutional symptoms of TB. A soft, non-tender, fluctuating mass in the neck without signs of acute inflammation (redness or heat) is the definition of a cold abscess, usually resulting from the liquefaction of caseous lymph nodes. A branchial cyst (Option A) is a congenital swelling located at the upper third of the sternocleidomastoid but lacks systemic symptoms. A thyroglossal cyst (Option C) is a midline mass that moves with tongue protrusion. A lipoma (Option D) is a painless, slow-growing fatty mass that is slip-sign positive but does not fluctuate. Fine-needle aspiration cytology (FNAC) or biopsy is required to confirm the presence of acid-fast bacilli or granulomatous inflammation.

Question 130. What is the most appropriate next step in the management of a 40-year-old man who presents with generalized abdominal pain, has a known history of peptic ulcer disease, and exhibits abdominal rigidity on examination, in light of the findings shown on the abdominal X-ray?

A. Antibiotics and NPO

B. Upper GI endoscopy

C. Urgent surgical exploration

D. CT abdomen

Correct answer: C

The patient presents with the "classic triad" of hollow viscus perforation: history of peptic ulcer disease, sudden widespread abdominal pain with rigidity (peritonitis), and radiographic evidence of pneumoperitoneum (air under the diaphragm). This represents a surgical emergency. The appropriate next step is urgent surgical exploration (laparotomy or laparoscopy) to identify and repair the perforation. Antibiotics and NPO (Option A) are part of the initial resuscitation but are not definitive treatment. Upper GI endoscopy (Option B) is

strictly contraindicated in suspected perforation because the air used to distend the bowel would worsen the pneumoperitoneum and spill more contents into the cavity. A CT abdomen (Option D) is highly sensitive for air but is unnecessary if the plain X-ray already confirms the diagnosis. Delay in surgical intervention significantly increases mortality from septic shock. Therefore, immediate surgical repair is the life-saving priority.

173. What type of ulcer is most likely in a 42-year-old barber with a history of a healed ulcer on the lower medial aspect of the right leg and visible varicose veins in both legs?

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Question 131. surgical exploration (laparotomy or laparoscopy) to identify and repair the perforation.

Antibiotics and NPO (Option A) are part of the initial resuscitation but are not definitive treatment. Upper GI endoscopy (Option B) is strictly contraindicated in suspected perforation because the air used to distend the bowel would worsen the pneumoperitoneum and spill more contents into the cavity. A CT abdomen (Option D) is highly sensitive for air but is unnecessary if the plain X-ray already confirms the diagnosis. Delay in surgical intervention significantly increases mortality from septic shock. Therefore, immediate surgical repair is the life-saving priority.

What type of ulcer is most likely in a 42-year-old barber with a history of a healed ulcer on the lower medial aspect of the right leg and visible varicose veins in both legs?

A. Neuropathic ulcer

B. Arterial ulcer

C. Venous ulcer

D. Tubercular ulcer

Correct answer: C

The patient’s occupation (prolonged standing) and the presence of visible varicose veins are major risk factors for chronic venous insufficiency. Venous ulcers (Option C) classically occur in the "gaiter area," specifically on the lower medial aspect of the leg just above the medial malleolus. These ulcers are often preceded by skin changes like lipodermatosclerosis or stasis dermatitis and tend to be shallow and irregularly shaped. Neuropathic ulcers (Option A) occur on pressure points like the sole of the foot, often in diabetic patients. Arterial ulcers (Option B) are located distally on the toes or lateral malleolus and are extremely painful with a "punched-out" appearance. Tubercular ulcers (Option D) are rare on the legs and usually present as undermined, chronic lesions related to underlying lymph node involvement. Given the specific location and the association with varicose veins, a venous etiology is the most probable diagnosis. Compression therapy is the mainstay of management.

A 65-year-old man presents with chronic low back pain, unexplained weight loss, and progressively worsening urinary symptoms. Imaging of the spine reveals osteoblastic lesions. What is the most likely diagnosis?

(A)

Benign Prostatic Hypertrophy

(B)

Carcinoma of the Bladder

(C)

Prostate Cancer

(D)

Renal Cell Cancer

Question 132. A 65-year-old man presents with chronic low back pain, unexplained weight loss, and

progressively worsening urinary symptoms.

Imaging of the spine reveals osteoblastic lesions.

What is the most likely diagnosis?

A. Benign Prostatic Hypertrophy

B. Carcinoma of the Bladder

C. Prostate Cancer

D. Renal Cell Cancer

Correct answer: C

The combination of advanced age, urinary symptoms (retention requiring catheterization), and osteoblastic (bone-forming) spinal lesions is pathognomonic for metastatic Prostate Cancer. Unlike most cancers that cause osteolytic (bone-destroying) lesions, prostate cancer classically stimulates osteoblasts, leading to dense white spots on X-ray. Benign Prostatic Hypertrophy (Option A) causes urinary symptoms but never causes weight loss or bone metastases. Carcinoma of the Bladder (Option B) usually presents with painless hematuria rather than primary bone pain. Renal Cell Cancer (Option D) typically produces large osteolytic lesions. Although the patient's PSA of 5.2 ng/ml is only mildly elevated (standard cutoff is 4.0), it does not rule out malignancy in the presence of metastatic evidence. Further evaluation should include a digital rectal examination and a transrectal ultrasound-guided (TRUS) biopsy. Prostate cancer is the leading cause of osteoblastic metastases in elderly men.

Question 133. What is the most appropriate immediate management for a 25-year-old man involved in a road traffic accident who has a respiratory rate of 25/min, blood pressure of 80/45 mmHg, and hyper-resonance on the left side of the chest?

A. Wide bore needle insertion in the right 5th ICS

B. Wide bore needle insertion in the left 5th ICS followed by an intercostal drain

C. Aspiration of the pleural fluid

D. No intervention needed

Correct answer: B

The patient exhibits the life-threatening triad of a Tension Pneumothorax: respiratory distress (RR 25), obstructive shock (BP 80/45 mmHg), and hyper-resonance on the affected side . Tension pneumothorax occurs when a one-way valve allows air into the pleural space but not out, causing mediastinal shift and compromising venous return to the heart. Immediate decompression is mandatory. Modern ATLS guidelines recommend needle decompression at the

5th intercostal space (ICS) at the anterior axillary line, which must be immediately followed by the insertion of an intercostal chest tube. Option A is incorrect as the clinical findings are on the left side. Option C is inappropriate as the pathology involves air, not fluid. Option D is incorrect as the condition is fatal if not treated immediately. Tension pneumothorax is a clinical diagnosis; treatment must never be delayed for radiographic confirmation.

Question 134. What is the first-line management for a patient presenting with a pelvic fracture associated with a confirmed rupture of the membranous urethra?

A. Insertion of a suprapubic catheter as soon as possible.

B. Perform an intravenous pyelogram (IVP).

C. Immediate urethroplasty.

D. Perform a micturating cystourethrogram (MCU).

Correct answer: A

Rupture of the membranous urethra is a classic complication of severe pelvic fractures. In the acute setting, the primary goal is to provide urinary diversion to prevent urine extravasation and infection while allowing the pelvic hematoma to stabilize. The standard initial management is the insertion of a suprapubic catheter (SPC) (Option A). This avoids further trauma to the injured urethra that could be caused by blind attempts at Foley catheterization. An intravenous pyelogram (IVP) (Option B) assesses the upper urinary tract and is not the priority for a urethral injury. Immediate urethroplasty (Option C) is generally avoided as the tissues are friable and the risk of impotence or incontinence is high. An MCU (Option D) is a diagnostic test performed later to evaluate the extent of the stricture once the acute injury has healed. Therefore, SPC is the essential first-aid urological intervention.

Question 135. What is the cause of the appearance observed in intravenous pyelography (IVP)?

A. Horseshoe kidney

B. Ureterocele

C. Bladder tumor

D. Posterior urethral valve

Correct answer: B

The IVP image shows a classic "cobra head" or "spring onion" sign — a well-defined radiolucent halo surrounding a contrast-filled dilation at the distal ureter as it enters the bladder. This pathognomonic appearance represents a ureterocele — a cystic dilation of the distal intravesical ureter.

Key Radiological Features visible:

1.

Cobra head deformity at distal ureter

2.

Contrast filled dilated distal ureteric segment

3.

Radiolucent halo surrounding it within bladder

4.

Bilateral renal collecting system otherwise visible

Why other options are wrong:

(A)

Horseshoe kidney is incorrect because horseshoe kidney shows fused lower poles of both kidneys across midline with medially rotated collecting systems and abnormally low positioned kidneys — none of which are seen here.

(C)

Bladder tumor is incorrect because bladder tumors appear as irregular filling defects within the bladder without the characteristic cobra head appearance at the ureterovesical junction seen in this IVP.

(D)

Posterior urethral valve is incorrect because PUV causes bladder trabeculation, dilated posterior urethra, and bilateral hydronephrosis — the findings here are localized to distal ureter showing classic ureterocele morphology.

Question 136. A 30-year-old man is evaluated for abdominal pain. Contrast-enhanced CT imaging reveals an abnormal finding marked by an arrow. Based on this radiological feature, what is the most likely diagnosis?

A. Appendicitis

B. Horseshoe Kidney

C. Wilms Tumor

D. Abdominal Aortic Aneurysm

Correct answer: B

The axial Contrast-Enhanced Computed Tomography (CECT) scan shows renal tissue crossing the midline anterior to the aorta and vertebral column, connecting the lower poles of both kidneys. This "isthmus" of tissue is the definitive diagnostic feature of a Horseshoe Kidney (Option B). Appendicitis (Option A) would show a thickened, blind-ending tubular structure in the right iliac fossa, not renal tissue crossing the aorta. Wilms Tumor (Option C) is a large,

distorted renal mass primarily seen in children, not a symmetrical fusion anomaly. An abdominal aortic aneurysm (Option D) would show an enlarged, dilated aorta often with mural thrombus, which is unrelated to renal fusion. Although often asymptomatic, horseshoe kidneys can cause abdominal pain if there is associated hydronephrosis or stone formation. Therefore, the anatomical bridge of renal parenchyma across the great vessels identifies this fused renal state.

179. What is the most likely diagnosis of the lesion that developed in a patient six months after undergoing cardiac surgery, as shown in the image below?

Question 137. What is the most likely diagnosis in a patient presenting with severe pain during erection and progressive curvature of the penis over the past six months?

A. Peyronie's Disease (B) Priapism

C. Marion's Disease (D) Erectile Dysfunction

Correct answer: A

The symptoms of progressive penile curvature and pain during erection are pathognomonic for Peyronie's Disease (Option A) . This condition is caused by the formation of fibrous plaques (scar tissue) within the tunica albuginea of the penis. The plaques are not elastic, so when the penis fills with blood during an erection, the affected side cannot expand, causing it to bend or curve toward the plaque. Priapism (Option B) is a prolonged, painful erection unrelated to sexual stimulation and is a medical emergency. Marion's disease (Option C) refers to congenital bladder neck obstruction. Erectile Dysfunction (Option D) is the inability to achieve or maintain an erection, whereas patients with Peyronie’s can usually achieve an erection, but it is deformed and painful. Diagnosis is clinical, sometimes supplemented by ultrasound to visualize the calcified plaques. Treatment options include oral medications, intralesional injections, or surgical straightening procedures in severe cases.

Question 138. What is the most likely diagnosis in a neonate who presents with mild, intermittent upper abdominal pain, a scaphoid abdomen, reduced breath sounds bilaterally, and the findings shown on the provided X-ray?

A. Bochdalek hernia

B. Pneumonia

C. Gastric volvulus

D. Eventration of diaphragm

Correct answer: A

The clinical presentation of a neonate with a "scaphoid abdomen" (hollowed out) and decreased breath sounds is the classic physical finding for a Congenital Diaphragmatic Hernia (CDH). The scaphoid appearance occurs because the abdominal organs have migrated into the thoracic cavity through a defect in the diaphragm. The most common type is the Bochdalek hernia (Option A), which occurs posterolaterally, usually on the left side. The provided X-ray (Option R) displays the characteristic "gaseous bowel loops" filling the hemithorax and displacing the mediastinum to the opposite side. Pneumonia (Option B) would show solid infiltrates without bowel loops. Gastric volvulus (Option C) involves twisting of the stomach within the abdomen. Eventration (Option D) involves a weak, elevated diaphragm but the abdominal organs remain under the diaphragmatic thin sheet. CDH is a life-threatening emergency causing pulmonary hypoplasia. Immediate management involves intubation and gastric decompression before surgical repair.

Question 139. A 45-year-old woman presents with a large breast lump measuring 9 × 10 cm. Histopathological examination reveals increased stromal cellularity with a characteristic leaf-like architecture. What is the most likely diagnosis?

A. Phyllodes tumor

B. Giant fibroadenoma

C. Inflammatory carcinoma

D. Ductal carcinoma

Correct answer: A

The clinical presentation of a large, rapidly growing breast mass in a middle-aged woman is highly suspicious for a Phyllodes tumor. The definitive diagnostic clue provided is the histopathological finding of "increased stromal cellularity" and a "distinctive leaf-like structure" (cleft-like spaces lined by epithelium). The name "Phyllodes" is derived from the Greek word for "leaf-like." Giant fibroadenoma (Option B) can present similarly as a large mass but lacks the leaf-like stromal overgrowth and increased cellularity seen here. Inflammatory carcinoma (Option C) presents with skin changes like peau d'orange and redness rather than a discrete large lump. Ductal carcinoma (Option D) typically appears as a hard, irregular, fixed mass often with nipple changes or nodal involvement. Phyllodes tumors can be benign, borderline, or malignant and are treated with wide local excision with a 1 cm margin to prevent local recurrence.

Question 140. Which intravenous fluid should be avoided when managing a hypotensive patient with a head injury?

A. 0.9% Normal Saline (NS)

B. 3% Saline

C. Ringer's Lactate

D. 5% Dextrose

Correct answer: D

In the management of patients with traumatic brain injury (TBI), the priority is to maintain cerebral perfusion pressure while avoiding factors that worsen cerebral edema. 5% Dextrose (Option D) is essentially a hypotonic fluid once the glucose is metabolized. Hypotonic fluids allow water to shift from the intravascular space into the brain cells (cytotoxic edema), which dangerously increases intracranial pressure (ICP). Normal Saline (Option A) and Ringer's Lactate (Option C) are isotonic crystalloids and are the preferred choices for maintaining blood pressure without worsening brain swelling. 3% Saline (Option B) is hypertonic and is actually used as a therapeutic intervention to reduce ICP by drawing fluid out of the brain tissue. Therefore, dextrose-containing or hypotonic fluids must be strictly avoided in the resuscitation of head-injured patients. Maintaining an isotonic or slightly hypertonic state is crucial for neuroprotection.

Question 141. What is the diagnosis based on the x-ray given below?

A. Renal calculi

B. Bladder calculi

C. Schistosomiasis

D. Ureteric calculi

Correct answer: B

The provided pelvic X-ray (Option R) displays a large, radiopaque, oval-shaped mass located in the midline of the lower pelvis, immediately superior to the pubic symphysis. This anatomical position is diagnostic of a bladder stone (Option B). Renal calculi (Option A) would be located much higher in the flank or loin region. Ureteric calculi (Option D) would appear as smaller opacities along the path of the ureters, lateral to the vertebral column. Schistosomiasis (Option C) of the bladder classically appears as "egg-shell" or curvilinear calcification of the bladder wall itself rather than a discrete internal stone. Large bladder stones often result from chronic urinary stasis, such as in benign prostatic hyperplasia (BPH) or neurogenic bladder. They can cause symptoms of suprapubic pain, hematuria, and interrupted urine flow. Management usually involves cystolitholapaxy or open cystolithotomy.

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(A) Neuropathic ulcer

(B) Arterial ulcer

(C) Venous ulcer
(D) Tubercular ulcer
AAns

(C) Venous ulcer.
The patient’s occupation (prolonged standing) and the presence of visible varicose veins are major risk factors for chronic venous insufficiency. Venous ulcers (Option C) classically occur in the "gaiter area," specifically on the lower medial aspect of the leg just above the medial malleolus. These ulcers are often preceded by skin changes like lipodermatosclerosis or stasis dermatitis and tend to be shallow and irregularly shaped. Neuropathic ulcers (Option A) occur on pressure points like the sole of the foot, often in diabetic patients. Arterial ulcers (Option B) are located distally on the toes or lateral malleolus and are extremely painful with a "punched-out" appearance. Tubercular ulcers (Option D) are rare on the legs and usually present as undermined, chronic lesions related to underlying lymph node involvement. Given the specific location and the association with varicose veins, a venous etiology is the most probable diagnosis. Compression therapy is the mainstay of management.

Question 142. What electrolyte disturbance is most commonly associated with this postoperative condition, as demonstrated in the provided X-ray image?

A. Hypocalcemia
B. Hypokalemia
C. Hyperkalemia
D. Hypercalcemia

Correct answer: B

The erect abdominal X-ray (Option R) shows multiple dilated loops of small and large bowel with air throughout, which is characteristic of a paralytic ileus. This condition involves the temporary cessation of intestinal peristalsis, frequently occurring after abdominal surgery. Hypokalemia (low serum potassium) (Option B) is the most common electrolyte imbalance that directly causes or worsens a paralytic ileus. Potassium is essential for the normal electrical activity and contraction of intestinal smooth muscle; its deficiency leads to gut atony. Options A, C, and D (Hypocalcemia, Hyperkalemia, and Hypercalcemia) are less classically associated with the development of postoperative gut paralysis . Management involves "drip and suck" (nasogastric decompression and IV fluids) and, crucially, the correction of the underlying electrolyte deficits. Once potassium levels are normalized, peristalsis usually returns spontaneously. Therefore, monitoring potassium is a vital part of postoperative care.

Question 143. What is the condition known as when a gallstone becomes impacted in the cystic duct,

causes dilation of the common hepatic duct, compresses the common bile duct, and leads to obstructive jaundice?

A. Acute cholecystitis

B. Porcelain gallbladder

C. Cholesterolosis

D. Mirizzi's syndrome

Correct answer: D

The scenario describes Mirizzi's syndrome (Option D), a rare complication of chronic gallstone disease . It occurs when a large gallstone becomes impacted in the cystic duct or the neck of the gallbladder (Hartmann’s pouch). This impacted stone causes significant extrinsic compression or secondary inflammation of the adjacent common hepatic duct (CHD), leading to biliary obstruction and obstructive jaundice. Acute cholecystitis (Option A) involves inflammation of the gallbladder but does not typically cause dilation of the CHD or CBD unless a stone has migrated into the CBD (choledocholithiasis). Porcelain gallbladder (Option B) refers to calcification of the gallbladder wall. Cholesterolosis (Option C) is an accumulation of cholesterol within the gallbladder mucosa ("strawberry gallbladder"). Mirizzi's syndrome is a surgical challenge because the intense inflammation can lead to a cholecystobiliary fistula. Therefore, extrinsic compression of the bile duct by a cystic duct stone is the defining feature of Mirizzi's syndrome.

Question 144. A 70-year-old woman undergoes a routine follow-up examination, during which an ultrasonography (USG) of the liver is performed and shown below. She has a history of mild pain in the hypochondriac region. What is the most likely diagnosis?

A. Gallstones

B. Amoebic liver abscess

C. Hydatid cyst

D. Acute cholecystitis

Correct answer: A

The USG image shows classic features of gallstones — hyperechoic (bright white) foci within the gallbladder lumen with characteristic posterior acoustic shadowing, which is the pathognomonic finding of gallstones on ultrasound.

Key USG Features visible:

1.

Hyperechoic echogenic foci within gallbladder

2.

Posterior acoustic shadowing behind the echogenic foci

3.

Gravity-dependent movement of stones

4.

Patient has mild hypochondriac pain — consistent with biliary colic

Why other options are wrong:

(B)

Amoebic liver abscess is incorrect because it appears as a hypoechoic/anechoic cavity within liver parenchyma with irregular walls — not echogenic foci with acoustic shadowing in the gallbladder.

(C)

Hydatid cyst is incorrect because hydatid cyst shows a "double wall sign," daughter cysts, or hydatid sand within a cystic structure in the liver — completely different morphology from what is seen here.

(D)

Acute cholecystitis is incorrect because although gallstones may coexist, acute cholecystitis additionally shows gallbladder wall thickening (>3mm), pericholecystic fluid, and positive sonographic Murphy's sign — features not specifically demonstrated here.

Question 145. Based on the image of the anal region showing a painful abscess commonly resulting from obstruction of an anal gland, what is the most likely diagnosis?

A. Hemorrhoids

B. Pelvirectal abscess

C. Perianal abscess

D. Pilonidal sinus

Correct answer: C

The provided image and clinical description identify a perianal abscess (Option C). This is the most common type of anorectal abscess, occurring when an anal crypt gland becomes blocked and subsequently infected. It presents as a very painful, red, and swollen lump immediately adjacent to the anal verge. Hemorrhoids (Option A) are swollen vascular cushions; while they can be painful if thrombosed, they do not present as an acute fluctuant abscess. A pelvirectal abscess (Option B) is deeper and more severe, often presenting with systemic symptoms and high-seated rectal pain rather than a visible external lump. A pilonidal sinus (Option D) occurs in the natal cleft between the buttocks, further away from the anus. The primary treatment for a perianal abscess is immediate incision and drainage. Over 50% of these cases may eventually

develop a fistula-in-ano. Therefore, the visual evidence of a localized abscess confirms the diagnosis.

Question 146. What is the most likely diagnosis in a 38-year-old man who presents with intermittent discharge of pus and blood from an external opening in the perianal region?

A. Jejunoileal atresia

B. Esophageal atresia

C. Duodenal atresia

D. Colonic atresia

Correct answer: C

A annular pancreas is a congenital anomaly where a ring of pancreatic tissue encircles the second part of the duodenum. This ring can cause extrinsic compression and narrowing of the duodenal lumen, leading to duodenal atresia or stenosis (Option C). Clinically, this presents shortly after birth with signs of high intestinal obstruction, such as bilious vomiting and upper abdominal distension. The pathognomonic radiological sign on an abdominal X-ray is the "double bubble" appearance (air in the stomach and the dilated proximal duodenum). Esophageal atresia (Option B) presents with excessive salivation and inability to swallow feeds. Jejunoileal atresia (Option A) and Colonic atresia (Option D) would show multiple dilated loops of bowel and different radiological signs. Surgical treatment for an annular pancreas involves bypassing the obstruction via a duodenoduodenostomy rather than dividing the pancreatic ring itself. Thus, duodenal atresia is the definitive clinical result of this anatomical malformation.

Question 147. A 7-year-old boy weighing 30 kg is scheduled for tumor resection surgery and will be kept nil per os (NPO). What is the appropriate daily maintenance fluid requirement for this child?

A. 1000 mL

B. 1700 mL

C. 2500 mL

D. 3000 mL

Correct answer: B

Maintenance fluid requirements in pediatrics are calculated using the Holliday-Segar formula (rule for hourly rates or a tiered system for daily volumes). For a child weighing 30 kg:

First 10 kg: (100 mL/kg)

Next 10 kg: (50 mL/kg)

Remaining 10 kg: (20 mL/kg) Total daily volume:

Option A (1000 mL) only accounts for the first 10 kg. Options C (2500 mL) and D (3000 mL) are

significantly higher and would lead to fluid overload in a 30 kg child. Maintaining fluid and electrolyte balance is critical during the NPO period to prevent dehydration and metabolic disturbances. Standard maintenance fluids for children usually consist of D5NS with potassium supplementation. Therefore, based on the established physiological tiers, 1700 mL is the precise daily requirement for this 7-year-old patient.

Question 148. What is the most likely condition affecting the umbilical region of a 39-year-old obese man who has recently begun exercising at the gym?

A. Omphalocele

B. Gastroschisis

C. Umbilical hernia

D. Paraumbilical hernia

Correct answer: C

The image shows a rounded swelling directly at the umbilicus in an adult obese man who recently started exercising. This is typical of an umbilical hernia, where abdominal contents protrude through a weakness in the umbilical ring. Increased intra-abdominal pressure (such as during exercise or obesity) is a common precipitating factor.

Umbilical hernias in adults usually present as a central bulge at the navel, which may become more prominent on straining or standing and may reduce on lying down.

Hy other options are incorrect:

(A)

Omphalocele : A congenital condition in newborns, where abdominal organs herniate into a sac at the umbilicus. Not seen in adults.

(B)

Gastroschisis : Another congenital defect, where bowel loops protrude outside the abdomen without a covering sac, usually to the right of the umbilicus. Again, only in newborns.

(D)

Paraumbilical hernia : Occurs adjacent to (not exactly at) the umbilicus. The swelling in the image is clearly central, not lateral.

Question 149. What is the most likely diagnosis in a 5-year-old child who presents with abdominal distension and a soft, fluctuant mass that is mobile perpendicular to the line of mesenteric attachment?

A. Peritoneal cyst

B. Lipoma

C. Chylolymphatic cyst

D. Pseudocyst

Correct answer: C

The clinical sign described—a soft, fluctuant abdominal mass that is "mobile in a plane perpendicular to the line of attachment of the mesentery" (from right upper to left lower quadrant)—is pathognomonic for a Mesenteric Cyst, specifically a Chylolymphatic cyst (Option C) . This movement happens because the cyst is located between the layers of the small bowel mesentery. A peritoneal cyst (Option A) would not show this specific directional mobility. A lipoma (Option B) is a solid fatty mass and would not be fluctuant. A pseudocyst (Option D) is usually fixed in the retroperitoneum and follows an episode of pancreatitis, which is rare in a healthy 5-year-old. Chylolymphatic cysts are thin-walled lymphatic malformations that contain milky chyle. While often asymptomatic, they can cause pain or intestinal obstruction due to their size. The definitive treatment is surgical enucleation. Therefore, the characteristic mobility defines this congenital lymphatic anomaly.

Question 150. Which of the following statements is FALSE regarding deep second-degree burns?

A. Heal by scar deposition

B. Less blanching

C. Damage to the deeper dermis

D. Painless

Correct answer: D

The false statement regarding deep second-degree (partial thickness) burns is that they are "painless." In reality, deep second-degree burns remain painful to pressure because the pressure-sensitive nerve endings in the deeper dermis are still functional, even if superficial pain receptors are destroyed. True "painless" burns are Third-degree (full thickness) burns, where all dermal sensory structures are completely destroyed. Other statements are correct: deep second-degree burns do result in damage to the deeper dermis (Option C); they show "less blanching" or delayed capillary refill because the superficial dermal vessels are damaged (Option B); and they frequently heal by scar deposition and may take 3 to 6 weeks to close (Option A) . Identifying the depth of a burn is essential for determining if a patient requires skin grafting or conservative dressing management. Because deep second-degree burns retain pressure sensation, labeling them as painless is medically inaccurate.

Question 151. As seen in the abdominal x-ray provided, what would be the appropriate diagnosis?

A. Ureterocele

B. Pelvic bone fracture

C. Rectal foreign body

D. Bladder stone

Correct answer: C

The pelvic X-ray displays a large, well-defined, radiopaque cylindrical object (resembling a glass bottle or canister) located within the midline of the lower pelvis. The size, shape, and position are definitively diagnostic of a rectal foreign body (Option C). A ureterocele (Option B) is a small cystic dilation of the ureter and is not radio-opaque like this. A pelvic bone fracture (Option B) would show disruption of the pelvic ring architecture. A bladder stone (Option D) would typically appear as an oval, laminated, or spiculated opacity and would not have this large cylindrical "man-made" appearance. Rectal foreign bodies are usually inserted through the anus and may require surgical extraction if they cannot be retrieved manually or via endoscopy. They pose a significant risk of rectal perforation or obstruction. Therefore, based on the clear radiographic evidence of an exogenous object in the rectal vault, this is the correct diagnosis.

Question 152. Question 198.Which of the following findings is usually not seen in patients who have received a massive blood transfusion?

A. DIC
(Disseminated
Intravascular
Coagulation)
B. Febrile transfusion reaction
C. Hypercalcemia
D. Thrombocytopenia

Correct answer: C

Massive blood transfusion is defined as replacing the patient's entire blood volume within 24 hours. The electrolyte imbalance that is characteristically absent is hypercalcemia; instead, patients frequently develop hypocalcemia (Option C). This occurs because the citrate used as an anticoagulant in stored blood binds to the patient's ionized calcium. Other options are common complications: DIC (Option A) can occur due to the underlying trauma and coagulopathy; febrile transfusion reactions (Option B) are common due to leukocytes in the blood; and dilutional thrombocytopenia (Option D) is a hallmark of massive transfusion as stored blood is deficient in functional platelets . Therefore, because citrate causes a reduction in serum calcium, hypercalcemia is not expected. Clinicians must often supplement calcium during massive protocols to prevent cardiac arrhythmias and further coagulation defects. Thus, "Hypercalcemia" is the correct "absent" finding for this clinical scenario.

Question 153. What is the most common site of peripheral aneurysm?

A. Brachial artery
B. Popliteal artery

C. Radial artery

D. Femoral artery

Correct answer: B

Among peripheral arterial aneurysms, the popliteal artery (Option B) is the most frequent site, accounting for approximately 70% to 80% of all cases. They are frequently bilateral and are often associated with abdominal aortic aneurysms. Femoral artery aneurysms (Option D) are the second most common peripheral site. Brachial (Option A) and radial (Option C) artery aneurysms are much rarer and are often related to trauma or iatrogenic injury (such as from cannulation) rather than primary degenerative atherosclerotic disease . Popliteal aneurysms rarely rupture; their primary danger is distal embolization or acute thrombosis, which can lead to limb-threatening ischemia. Clinical signs include a prominent pulsatile mass in the popliteal fossa. Screening with ultrasound is recommended if a large pulsatile mass is found behind the knee. Therefore, the popliteal artery remains the statistical "gold standard" answer for the most common peripheral aneurysm location.

Question 154. In which condition is Grey-Turner's sign observed?

A. Acute appendicitis

B. Acute pancreatitis

C. Acute cholecystitis

D. Acute hepatitis

Correct answer: B

Grey-Turner's sign is a clinical sign characterized by ecchymosis (bluish discoloration or bruising) of the flanks. It is a classic indicator of severe Acute Pancreatitis (Option B), specifically the hemorrhagic variety. This bruising results from blood tracked from the retroperitoneum through the transversalis fascia into the subcutaneous tissue of the abdominal wall. Acute appendicitis (Option A), cholecystitis (Option C), and hepatitis (Option D) involve different inflammatory pathways and do not typically lead to the massive retroperitoneal hemorrhage required to produce this sign . Another related sign is Cullen's sign, which involves bruising around the umbilicus. The presence of Grey-Turner's sign signifies a poor prognosis and a high severity of the disease. Therefore, its identification is critical for the risk stratification of patients with acute abdominal pain. It remains the classic pedagogical clinical finding associated with severe, necrotizing pancreatitis in medical board examinations.

Examination Paper December 2020 Question

Question 155. A fetus recovered from a water canal has a crown–heel length of 25 cm. Based on this measurement, what is the approximate

gestational age of the fetus?

A. 6 months

B. 5 months

C. 4 months

D. 3 months

Correct answer: B

According to Haase’s Rule, fetal age can be estimated from crown–heel length:

For the first 5 months of gestation:

Age in months = √(length in cm)

In this case:

√25 = 5 months

After 5 months:

Age in months = length (cm) ÷ 5

(e.g., a 6-month fetus ≈ 30 cm)

Why other options are incorrect:

6 months → expected length ≈ 30 cm

4 months → expected length ≈ 16 cm

3 months → expected length ≈ 9 cm

Question 156. What is the most likely diagnosis in a 10-year-old child with a two-year history of recurrent fractures, blue sclera, dental abnormalities, and a positive family history?

A. Scurvy

B. Rickets

C. Osteogenesis Imperfecta

D. Osteomalacia

Correct answer: C

Osteogenesis Imperfecta (OI), often called "brittle bone disease," is a genetic disorder of Type I collagen synthesis. The clinical presentation is classic: frequent fractures from minimal trauma, blue sclera (due to thinning of the scleral collagen allowing the underlying choroid to show through), and dentinogenesis imperfecta (dental abnormalities). The positive family history supports its autosomal dominant inheritance pattern. Scurvy (Option A) involves Vitamin C deficiency and causes bleeding gums and subperiosteal hemorrhages. Rickets (Option B) is due to Vitamin D deficiency and presents with bony deformities like bowing of legs and "rachitic rosary". Osteomalacia (Option D) is the adult form of rickets, involving defective bone mineralization rather than a primary collagen defect. OI is diagnosed clinically and confirmed by genetic testing. There is no cure, so management focuses on preventing fractures and using

bisphosphonates to increase bone density. Therefore, the ocular and dental findings confirm the diagnosis.

Question 157. A child with IQ of 55 comes under:

A. Mild MR

B. Moderate MR

C. Severe MR

D. Profound MR

Correct answer: B

Mental Retardation (MR), now more commonly referred to as Intellectual Disability (ID), is classified into categories based on Intelligence Quotient (IQ) scores. According to standard diagnostic criteria:

Mild MR: IQ 50–69 (Option A)

1.

Moderate MR: IQ 35–49 (some scales include 50–55) (Option B)

2.

Severe MR: IQ 20–34 (Option C)

3.

Profound MR: IQ below 20 (Option D)

An IQ of 55 falls into the Moderate MR category. Children with moderate intellectual disability often demonstrate significant developmental delays and require some level of support for daily tasks, but they can usually learn basic communication and functional academic skills. Mild MR represents the majority of cases and individuals can often live independently. Severe and Profound categories involve much more limited cognitive and physical capabilities. Understanding these classifications is vital for educational planning and specialized pediatric care. Therefore, based on the standardized IQ ranges, a score of 55 is correctly classified as moderate intellectual impairment.

Question 158. A 10-year-old boy has a history of spontaneous excessive bruising and hemarthrosis, with laboratory findings of a normal platelet count, prolonged partial thromboplastin time (PTT), and a normal prothrombin time (PT). What is the most likely diagnosis?

A. Von Willebrand disease

B. Hemophilia A

C. Bernard-Soulier syndrome

D. Glanzmann thrombasthenia

Correct answer: B

The clinical triad of spontaneous bruising, hemarthrosis (bleeding into joints), and an isolated prolonged PTT in a young boy is highly characteristic of Hemophilia A. Hemophilia A is an X-linked recessive disorder caused by a deficiency of Factor VIII. Factors in the intrinsic pathway, such as Factor VIII, are measured by the PTT. Because the extrinsic and common pathways (measured by PT) and platelet function are normal, those tests remain within normal limits. Von Willebrand disease (Option A) could show a prolonged PTT but typically presents with mucosal bleeding (nosebleeds, gum bleeding) rather than deep joint bleeds. Bernard-Soulier (Option C) and Glanzmann thrombasthenia (Option D) are qualitative platelet disorders that would present with an increased bleeding time and abnormal platelet function tests, which are not described here . Therefore, the specific joint bleeding pattern and clotting profile definitively identify Hemophilia A.

Question 159. During an appendectomy in a 2-year-old child, the surgeon incidentally discovers a 2-inch long structure located approximately 2 feet proximal to the ileocecal valve. What is the most likely diagnosis of this finding?

A. Sarcoma

B. Appendicitis

C. Meckel's diverticulum

D. Zenker's diverticulum

Correct answer: C

The "Rule of 2s" is the classic aid for identifying Meckel's diverticulum (Option C): it is found in 2% of the population, is approximately 2 inches long, is located 2 feet (60 cm) proximal to the ileocecal valve, and often presents by 2 years of age. This incidental finding during abdominal surgery matches these exact dimensions. Meckel's is a remnant of the vitelline duct. Sarcoma (Option A) is a malignant tumor and would not present as a uniform diverticular structure. Appendicitis (Option B) refers to the inflammation of the appendix itself, not an additional small bowel structure. Zenker's diverticulum (Option D) is a pharyngeal pouch found in the neck, not the abdomen. Meckel's can contain ectopic gastric or pancreatic tissue, leading to painless lower gastrointestinal bleeding or intestinal obstruction. Therefore, based on the specific anatomical location and the "rule of 2s," it is the definitive diagnosis.

Question 160. A child presents with muscle weakness and failure to thrive, and the attached X-ray shows characteristic findings. What is the most probable diagnosis?

A. Scurvy

B. Rickets

C. Osteomalacia

D. Osteopetrosis

Examination Paper December 2020 Question

Correct answer: B

The X-ray displays the classic radiological hallmarks of Rickets: cupping, fraying, and splaying of the metaphyses, particularly at the distal radius and ulna. These findings indicate a failure of mineralization of the osteoid at the growth plate, usually due to Vitamin D deficiency. Clinically, this leads to failure to thrive, delayed milestones, and muscle weakness. Scurvy (Option A) shows different radiological signs like "Wimberger’s ring" and "Pelkan spur" due to Vitamin C deficiency. Osteomalacia (Option C) is the adult equivalent of rickets, occurring after growth plate closure. Osteopetrosis (Option D) is characterized by excessively dense, "marble-like" bones, which is the opposite of the radiolucency seen in rickets. Rickets is a preventable disease treated with Vitamin D and calcium supplementation. Therefore, the specific metaphysical changes on the wrist X-ray are pathognomonic for Rickets.

Question 161. What is the most likely diagnosis in a newborn presenting with features of intestinal obstruction, where X-ray and CT abdomen findings suggest the presence of an annular pancreas?

B. Anterior dislocation of the hip

C. Intertrochanteric fracture

D. Femoral neck fracture

Correct answer: B

The specific posture of the affected limb is the key to differentiating hip dislocations. An anterior hip dislocation (Option B) classically presents with the leg held in abduction, external rotation, and flexion, which results in "apparent lengthening" of the limb. This is much rarer than a posterior dislocation (Option A), which presents with the opposite posture: adduction, internal rotation, and flexion, with apparent shortening. Intertrochanteric (Option C) and femoral neck fractures (Option D) also cause external rotation but would present with true shortening and no abduction . Anterior dislocations can be "obturator" (more flexion) or "pubic" (more extension). Management requires urgent closed reduction under general anesthesia to prevent avascular necrosis of the femoral head. Because the patient demonstrates the unique "abducted and externally rotated" posture, anterior dislocation is the only accurate diagnosis.

Question 162. A neonate presents with forceful, non-bilious vomiting and visible gastric peristalsis. A barium meal study is shown below. What is the most likely diagnosis?

A. Hirschsprung's disease

B. Congenital

hypertrophic

pyloric stenosis

C. Jejunal atresia

D. Duodenal atresia

Correct answer: B

The presentation of forceful (projectile) non-bilious vomiting in a neonate (typically at 3–6 weeks of age), along with visible gastric peristalsis (stomach movements), is classic for Congenital Hypertrophic Pyloric Stenosis (CHPS). The "non-bilious" nature of the vomit is critical as it indicates the obstruction is proximal to the second part of the duodenum. The barium meal image provides the definitive diagnosis, showing the "string sign"—the elongated, narrow pyloric canal. Duodenal atresia (Option D) would show bilious vomiting and a "double bubble" on X-ray. Jejunal atresia (Option C) also causes bilious vomiting and distal obstruction. Hirschsprung's disease (Option A) causes low intestinal obstruction and delayed meconium passage . CHPS is also associated with a palpable "olive-shaped" mass in the epigastrium and hypokalemic hypochloremic metabolic alkalosis. Surgical management involves a Ramstedt’s pyloromyotomy.

Question 163. What is the type of cell displayed below originating from?

A. NK cells

B. CD4 cells

C. B cells

D. CD8 cells

Correct answer: C

The histological image displays a Plasma Cell. Plasma cells are easily identified by their ovoid shape, an eccentric nucleus, and a characteristic "cartwheel" or "clock-face" appearance of the nuclear chromatin. They also feature a prominent "perinuclear halo," which represents the Golgi apparatus. Plasma cells are the final differentiated form of B-lymphocytes (B cells) (Option C). Their primary function is the massive production and secretion of antibodies (immunoglobulins). CD4 cells (Option B) and CD8 cells (Option D) are types of T-lymphocytes; they perform cellular immune functions and do not differentiate into plasma cells . NK cells (Option A) are large granular lymphocytes involved in the innate immune response. The identification of plasma cells is fundamental in diagnosing chronic inflammation and plasma cell dyscrasias like multiple myeloma. Therefore, B cells are the definitive progenitor for the cell type shown.

Question 164. What is the recommended treatment for inguinal hernia in infants?

A. Herniotomy

B. Herniorrhaphy

C. Truss

D. Hernioplasty

Correct answer: A

In infants and children, nearly all inguinal hernias are of the indirect type and result from a patent processus vaginalis (a congenital developmental defect). Because the underlying abdominal wall muscles are typically strong and normal, the only surgical step required is the high ligation and excision of the patent hernia sac. This procedure is called a Herniotomy (Option A). Herniorrhaphy (Option B) involves suturing the abdominal wall to reinforce it, which is unnecessary in infants. Hernioplasty (Option D) involves using a synthetic mesh for reinforcement, which is standard in adults but strictly avoided in growing children. A Truss (Option C) is an outdated external belt that is ineffective and can lead to skin damage and incarceration. Inguinal hernias in infants never resolve spontaneously and carry a high risk of strangulation, so early surgical herniotomy is mandatory. Therefore, simple excision of the sac is the gold standard pediatric surgical intervention.

ORTHOPEDICS

Question 165. A 65-year-old man presents with chronic joint pain and morning stiffness lasting about 30 minutes. Examination reveals Heberden’s and Bouchard’s nodes, and X-ray findings show joint space narrowing with osteophyte formation. What is the most likely diagnosis?

A. Osteoporosis

B. Osteoarthritis

C. Rheumatoid arthritis

D. Bone tumor

Correct answer: B

The clinical profile of an elderly patient with chronic pain in weight-bearing joints, short-lived morning stiffness (less than 30 minutes), and characteristic Heberden's nodes (at the DIP joints) and Bouchard's nodes (at the PIP joints) is diagnostic of Osteoarthritis (OA). The radiographic findings—narrowed joint spaces and osteophytes (bone spurs)—are the "classic" indicators of OA. Rheumatoid arthritis (RA) (Option C) typically presents with prolonged morning stiffness (more than 1 hour), involves different hand joints (MCP and PIP), and shows periarticular osteopenia rather than osteophytes. Osteoporosis (Option A) is a systemic loss of bone density that is usually painless until a fracture occurs. Bone tumors (Option D) would present as a localized mass or focal destructive lesion rather than symmetrical joint wear. OA is a

degenerative "wear and tear" disease. Therefore, based on the specific nodes and radiographic spurs, Osteoarthritis is the only viable diagnosis.

Question 166. This image displays a brace that belongs to?

A. Boston brace

B. Milwaukee brace

C. Taylor brace

D. ASHE brace

Correct answer: C

The image displays a Taylor brace (Option C), which is a thoracolumbosacral orthosis (TLSO). It is characterized by two long vertical metal bars (paraspinal bars) connected to a pelvic band, along with shoulder straps. This brace is traditionally used to restrict spinal flexion and extension, particularly in the management of stable vertebral fractures, Pott's disease (spinal tuberculosis), or Scheuermann's kyphosis. The Milwaukee brace (Option B) is a cervico-thoraco-lumbosacral orthosis that includes a neck ring, used for high-thoracic scoliosis. The Boston brace (Option A) is a low-profile, rigid plastic shell used primarily for lumbar or thoracolumbar scoliosis. The ASHE brace (Option D) is another spinal support but lacks the specific Taylor vertical-bar structure. Understanding these orthoses is essential for pediatric and spinal care. Therefore, the visual of the paraspinal metal bars with shoulder straps uniquely identifies the Taylor brace.

231. Identify the marked tarsal bone shown in the
image given below?

Examination Paper December 2020 Question

Question 167. A 25-year-old man presents with pain and swelling of the right knee. Radiography reveals an eccentric, lytic “soap-bubble” lesion involving the epiphysis of the distal femur. What is the most likely diagnosis?

A. Patellar fracture

B. Tibial fracture

C. Foreign body

D. Femur fracture

Correct answer: A

The X-ray shows a displaced patellar fracture in a 25-year-old presenting with pain and swelling of the right knee. The white arrow points to fragmentation and displacement of patellar fragments, confirming patellar fracture.

Key Radiological Features visible:

1.

Disrupted patellar continuity with visible fragment separation

2.

Displaced bony fragments near the patella

3.

Soft tissue swelling around the knee joint

4.

Arrow specifically indicating the fracture site

Why other options are wrong:

(B)

Tibial fracture is incorrect because the tibial cortex appears completely intact without any visible fracture line, periosteal reaction, or bony displacement in the tibial region.

(C)

Foreign body is incorrect because the radio-opaque opacity seen represents displaced bony patellar fragments — not an extrinsic foreign body. The density corresponds anatomically to the patella rather than an external object.

(D)

Femur fracture is incorrect because the distal femur appears structurally intact with no visible cortical break, fracture line, or displacement of femoral fragments anywhere in the image.

Question 168. Identify the fracture visible in the provided x-ray image?

A. Galeazzi's fracture

B. Monteggia fracture

C. Smith's fracture

D. Colle's fracture

Correct answer: A

The X-ray shows a fracture of the distal radius with dorsal angulation and displacement, occurring just proximal to the wrist joint — the classic Colles' fracture. The lateral view clearly demonstrates the characteristic "dinner fork deformity" with posterior displacement of the distal fragment.

Key Radiological Features visible:

1.

Transverse fracture of distal radius within 2.5 cm of wrist

2.

Dorsal angulation of distal fragment

3.

Radial shortening visible

4.

Classic dinner fork appearance on lateral view

Why other options are wrong:

(A)

Galeazzi's fracture is incorrect because Galeazzi fracture involves fracture of distal radius shaft with dislocation of distal radioulnar joint — no radioulnar joint dislocation is visible here.

(B)

Monteggia fracture is incorrect because Monteggia involves fracture of proximal ulna with radial head dislocation — the fracture here is in the distal radius, not proximal ulna.

(C)

Smith's fracture is incorrect because Smith's fracture shows volar/anterior angulation of the distal radial fragment — the opposite of Colles'. The lateral view here clearly shows dorsal displacement confirming Colles'.

Question 169. The USG given below is seen in:

A. Ectopic pregnancy

B. Ovarian pregnancy

C. Anencephaly

D. Hydatidiform mole

Correct answer: D

The ultrasound image depicts the classic "snowstorm" appearance (or "bunch of grapes" appearance), which is pathognomonic for a Hydatidiform Mole. This pattern is created by the hydropic degeneration of placental villi, appearing as multiple small cystic spaces filling an enlarged uterine cavity. A fetus is notably absent in a complete mole. Ectopic pregnancy (Option A) would show an empty uterus with an adnexal mass. Ovarian pregnancy (Option B) is a rare ectopic type. Anencephaly (Option C) is a fetal neural tube defect that would show a developing fetus lacking the cranial vault. Gestational Trophoblastic Disease (GTD) also presents with vaginal bleeding and abnormally high serum beta-hCG levels. Management requires urgent suction evacuation and careful long-term follow-up to monitor for malignant transformation. Therefore, the distinctive "snowstorm" ultrasound visual is the defining characteristic of a molar pregnancy.

Question 170. In the anteroposterior diameters of the pelvic inlet, the true conjugate is:

A. The distance from the midpoint of the sacral promontory to the uppermost margin of the symphysis pubis

B. The shortest distance between the sacral promontory and the symphysis pubis

C. The distance from the lowest margin of the symphysis to the sacral promontory

D. The distance from the posterior margin of the sacral promontory to the symphysis pubis

Correct answer: A

The True Conjugate (Anatomical Conjugate) is defined as the distance between the midpoint of the sacral promontory and the uppermost margin (superior border) of the symphysis pubis. It normally measures about 11 cm. Obstetric conjugate (Option B) is the shortest distance between the sacral promontory and the posterior surface of the symphysis (approximately 10 cm); this is the most clinically important diameter for labor. Diagonal conjugate (Option C) is the distance from the lowest margin (inferior border) of the symphysis to the sacral promontory (approximately 12.5 cm); it is the only AP diameter that can be measured during a digital vaginal examination. Option D provides a description that does not match standard anatomical nomenclature for pelvic conjugates. Precise knowledge of these diameters is essential for identifying cephalopelvic disproportion. Therefore, the measurement to the superior border defines the true conjugate.

Question 171. A primigravida presents with labor pains, and per vaginal examination reveals that the cervix is 7 cm dilated and fully effaced. Which stage of labor is she currently in?

A. Acceleration phase

B. Latent phase

C. Deceleration phase

D. The phase of maximum slope

Correct answer: D

The first stage of labor is divided into the latent and active phases . Friedman’s curve further subdivides the active phase into the acceleration phase, the phase of maximum slope, and the deceleration phase . The latent phase ends and the active phase begins around 4 cm of cervical dilation. Between 4 cm and 9 cm of dilation, particularly at 7 cm, the patient is in the phase of maximum slope. This is when cervical dilation occurs at its fastest rate. The acceleration phase (Option A) occurs just before this, usually between 3–4 cm. The deceleration phase (Option C) occurs after 9 cm, when dilation slows down before full dilation (10 cm). The latent phase (Option B) is the early part of labor with slow cervical change. Because the patient is 7 cm dilated and fully effaced, she has progressed well into the most rapid portion of the active stage, identifying this as the phase of maximum slope.

Question 172. What observation can be made from this

hysterosalpingogram?

A. Bilateral hydrosalpinx

B. Extravasation into the venous

system

C. Normal HSG

D. Bilateral cornual block

Correct answer: A

The hysterosalpingogram (HSG) shows bilateral dilated, fluid-filled fallopian tubes with no peritoneal spill of contrast bilaterally — classic appearance of bilateral hydrosalpinx.

Key Radiological Features visible:

1.

Bilateral dilated tubular structures filled with contrast

2.

No free peritoneal spillage of contrast beyond tube ends

3.

Club-shaped/sausage-shaped dilation of both tubes

4.

Uterine cavity appears normal

5.

Complete blocked tubes at fimbrial ends retaining contrast

Why other options are wrong:

(B)

Extravasation into venous system is incorrect because venous intravasation appears as linear vascular patterns radiating away from uterus in a vascular distribution — not the bulbous dilated tubular pattern seen here.

(C)

Normal HSG is incorrect because normal HSG shows free bilateral peritoneal spillage of contrast beyond tube ends into peritoneal cavity — absent in this image confirming pathology.

(D)

Bilateral cornual block is incorrect because cornual block shows non-filling of tubes from the cornual end itself — here contrast has clearly filled and outlined both tubes completely, ruling out cornual obstruction.

Question 173. Which part of the female body is considered the most reliable indicator among the given options?

A. Rectouterine pouch

B. Ovarian fossa

C. Posterior fornix

D. Vesicouterine pouch

Correct answer: A

The rectouterine pouch, also known as the Pouch of Douglas, is the most dependent (reliant) part of the female peritoneal cavity in the upright position. It is located between the posterior wall of the uterus and the anterior wall of the rectum. Because it is the lowest point, clinical conditions such as hemoperitoneum, pelvic inflammatory disease exudates, or ruptured ectopic pregnancies result in fluid accumulation here. The posterior fornix (Option C) is the deepest part of the vagina and is anatomically related to this pouch, making it the site for culdocentesis. The ovarian fossa (Option B) is a depression in the lateral pelvic wall where the ovary sits but is not a dependent drainage area. The vesicouterine pouch (Option D) is located anteriorly between the bladder and uterus and is shallower and higher than the Pouch of Douglas. Therefore, in clinical diagnostics and imaging, the rectouterine pouch is the primary site checked for pathological fluid collection.

Question 174. During a planned dilatation and curettage (D&C) procedure, a Sims' uterine sound is introduced, but no resistance is encountered. Based on this finding, what should be the next appropriate step in management from the given options?

A. Continue the procedure

B. Do planned evacuation

C. Immediate laparoscopy

D. Mifepristone and Misoprostol

Correct answer: C

During a D&C, a sudden loss of resistance while using a uterine sound or curette is a classic sign of uterine perforation. This is a serious surgical complication. The immediate priority is to stop the procedure and assess for injury to internal organs, such as the bowel or bladder. Immediate laparoscopy (Option C) is the gold standard for visualizing the site of perforation and checking for secondary damage or internal bleeding. Continuing the procedure (Option A) or proceeding with the planned evacuation (Option B) is extremely dangerous, as it can worsen the injury or cause a bowel pull-through. Mifepristone and Misoprostol (Option D) are medical management options that have no role in the acute management of a surgical perforation. If the patient is hemodynamically unstable, an emergency laparotomy might be required, but in a controlled setting, laparoscopy is the preferred diagnostic and potentially therapeutic next step to ensure patient safety.

Question 175. A 16-year-old girl presents to the outpatient department with primary amenorrhea and

recurrent cyclical pain. On perineal examination, a bulging mass is seen protruding at the vaginal opening. What is the most likely underlying cause of this condition?

A. Transverse septum in the proximal vagina

B. Complete vaginal atresia

C. Imperforate hymen

D. Cervical agenesis

Correct answer: C

The clinical triad of primary amenorrhea (absence of periods), cyclical pelvic pain, and a visible vaginal protrusion is pathognomonic for an imperforate hymen . The protrusion is a bulging, often bluish membrane caused by hematocolpos (the accumulation of menstrual blood trapped behind the hymen). A transverse vaginal septum (Option A) would also cause obstructive amenorrhea and cyclical pain, but the obstruction is typically higher up and would not present as a protrusion at the introitus. Complete vaginal atresia (Option B) involves a lack of the vaginal canal, meaning no protrusion would be visible. Cervical agenesis (Option D) would present with amenorrhea and pain due to hematometra, but without the vaginal bulge. The classic visual sign of a tense, bulging membrane between the labia in an adolescent girl confirms the diagnosis. Treatment involves a cruciate incision to drain the accumulated blood and create a permanent opening.

Question 176. A 35-year-old asymptomatic woman undergoes routine ultrasonography, which reveals a 6 cm unilocular ovarian cyst. Her tumor markers and other serological investigations are within normal limits. What is the most appropriate approach to management?

A. Laparotomy

B. Follow-up after 1-2 cycles of Oral Contraceptive Pills (OCPs)

C. Ovariotomy

D. Follow-up with CA-125

Correct answer: D

In a 35-year-old asymptomatic woman with a 6 cm unilocular ovarian cyst and normal tumor markers, the most appropriate management is watchful waiting with follow-up CA-125 monitoring.

Since all tumor markers are normal and the cyst is unilocular with no suspicious features, immediate surgery is not warranted. Serial CA-125 monitoring along with repeat ultrasonography after 3 months is the recommended conservative approach to assess for resolution or change in characteristics.

Why other options are wrong:

(A)

Laparotomy is incorrect because laparotomy is reserved for suspicious, complex, or malignant ovarian masses. An asymptomatic unilocular cyst with normal markers does not justify major surgery.

(B)

Follow-up with OCPs is incorrect because OCPs are useful for functional cysts which are typically smaller (<5 cm). A 6 cm cyst in a 35-year-old warrants monitoring with tumor markers rather than OCP suppression therapy alone.

(C)

Ovariotomy is incorrect because surgical removal of the ovary is not indicated as first-line management for a simple unilocular cyst with normal tumor markers in a premenopausal woman.

Question 177. How is this contraceptive inserted?

A. Hysteroscopic

B. Abdominal

C. Laparoscopic

D. Oral

Correct answer: A

The device shown is an intratubal contraceptive micro-insert (classically known by the brand name Essure). It is a non-incisional form of permanent sterilization. The coils are inserted hysteroscopically (Option A) through the vagina and cervix into the fallopian tubes. Once in place, they induce a localized inflammatory response that leads to the formation of scar tissue (fibrosis), which permanently blocks the tubes. Abdominal (Option B) and Laparoscopic (Option C) methods are used for traditional tubal ligation (e.g., Pomeroy’s technique or applying Falope rings), which involve incisions and general anesthesia. Oral (Option D) refers to birth control pills. The primary advantage of the hysteroscopic coil method is that it can be performed in an office setting without incisions. However, users must use backup contraception for three months until a follow-up test confirms the tubes are completely occluded. Therefore, the visual of the micro-coil coil uniquely identifies the hysteroscopic delivery route.

Question 178. A 29-year-old pregnant woman at 32 weeks of gestation undergoes an oral glucose tolerance test (OGTT). Her fasting blood glucose is 110 mg/dL, and the 2-hour post-glucose value is 180 mg/dL. What is the most appropriate next step in management?

A. Start oral hypoglycemics

B. Reassurance

C. Admit and start insulin

D. Induce labor due to risk of fetal macrosomia

Correct answer: C

The patient's OGTT results (fasting 110 mg/dl and 2-hour 180 mg/dl) are well above the diagnostic thresholds for Gestational Diabetes Mellitus (GDM). In India, the DIPSI guidelines suggest that a fasting level or a 2-hour level is diagnostic. Because her levels are significantly elevated, particularly the fasting glucose, conservative management with diet alone is unlikely to be sufficient at 32 weeks. Admitting and starting insulin (Option C) is the most appropriate management to achieve rapid glycemic control and reduce the risk of maternal and fetal complications. Starting oral hypoglycemics (Option A) like metformin is an alternative, but insulin remains the gold standard in pregnancy for severe elevations. Reassurance (Option B) is inappropriate as untreated GDM leads to macrosomia and polyhydramnios. Induced labor (Option D) is not indicated at 32 weeks solely for GDM unless there are other severe complications. Prompt insulin therapy is the priority.

Question 179. In the diagnosis of bacterial vaginosis, which of the following findings is not typically associated with the condition?

A. Presence of clue cells

B. Thick white discharge

C. Vaginal pH greater than 4.5

D. Fishy odour

Correct answer: B

Bacterial Vaginosis (BV) is diagnosed using Amsel’s Criteria, which requires three of the following: 1) A thin, homogenous greyish-white discharge. 2) A vaginal pH greater than 4.5 (Option C). 3) A positive Whiff test (a fishy odour upon adding 10% KOH) (Option D). 4) The presence of clue cells on wet mount microscopy (Option A) . Thick, white, "curdy" or "cottage cheese" discharge (Option B) is the hallmark feature of Vulvovaginal Candidiasis (yeast infection), not BV. Candidiasis is also typically associated with a normal vaginal pH (around 4.0–4.5). BV results from a shift in the vaginal flora where normal lactobacilli are replaced by

anaerobes like Gardnerella vaginalis. Because BV is characterized by a thin, malodorous discharge rather than a thick white one, Option B is the incorrect feature for this diagnosis. Management usually involves oral or topical metronidazole.

Question 180. A 45-year-old woman reports postcoital bleeding for the past three months. On pelvic examination, a small friable cervical growth is seen that bleeds on touch. What is the most likely diagnosis?

A. Hemorrhagic cyst

B. Cervical polyp

C. Cervical cancer

D. Cervical fibroid

Correct answer: B

The image shows a large, red, smooth, rounded cervical growth in a 45-year-old woman with postcoital bleeding. Despite its large size, the growth appears smooth surfaced and pedunculated — characteristic of a cervical polyp.

Key Clinical Features:

1.

Smooth, rounded, red mass protruding from cervix

2.

Bleeds on touch — polyps are highly vascular

3.

Postcoital bleeding — common presentation of cervical polyp

4.

Surface appears relatively smooth unlike irregular malignant growth

Why other options are wrong:

(A)

Hemorrhagic cyst is incorrect because hemorrhagic cysts appear as smooth bluish-white rounded swellings — they do not protrude as large vascular masses and rarely cause postcoital bleeding.

(C)

Cervical cancer is incorrect because cervical cancer typically presents as irregular, cauliflower-like, ulcerative, necrotic friable mass with irregular surface — the growth here

appears smoother and more rounded suggesting benign polyp.

(D)

Cervical fibroid is incorrect because cervical fibroids are firm, pale, hard masses arising from cervical stroma — they are not typically bright red vascular pedunculated growths as seen here.

Question 181. In the context of contraceptive effectiveness, the Pearl Index is utilized to evaluate:

A. Accidental pregnancies

B. Population

C. Fertility rate

D. Abortions

Correct answer: A

The Pearl Index is the standard statistical measure used to describe the clinical effectiveness of a contraceptive method. It specifically calculates the number of accidental pregnancies (Option A) that occur per 100 woman-years of exposure to the method. A lower Pearl Index indicates a more effective and reliable contraceptive. It does not measure population size (Option B), the general fertility rate (Option C) of a region, or the number of abortions (Option D) . The formula for the index is: . This index is essential for clinicians to counsel patients on the "failure rate" of various methods, such as comparing the high effectiveness of IUCDs to the lower effectiveness of barrier methods. Therefore, the Pearl Index is uniquely and strictly associated with evaluating accidental pregnancies in family planning studies.

Question 182. A woman presents with amenorrhea, headaches, visual disturbances, and milky discharge from the nipples. What is the most appropriate initial investigation to perform?

A. Prolactin level

B. LH

C. FSH

D. hCG

Correct answer: A

The combination of amenorrhea (absent periods) and galactorrhea (milky nipple discharge) is known as the amenorrhea-galactorrhea syndrome. This is most commonly caused by hyperprolactinemia. The presence of headaches and blurred vision (classically bitemporal hemianopia) strongly suggests a prolactin-secreting pituitary adenoma (prolactinoma) that is large enough to compress the optic chiasm. The most appropriate initial test to confirm the diagnosis is measuring the serum prolactin level (Option A). hCG (Option D) should be checked to rule out pregnancy in any woman with amenorrhea, but it would not explain the milky discharge and visual symptoms. LH (Option B) and FSH (Option C) are used to evaluate

hypothalamic or ovarian failure but are not the primary diagnostic tests for galactorrhea. If prolactin levels are significantly elevated, an MRI of the sella turcica is then indicated. Thus, prolactin is the prioritized biochemical test.

Question 183. What is the FIGO stage of endometrial carcinoma when the disease has extended to involve the vagina?

A. Stage IIIa

B. Stage IIIb

C. Stage IIIc

D. Stage IVa

Correct answer: B

The FIGO staging for endometrial carcinoma defines Stage III as local and/or regional spread of the tumor. Specifically, Stage IIIb (Option B) refers to tumors that have spread to the vagina and/or the parametrium. Stage IIIa (Option A) involves the tumor spreading to the serosa of the corpus uteri and/or the adnexa (ovaries/tubes). Stage IIIc (Option C) indicates spread to the pelvic and/or para-aortic lymph nodes. Stage IVa (Option D) is more advanced and involves the invasion of the bladder and/or bowel mucosa . Accurate staging is essential for determining the prognosis and the need for adjuvant therapies such as radiation or chemotherapy. Because vaginal involvement is the specific criteria for the "b" sub-category of Stage III, Stage IIIb is the correct diagnostic stage. Management of Stage IIIb disease often requires a combination of surgery and radiation therapy.

Question 184. Which of the following is NOT typically associated with fibroids?

A. Pelvic mass

B. Amenorrhea

C. Infertility

D. Menstrual irregularity

Correct answer: B

Uterine leiomyomas (fibroids) are benign smooth muscle tumors. The most common symptoms include a palpable pelvic mass (Option A), menstrual irregularities (Option D)—specifically heavy bleeding (menorrhagia) and prolonged periods—and infertility (Option C) due to cavity distortion . Amenorrhea (the absence of periods) (Option B) is not a feature of fibroids. In fact, fibroids are far more likely to cause excessive bleeding rather than no bleeding at all. Amenorrhea should prompt a clinician to investigate for pregnancy, PCOS, or hypothalamic-pituitary-ovarian axis disorders. Fibroids grow in response to estrogen, so they typically regress after menopause. If a woman with known fibroids develops amenorrhea, it is usually due to a concurrent condition or the natural onset of menopause rather than the fibroids

themselves. Therefore, amenorrhea is the correct "not" answer for typical fibroid presentations.

Question 185. Which hormone is responsible for producing the characteristic ferning pattern seen when cervical mucus dries?

A. Estrogen

B. Progesterone

C. Prolactin

D. 17-ketosteroids

Correct answer: A

The "ferning pattern" refers to the microscopic appearance of cervical mucus when it is allowed to dry on a glass slide. This pattern, which resembles the leaves of a fern, is caused by high concentrations of sodium chloride in the mucus. This phenomenon is exclusively under the influence of Estrogen (Option A) and is most prominent during the mid-cycle (pre-ovulatory) phase. Progesterone (Option B), which dominates the luteal phase after ovulation, inhibits the ferning pattern and causes the mucus to become thick and cellular (beading). This is known as a negative fern test. Prolactin (Option C) and 17-ketosteroids (Option D) (adrenal androgens) do not have a direct effect on the crystallization properties of cervical mucus. The presence of ferning is a reliable clinical indicator of estrogenic activity and is used to monitor follicular development and determine the timing of ovulation in infertility assessments.

Question 186. Which of the following spermicides is used in the contraceptive product "TODAY"?

A. NET-EN

B. DMPA

C. Nonoxynol-9

D. Norethisterone

Correct answer: C

The contraceptive product "TODAY" is a vaginal sponge that acts as both a mechanical barrier and a chemical contraceptive. It contains the spermicide Nonoxynol-9 (Option C). Nonoxynol-9 is a surfactant that disrupts the cell membrane of the sperm, rendering them immobile and incapable of fertilization. NET-EN (Option A) and DMPA (Option B) are progestogen-only injectable contraceptives (norethisterone enanthate and depot medroxyprogesterone acetate). Norethisterone (Option D) is a common progestin used in oral birth control pills and HRT . Nonoxynol-9 is the most widely used spermicide globally and is also found in many contraceptive gels, foams, and pre-lubricated condoms. While effective as a spermicide, it does not provide protection against STIs and can occasionally cause vaginal irritation. Thus, for the "TODAY" vaginal sponge, Nonoxynol-9 is the active chemical agent.

Question 187. What is the most common side effect she is likely to experience following the insertion?

A. Ectopic pregnancy

B. Pelvic infection

C. Pain

D. Bleeding

Correct answer: D

The Intrauterine Contraceptive Device (IUCD) is a highly effective, long-acting reversible contraceptive. However, users frequently experience specific side effects. The most common side effect leading to the removal of the device is abnormal vaginal bleeding (Option D), which can manifest as heavier or longer menstrual periods (menorrhagia) or intermenstrual spotting. Pain (Option C), such as pelvic cramps, is the second most common side effect . While pelvic infection (Option B) (PID) and ectopic pregnancy (Option A) are serious potential complications, their overall incidence is significantly lower than the occurrence of bleeding. Most bleeding issues are mild and resolve within the first few months after insertion, but they remain the primary reason for patient dissatisfaction. Clinicians should counsel patients about these expected changes to improve compliance. Therefore, increased menstrual bleeding is the most frequent adverse outcome of IUCD use.

Question 188. For a 30-year-old woman presenting with creamy vaginal discharge, a fishy odor, an Amsel score of 3/4, and a positive amine (whiff) test, which syndromic treatment kit would you recommend?

A. Red kit

B. Blue kit

C. Green kit

D. Gray kit

Correct answer: C

The image shows clue cells — epithelial cells studded with bacteria obscuring cell borders — pathognomonic of Bacterial Vaginosis. Combined with creamy discharge, fishy odor, and Amsel score 3/4 with positive whiff test, this confirms Bacterial Vaginosis.

Under India's Syndromic Case Management, the Green Kit is recommended for vaginal discharge syndrome in women, which includes bacterial vaginosis treatment.

Green Kit contains:

1.

Metronidazole — targets anaerobes in BV

2.

Fluconazole — covers candidal component

3.

Doxycycline — covers chlamydial cervicitis

Why other options are wrong:

(A)

Red kit is incorrect because the Red kit is used for syphilis treatment — not indicated for vaginal discharge syndrome.

(B)

Blue kit is incorrect because the Blue kit is designated for urethral discharge syndrome in males — completely inappropriate for female vaginal discharge.

(D)

Gray kit is incorrect because the Gray kit is specifically used for anorectal discharge syndrome — not for vaginal discharge in women.

Question 189. What is typically the first sign of sexual maturation in females?

A. Maturation

B. Thelarche

C. Pubarche

D. Menarche

Correct answer: B

Puberty in females typically follows a well-defined chronological sequence. The first sign of sexual maturation is usually Thelarche (Option B), which refers to the beginning of breast development (breast budding). This typically occurs between ages 8 and 10. This is followed by Pubarche (Option C) or Adrenarche, which is the growth of pubic and axillary hair. The final major milestone is Menarche (Option D), the onset of the first menstrual period, which usually occurs about 2 to 2.5 years after thelarche. "Maturation" (Option A) is a general term for the whole process. While there can be individual variations in this sequence, thelarche is the standard physiological "herald" of pubertal onset. Recognition of this sequence is important for pediatricians to identify precocious or delayed puberty. Therefore, breast development is correctly identified as the initial visible marker of female maturation.

DERMATOLOGY

Question 190. What is the specific nail finding that is considered pathognomonic for psoriasis?

A. Nail pitting

B. Subungual oil drop sign

C. Thinning of nails

D. Pterygium

Correct answer: B

While several nail changes occur in psoriasis, the subungual "oil drop" sign (or salmon patch) is considered the most specific and pathognomonic finding. It appears as a yellowish-red discoloration under the nail plate, resembling a drop of oil, caused by parakeratosis and inflammation in the nail bed. Nail pitting (Option A) is the most common finding in psoriasis but is not pathognomonic, as it can also be seen in alopecia areata or eczema. Thinning of nails (Option C) is non-specific. Pterygium (Option D) is an extension of the skin onto the nail, classically seen in lichen planus, not psoriasis. Other psoriatic nail signs include subungual hyperkeratosis and onycholysis (separation of the nail from the bed) . Because the oil drop sign is unique to the psoriatic inflammatory process, it is the most definitive clinical diagnostic marker for the disease.

Question 191. A farmer presents with a swelling on the palm that developed several months after sustaining a thorn prick injury. What is the most likely medical diagnosis?

A. Ameloblastoma

B. Embryogenic dermoid

C. Sequestration dermoid

D. Implantation dermoid

Correct answer: D

The clinical history of a palm swelling following a penetrating injury (like a thorn prick) is the "textbook" presentation of an implantation dermoid cyst. This occurs when a fragment of surface epithelium is driven into the deeper subcutaneous tissues during trauma. Over time, this trapped tissue grows and desquamates keratin, forming a cyst. Farmers are particularly susceptible due to occupational exposure to thorns and splinters. Ameloblastoma (Option A) is a tumor of the jaw. Embryogenic (Option B) and sequestration dermoids (Option C) are congenital cysts that occur along embryonic fusion lines (e.g., the midline or outer angle of the eye) rather than resulting from trauma. Implantation dermoids are typically firm, non-tender, and move with the skin. Surgical excision is the definitive treatment. Therefore, the traumatic origin in the palm confirms the diagnosis of an implantation dermoid .

Question 192. A 54-year-old woman presents with heartburn and shiny, tight, thickened skin over her hands associated with non-pitting edema. Serological testing is positive for anti–topoisomerase I antibodies. What is the most likely diagnosis?

A. Limited cutaneous systemic sclerosis

B. Diffuse cutaneous systemic sclerosis

C. Raynaud's phenomenon

D. Peutz-Jeghers syndrome

Correct answer: B

The patient displays the core features of systemic sclerosis (scleroderma), including skin thickening (sclerodactyly) and esophageal symptoms (heartburn). The definitive diagnostic marker is the Topoisomerase I (Anti-Scl-70) antibody, which is highly specific for the Diffuse cutaneous systemic sclerosis subtype (Option B). This subtype is characterized by rapid skin involvement that extends proximal to the elbows and knees, and a high risk of internal organ disease like interstitial lung disease, as noted in this patient. Limited cutaneous systemic sclerosis (Option A) (CREST syndrome) is associated with Centromere antibodies and limited skin involvement. Raynaud's phenomenon (Option C) is a symptom (color change in fingers) that is often the first sign of scleroderma but is not the diagnosis for the full clinical picture. Peutz-Jeghers syndrome (Option D) involves GI polyps and pigmentation . Thus, the specific antibody profile confirms the diffuse type.

Question 193. A 60-year-old man, status post femur fracture surgery, develops sharp, severe, constant burning pain over the right side of his back, where a rash is also noted. What is the most appropriate treatment for this condition?

A. Amitriptyline

B. Topical corticosteroids

C. Valacyclovir

D. Mupirocin

Correct answer: C

The patient’s symptoms of severe burning pain and a localized rash on one side of the back are classic for Herpes Zoster (Shingles), likely triggered by the stress of surgery and trauma. The rash follows a specific dermatome. The first-line recommended treatment for an acute outbreak is antiviral therapy with Valacyclovir (Option C) or acyclovir. These drugs help reduce the duration of the rash and the severity of the pain. Amitriptyline (Option A) is used to treat post-herpetic neuralgia (chronic pain after the rash heals), not the acute infection. Topical corticosteroids (Option B) are avoided as they can worsen viral replication. Mupirocin (Option D) is an antibiotic for secondary bacterial infections but does not treat the primary virus . Prompt antiviral treatment (ideally within 72 hours) is essential for achieving the best outcome and preventing long-term nerve pain. Therefore, Valacyclovir is the indicated acute management.

Question 194. For day care anesthesia, which intravenous induction agent is preferred?

A. Ketamine

B. Propofol

C. Etomidate

D. Thiopentone

Correct answer: B

Propofol (Option B) is the "gold standard" and preferred intravenous induction agent for day care (ambulatory) anesthesia. Its primary advantages include an extremely rapid onset, a very short duration of action due to rapid redistribution, and a smooth, quick recovery profile that allows patients to be discharged sooner. Most importantly, propofol has intrinsic antiemetic properties, which significantly reduces the risk of postoperative nausea and vomiting (PONV), a common cause of delayed discharge. Ketamine (Option A) can cause emergence delirium and hallucinations. Thiopentone (Option D) has a longer "hangover" effect due to its accumulation in fat tissues. Etomidate (Option C) is preferred for cardiovascular stability but can cause myoclonus and adrenocortical suppression . Because of its "clear-headed" recovery and antiemetic benefit, Propofol is the ideal choice for procedures where rapid recovery and same-day discharge are essential.

Question 195. Which anesthetic induction agent is most commonly associated with hallucinations and vivid dreams during the recovery phase?

A. Ketamine

B. Propofol

C. Thiopentone

D. Etomidate

Correct answer: A

Ketamine (Option A) is a dissociative anesthetic that acts as an NMDA receptor antagonist. Its most characteristic and bothersome side effect is emergence delirium, which occurs in up to 30% of adults. This phenomenon includes hallucinations, vivid dreams, confusion, and agitation during the recovery phase as the patient "emerges" from anesthesia. To minimize these effects, ketamine is often administered alongside a benzodiazepine like midazolam. Propofol (Option B) provides a pleasant recovery and is actually associated with euphoria rather than hallucinations. Thiopentone (Option C) and Etomidate (Option D) do not classically cause psychiatric emergence phenomena . Ketamine is highly valued for its analgesic properties and for maintaining spontaneous respiration, but its psychotropic side effects limit its use in adult elective surgery. Therefore, the specific side effect profile of vivid dreams and hallucinations is uniquely attributed to ketamine among the choices provided.

Question 196. How do local anesthetics function?

A. Block sodium channels

B. Block potassium channels

C. Block calcium channels

D. Block chloride channels

Correct answer: A

Local anesthetics such as lignocaine (lidocaine) and bupivacaine act by reversibly blocking voltage-gated Na^+ channels on the inner surface of the neuronal membrane. By preventing the influx of Na^+ ions, they inhibit membrane depolarization, thereby blocking the initiation and propagation of action potentials. As a result, pain impulses cannot be transmitted from the peripheral nerves to the central nervous system.

Why other options are incorrect:

1.

Potassium (K^+) channels regulate repolarization, not impulse initiation.

2.

Calcium (Ca^{2+}) channels are involved in neurotransmitter release at synapses.

3.

Chloride (Cl^-) channels mainly mediate inhibitory neurotransmission.

Question 197. Which form of anesthesia is most appropriate for dental procedures carried out in a daycare (outpatient) setting?

A. General anesthesia

B. Spinal anesthesia

C. Epidural anesthesia

D. Infiltration anesthesia

Correct answer: D

For minor dental surgery in a daycare setting, Infiltration Anesthesia (Option D) is the preferred method. This involves injecting a local anesthetic directly into the tissue at the surgical site to block the terminal nerve branches. It is safe, effective, and allows the patient to remain fully conscious and mobile, facilitating immediate discharge. General anesthesia (Option A) is reserved for very complex surgeries, uncooperative children, or severe dental anxiety, but it carries higher risks and requires a longer recovery period. Spinal (Option B) and Epidural (Option C) anesthesia are used for procedures involving the lower half of the body (e.g., legs or lower abdomen) and have no anatomical application for dental work in the mouth. Infiltration anesthesia, often supplemented by a nerve block (like the inferior alveolar nerve block), remains the mainstay of pain control in clinical dentistry due to its localized effect and safety profile.

RADIOLOGY

Question 198. At what age do frontal sinuses typically become

visible on an X-ray?

A. 1 year

B. 2 years

C. 3 years

D. 4 years

Correct answer: D

The frontal sinuses are absent at birth and develop gradually during childhood. Although their development begins around 2 years of age, they are not radiologically visible at that stage because they are too small and poorly pneumatized.

Frontal sinuses typically become visible on X-ray around 4 years of age, when sufficient pneumatization (air filling) has occurred. After this, they continue to grow and enlarge throughout childhood and adolescence, reaching full size after puberty.

Why other options are incorrect:

(A)

1 year: Frontal sinuses are not developed at all

(B)

2 years: Development begins, but not visible on X-ray

(C)

3 years: May start forming but still usually not clearly visible radiologically

Question 199. A 72-year-old former pilot presents with rapidly progressive dementia accompanied by myoclonus, ataxia, and visual disturbances.

What is the most likely diagnosis?

A. Alzheimer's disease

B. Vascular dementia

C. Sporadic CJD

D. Variant CJD

Correct answer: D

The MRI shows bilateral hyperintensities in the pulvinar/thalamic region — the classic "Pulvinar sign" or "Hockey stick sign" pathognomonic of Variant CJD (vCJD). Combined with rapidly progressive dementia, myoclonus, ataxia, and visual disturbances in a former pilot with possible prion exposure, this confirms vCJD.

Key Features:

1.

Pulvinar sign on DWI/FLAIR — bilateral thalamic hyperintensities

2.

Rapidly progressive dementia

3.

Myoclonus, ataxia, visual disturbances

4.

Age 72 with occupational exposure history

Why other options are wrong:

(A)

Alzheimer's disease is incorrect because Alzheimer's shows slow progressive dementia over years with hippocampal/cortical atrophy on MRI — no pulvinar hyperintensities or myoclonus.

(B)

Vascular dementia is incorrect because vascular dementia shows multiple cortical/subcortical infarcts on MRI with stepwise progression — not the bilateral symmetric thalamic hyperintensities seen here.

(C)

Sporadic CJD is incorrect because sporadic CJD shows cortical ribboning and basal ganglia hyperintensities on DWI — pulvinar sign is specifically associated with variant CJD, not sporadic CJD.

Question 200. An adult patient presents with a pulsatile swelling in the neck just below the angle of the jaw, exhibiting an outward expansile impulse.
What is the most likely diagnosis?

A. Grave's disease

B. Branchial cyst

C. Thymic cyst

D. Carotid body tumor

Correct answer: D

A pulsatile neck swelling located at the carotid bifurcation (below the angle of the jaw) that exhibits an expansile impulse is classic for a Carotid Body Tumor (Option D). This is a highly vascular paraganglioma. A hallmark sign is that the swelling can be moved side-to-side but not up and down (Fontaine's sign), as it is fixed to the carotid artery. The provided angiography (Option DSA) demonstrates the pathognomonic "Lyre sign", where the tumor physically splays the internal and external carotid arteries apart. Grave's disease (Option A) involves generalized thyroid enlargement. Branchial cysts (Option B) and thymic cysts (Option C) are soft, non-pulsatile masses . Because the tumor is intensely vascular and intimately associated with the major neck arteries, it pulsates with the arterial pressure. Surgical excision is the treatment but carries a high risk of vascular or nerve injury.

Question 201. A patient is asked to copy the face of a clock, and the resulting drawing is shown below. What

is the correct term used to describe this finding?

A. Confabulation

B. Hemispatial neglect

C. Kinetic apraxia

D. Asterixis

Correct answer: B

The image displays a classic result of the "Clock Drawing Test" where the patient has crowded all the numbers onto the right side of the clock face, completely ignoring the left side. This is the hallmark of Hemispatial Neglect (Option B) (also known as unilateral neglect). This condition usually results from a lesion in the right parietal lobe (often after a stroke), causing the patient to lose awareness of the left half of their environment. Confabulation (Option A) is the fabrication of memories seen in Korsakoff syndrome. Kinetic apraxia (Option C) is the loss of ability to perform fine, skilled movements despite normal strength. Asterixis (Option D) is a "flapping tremor" of the hands seen in hepatic or metabolic encephalopathy . Because the patient has completely failed to represent one side of the spatial layout, hemispatial neglect is the only accurate neurological term. This test is a simple and effective bedside screening tool for parietal dysfunction.

Question 202. A 45-year-old man presents with chest pain and breathlessness that worsen in the supine position and improve on sitting up. On examination, heart sounds are muffled. What is the most likely diagnosis?

A. Pericardial effusion

B. Tetralogy of Fallot

C. Transposition of great arteries

D. Pulmonary hypertension

Correct answer: A

The patient exhibits the classic clinical features of Pericardial Effusion: pleuritic chest pain and dyspnea that are relieved by sitting forward (positional relief). The hallmark physical finding is muffled (distant) heart sounds due to the fluid surrounding the heart. In severe cases, this can lead to Beck’s triad (muffled sounds, JVP distension, and hypotension) indicating cardiac tamponade. The provided X-ray shows the characteristic "Water-bottle heart" appearance, where the heart shadow is globular and massively enlarged. Tetralogy of Fallot (Option B) would show a "boot-shaped" heart. Transposition of great arteries (Option C) classically shows an "egg-on-a-string" heart . Pulmonary hypertension (Option D) shows enlarged pulmonary arteries but not a globular heart shadow. Diagnosis is confirmed by echocardiography, which can visualize the fluid in the pericardial sac. Treatment involves treating the underlying cause

or performing pericardiocentesis.

Question 203. What is the most reliable confirmatory method to verify correct placement of a central venous catheter in the internal jugular vein?

A. Chest x-ray

B. Blood pH

C. Blood color

D. ETCO2 (End-Tidal CO2)

Correct answer: A

After inserting a central venous catheter (CVC) into the internal jugular or subclavian vein, a chest X-ray (Option A) is the gold standard and best confirmatory method. It ensures that the tip of the catheter is correctly positioned at the junction of the superior vena cava and the right atrium. Crucially, it also rules out procedural complications such as a pneumothorax. Blood color (Option C) and pH (Option B) are unreliable indicators, especially in hypoxic or acidotic patients, as venous blood can sometimes appear arterial and vice versa. ETCO2 (Option D) is used to confirm the correct placement of an endotracheal tube in the lungs, not a vascular catheter . While ultrasound is used to guide the initial insertion, the post-procedure X-ray remains mandatory to verify the final location and safety of the line. Therefore, X-ray is the definitive clinical step before using the line for high-volume infusion or medications.

Question 204. What is the required thickness of a lead apron used for radiation protection?

A. 1mm

B. 2mm

C. 0.5mm

D. 1.5 mm

Correct answer: C

For healthcare workers exposed to ionizing radiation (such as in X-ray rooms or cardiac catheterization labs), lead aprons are a critical part of personal protective equipment (PPE). According to standard radiation safety guidelines, a lead apron must have a minimum thickness equivalent of 0.5 mm (Option C). This thickness is designed to attenuate approximately 90% or more of the scattered X-ray radiation. A thickness of 1 mm (Option A) would provide even more protection but is often too heavy for practical daily use. Options B and D are not the standard regulatory requirements for personal aprons . Lead aprons must be regularly inspected for cracks using fluoroscopy and stored flat or on specialized hangers to prevent damage to the internal shielding. Therefore, 0.5 mm is the universally accepted standard for providing a balance between effective radiation protection and ergonomic feasibility for medical personnel.

Question 205. What is the most likely diagnosis in a cricket player who sustained a head injury, appeared normal initially, but was later found unconscious?

A. Extradural hemorrhage

B. Artifact

C. Subdural hemorrhage

D. Subarachnoid hemorrhage

Examination Paper December 2020 Question

Correct answer: A

The clinical history of a head injury followed by a "lucid interval"—where the patient is temporarily conscious and appears fine before rapidly deteriorating—is the classic textbook presentation of an Extradural Hemorrhage (Option A). This typically results from a traumatic rupture of the middle meningeal artery. The provided CT scan provides the definitive diagnosis, showing the pathognomonic biconvex (lentiform), hyperdense lesion that does not cross suture lines. A subdural hemorrhage (Option C) would appear as a crescent-shaped lesion on CT and usually lacks a clear lucid interval. Subarachnoid hemorrhage (Option D) would show hyperdensity within the brain's cisterns and sulci . EDH is a neurosurgical emergency; as the arterial bleed expands, it increases intracranial pressure, leading to the sudden collapse. Immediate surgical evacuation via craniotomy is often life-saving and leads to a full recovery if performed early.

Question 206. What is the most effective method for locating an extra-adrenal pheochromocytoma?

A. X-ray

B. VMA excretion

C. Nucleotide scan

D. Clinical examination

Correct answer: C

Pheochromocytomas are catecholamine-secreting tumors. While 90% are in the adrenal medulla, "extra-adrenal" types (paragangliomas) can occur anywhere along the sympathetic chain. The most effective method for locating these ectopic tumors is a nucleotide scan (Option C), specifically the MIBG (Meta-iodobenzoguanidine) scan. MIBG is a catecholamine precursor that is taken up by chromaffin tissue, allowing the scan to "light up" the tumor anywhere in the body. VMA excretion (Option B) (urinary vanillylmandelic acid) is a biochemical test used to diagnose the presence of a tumor but cannot locate it. X-rays (Option A) are not sensitive enough to detect these soft-tissue masses. Clinical examination (Option D) may detect

hypertension or a rare abdominal mass but is not an accurate localization tool . MIBG scans are superior to CT/MRI for extra-adrenal cases because they identify functionally active tumors across a whole-body survey. Therefore, functional imaging via nucleotide scanning is the gold standard for localization.

PSYCHIATRY

Question 207. What is the term for a child born when a woman pretends to be pregnant and later uses the child to extort a man?

A. Supposititious child

B. Superfecundation

C. Posthumous child

D. Superfetation

Correct answer: A

In forensic medicine and legal terms, a supposititious child (Option A) is one who is falsely substituted or presented as the biological offspring of a woman who was never actually pregnant, usually for the purpose of defrauding or extorting an inheritance or a man. Superfecundation (Option B) refers to the fertilization of two ova within the same cycle by two different acts of intercourse, potentially by different fathers. A posthumous child (Option C) is born after the death of the father. Superfetation (Option D) is the fertilization of a second ovum while a woman is already pregnant, resulting in two fetuses of different ages . The term "supposititious" specifically implies a fraudulent claim of parentage involving deception about a pregnancy. This is a rare but legally significant concept in cases of disputed maternity or inheritance fraud. Therefore, the fraudulent presentation of a child defines the supposititious category.

Question 208. A 40-year-old patient presents with a history of mood disturbance, as illustrated in the accompanying image. What is the most likely diagnosis?

A. Bipolar disorder

B. Dysthymia

C. Rapid cycling disorder

D. Cyclothymia

Correct answer: C

The image shows a mood chart depicting 4 or more distinct mood episodes within 12 months, oscillating between mania and severe depression — the defining feature of Rapid Cycling Disorder.

Key Diagnostic Features visible in chart:

1.
4+ episodes within 12 months
2.
Swings between full mania and severe depression
3.
Episodes separated by periods of normal mood
4.
Meets DSM-5 criteria for rapid cycling specifier in Bipolar disorder
Why other options are wrong:
(A)
Bipolar disorder is incorrect because while rapid cycling is a specifier of bipolar disorder, the chart specifically shows 4+ episodes in 12 months making rapid cycling the more precise and specific diagnosis here.
(B)
Dysthymia is incorrect because dysthymia presents as chronic, persistent mild depression lasting at least 2 years — no manic or hypomanic episodes occur, completely inconsistent with the mood chart shown.
(D)
Cyclothymia is incorrect because cyclothymia shows hypomanic and mild depressive episodes — never reaching full mania or severe depression thresholds. The chart clearly shows full manic and severe depressive episodes ruling out cyclothymia.

Question 209. Which type of learning is demonstrated when a medical intern is guided step by step on how to correctly elicit the knee reflex?

A. Cognitive learning
B. Psychomotor learning
C. Affective learning
D. Repeated learning

Correct answer: B

In medical education, learning objectives are categorized into three domains. Psychomotor learning (Option B) involves the acquisition of physical skills and manual dexterity, such as the correct technique for using a reflex hammer to elicit a knee jerk. This type of learning requires the coordination of cognitive understanding with physical performance. Cognitive learning (Option A) focuses on the acquisition of knowledge, facts, and theoretical concepts. Affective learning (Option C) pertains to the development of attitudes, professional values, and empathy. Repeated learning (Option D) is a method of study but not a recognized educational domain. Because the intern is being taught a specific procedural skill that requires physical action and

precision, it is the classic example of psychomotor development. Clinical rotations are designed to bridge the gap between classroom cognitive knowledge and hands-on psychomotor proficiency. Therefore, mastering clinical examination techniques is a core psychomotor task.

Question 210. How is a 'Case' of tuberculosis defined according to standard medical guidelines?

A. X-ray positive

B. Sputum positive

C. Mantoux positive

D. History of cough

Correct answer: B

Under the National Tuberculosis Elimination Program (NTEP) and global WHO guidelines, a confirmed 'Case' of tuberculosis is traditionally defined as an individual who is sputum positive (Option B) for Mycobacterium tuberculosis. This can be through sputum smear microscopy or, more reliably, through rapid molecular tests like CBNAAT/GeneXpert. Sputum positivity confirms that the patient is infectious and capable of transmitting the bacilli. An X-ray positive (Option A) result indicates suggestive lung lesions but is not definitive without microbiological confirmation. A Mantoux positive (Option C) test only indicates that a person has been exposed to the bacteria or the BCG vaccine; it does not diagnose active tuberculosis. A history of cough (Option D) is a clinical symptom that makes someone a "presumptive TB case" but is not sufficient for a diagnosis . Therefore, microbiological evidence in the sputum remains the primary criteria for classifying and reporting a definitive tuberculosis case.

Question 211. 292. (B) Sputum positive.
This question is a duplicate from the source, re-emphasizing the definition of a TB case. A definitive diagnosis of tuberculosis requires the detection of the pathogen. Sputum positive status (Option B) (either by smear, culture, or molecular test) is the gold standard for defining a "microbiologically confirmed case." This is the highest priority for public health because these patients are actively shedding the bacteria. X-ray (Option A) is a screening tool used to identify lung damage. Mantoux (Option C) is an immunological test for exposure. A history of cough (Option D) for more than two weeks is the primary trigger for investigation but does not constitute a diagnosis . Modern guidelines

have shifted to include "clinically diagnosed cases" where microbiology is negative but symptoms and imaging are highly suggestive, but the classic epidemiological definition for reporting still prioritizes the sputum-positive status to ensure accurate disease tracking and transmission control.

A 30-year-old man develops auditory hallucinations and is unable to identify the source of the voices approximately seven hours after undergoing an appendectomy. What is the most likely diagnosis?

A. Delirium tremens

B. Acute transient psychotic disorder

C. Delirium

D. Alcoholic hallucinosis

Correct answer: C

A patient developing auditory hallucinations 7 hours post-surgery is classic presentation of postoperative delirium — an acute confusional state caused by physiological disturbance following surgery including anesthesia effects, hypoxia, electrolyte imbalance, or pain medications.

Key features pointing to Delirium:

1. Acute onset after surgery
2. Hallucinations — perceptual disturbances
3. Postoperative setting — classic trigger
4. Unable to identify source — disorientation characteristic of delirium

Why other options are wrong:

(A) Delirium tremens is incorrect because delirium tremens occurs 48-72 hours after alcohol withdrawal — not 7 hours post-surgery. No history of alcohol dependence or withdrawal is mentioned here.

(B) Acute transient psychotic disorder is

incorrect because ATPD requires symptoms lasting at least 1 day with sudden onset

Question 212. psychosis — postoperative hallucinations have a clear organic physiological cause making delirium more appropriate diagnosis.

A. Malingering

B. Factitious disorder

C. Somatization syndrome

D. Hypochondriasis

Correct answer: A

The 18-year-old presents with "pseudoseizures" or jerk-like movements. The absence of classic epileptic signs—such as confusion (post-ictal state), tongue biting, or urinary incontinence—along with normal medical tests (EEG, CT), suggests that the behavior is not an organic seizure. If the patient is consciously and intentionally producing these symptoms to achieve a specific external gain (like avoiding school, work, or legal trouble), the correct term is malingering (Option A). Factitious disorder (Option B) also involves intentional symptom production, but the goal is to play the "sick role" rather than for external gain. Somatization syndrome (Option C) involves involuntary symptoms in response to psychological stress. Hypochondriasis (Option D) is an excessive preoccupation with having a serious disease . Malingering is not a psychiatric illness but a behavior. Given the age and the non-epileptic nature of the movements, malingering for secondary gain is a key forensic and clinical consideration.

A 40-year-old man reports excessive, uncontrollable worry about everyday activities, financial matters, and his health for the past two years, accompanied by restlessness, fatigue, and disturbed sleep. What is the most likely diagnosis?

(A)

Depression

(B)

Illness anxiety disorder

(C)

Somatoform disorder

(D)

Generalized anxiety disorder

Question 213. 294. (A) Malingering.

The 18-year-old presents with "pseudoseizures" or jerk-like movements. The absence of classic epileptic signs—such as confusion (post-ictal state), tongue biting, or urinary incontinence—along with normal medical tests (EEG, CT), suggests that the behavior is not an organic seizure. If the patient is consciously and intentionally producing these symptoms to achieve a specific external gain (like avoiding school, work, or legal trouble), the correct term is malingering (Option A). Factitious disorder (Option B) also involves intentional symptom production, but the goal is to play the "sick role" rather than for external gain. Somatization syndrome (Option C) involves involuntary symptoms in response to psychological stress. Hypochondriasis (Option D) is an excessive preoccupation with having a serious disease . Malingering is not a psychiatric illness but a behavior. Given the age and the non-epileptic nature of the movements, malingering for secondary gain is a key forensic and clinical consideration.

A 40-year-old man reports excessive, uncontrollable worry about everyday activities, financial matters, and his health for the past two years, accompanied by

restlessness, fatigue, and disturbed sleep. What is the most likely diagnosis?

A. Depression

B. Illness anxiety disorder

C. Somatoform disorder

D. Generalized anxiety disorder

Correct answer: D

The patient meets the DSM-5 criteria for Generalized Anxiety Disorder (GAD) (Option D): excessive and uncontrollable worry about a variety of topics (finances, health, daily life) occurring more days than not for at least six months. He also exhibits the required physical symptoms, including restlessness, fatigue, and disturbed sleep. Depression (Option A) primarily involves a low mood and loss of interest rather than pervasive worry. Illness anxiety disorder (Option B) is limited to worries about having a serious illness. Somatoform disorder (Option C) involves multiple unexplained physical

Question 214. complaints. GAD is a chronic condition that significantly impairs daily functioning. It is often treated with a combination of Cognitive Behavioral Therapy (CBT) and medications like SSRIs or SNRIs . Because the man's anxiety is broad, persistent, and accompanied by physiological tension, GAD is the definitive clinical diagnosis for his presentation.

Jet-black discoloration of the tongue accompanied by tactile hallucinations is characteristic of abuse of which substance?

A. Heroin

B. Opium

C. Alcohol

D. Cocaine

Correct answer: D

A classic and pathognomonic presentation for chronic cocaine abuse is the combination of jet-black pigmentation of the tongue and

tactile hallucinations (Option D). The tactile hallucinations are famously known as "cocaine bugs" or Magnan’s sign, where the user feels insects crawling under or on their skin (formication). The black tongue discoloration results from the chemical effects of the drug or contaminants when smoked. Heroin (Option A) and Opium (Option B) are opioids that cause miosis and respiratory depression but not these specific features. Alcohol (Option C) withdrawal can cause hallucinations but not the black tongue sign . Cocaine is a powerful stimulant that increases synaptic dopamine. The presence of formication often leads to self-excoriation as the user tries to "pick" the bugs out. Therefore, the visual sign of a black tongue combined with the sensation of crawling insects is the definitive forensic identifier for cocaine toxicity.

Which pair of neurotransmitters is associated with depression?

(A)

GABA and dopamine

(B)

Serotonin and norepinephrine

(C)

Dopamine and serotonin

(D)

GABA and norepinephrine

Question 215. 296. (D) Cocaine.

A classic and pathognomonic presentation for chronic cocaine abuse is the combination of jet-black pigmentation of the tongue and tactile hallucinations (Option D). The tactile hallucinations are famously known as "cocaine bugs" or Magnan’s sign, where the user feels insects crawling under or on their skin (formication). The black tongue discoloration results from the chemical effects of the drug or

contaminants when smoked. Heroin (Option A) and Opium (Option B) are opioids that cause miosis and respiratory depression but not these specific features. Alcohol (Option C) withdrawal can cause hallucinations but not the black tongue sign . Cocaine is a powerful stimulant that increases synaptic dopamine. The presence of formication often leads to self-excoriation as the user tries to "pick" the bugs out. Therefore, the visual sign of a black tongue combined with the sensation of crawling insects is the definitive forensic identifier for cocaine toxicity.

Which pair of neurotransmitters is associated with depression?

A. GABA and dopamine

B. Serotonin and norepinephrine

C. Dopamine and serotonin

D. GABA and norepinephrine

Correct answer: B

The "monoamine hypothesis" of depression proposes that the condition results from a deficiency of certain neurotransmitters in the brain. The two most critical neurotransmitters involved are Serotonin and Norepinephrine (Option B). Serotonin (5-HT) regulates mood, sleep, and appetite, while norepinephrine (noradrenaline) is involved in energy, focus, and the stress response. Most modern antidepressants work by increasing the synaptic levels of these two chemicals . For

example, SSRIs target serotonin, while SNRIs target both. While dopamine (Option C) also plays a role in the brain's reward system and its lack can contribute to anhedonia (loss of pleasure), the most standard pairing taught in medical and psychiatric texts regarding the core

Question 216. pathophysiology of depression is serotonin and norepinephrine. GABA (Option A and D) is the primary inhibitory neurotransmitter and is more closely associated with anxiety disorders. Therefore, the "monoamine" pair is the correct answer.

What is the most likely diagnosis in a girl who has normal language development but predominantly focuses on watching her own hands and shows minimal social interaction with others?

A. ADHD

B. Autism

C. Asperger's Syndrome

D. Rett's Syndrome

Correct answer: D

Rett's Syndrome is the correct diagnosis. A girl with normal early development who subsequently shows hand-wringing/hand-watching stereotypies and social withdrawal is the classic presentation of Rett's syndrome — an X-linked neurodevelopmental disorder occurring exclusively in females.

Key Diagnostic Features:

1. Occurs exclusively in females
2. Normal early development followed by regression
3. Characteristic hand stereotypies —

wringing, watching, mouthing
4. Social withdrawal and loss of purposeful hand use
5. Language may be preserved initially then regresses
Why other options are wrong:
(A) ADHD is incorrect because ADHD presents with inattention, hyperactivity, impulsivity — not hand stereotypies or social withdrawal. No characteristic hand-focusing behavior occurs in ADHD.
(B) Autism is incorrect because while autism shows social withdrawal, it occurs in both sexes, lacks the characteristic hand-watching stereotypies and normal early developmental period followed by regression specific to Rett's.
(C) Asperger's Syndrome is incorrect because Asperger's presents with normal intelligence, social difficulties, and restricted interests — no hand stereotypies, regression, or gender specificity as seen in Rett's syndrome.