FMGE January 2023 Question Paper

190 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.

Downloaded from medladder.top — free mock tests plus 8 free modules in every subject, full bank from Rs 199/month.

Question 1. Sickness absenteeism of workers in the industry is used to evaluate

A. Health of the worker

B. Health of the family

C. Industrial environment

D. Community health

Correct answer: A

Sickness absenteeism refers to the absence of workers from their job due to illness. It is a commonly used indicator of workers' health status in occupational health studies. A higher rate of absenteeism suggests that workers are experiencing more illness or poor health conditions.

This measure directly reflects the physical and mental well-being of the workers, including the impact of occupational hazards, workload, and workplace conditions on their health.

Why Other Options Are Wrong

(B)

Health of the family: Not directly assessed by workplace absenteeism

(C)

Industrial environment: Although it may influence absenteeism, it is not directly measured

(D)

Community health: Absenteeism is specific to workers, not the general population

Question 2. Most appropriate choice for administering intravenous regional anesthesia?

A. Bupivacaine

B. Mepivacaine

C. Procaine

D. Lidocaine

Correct answer: D

Intravenous Regional Anesthesia (IVRA), also known as a Bier block, involves injecting a local anesthetic into the venous system of an isolated limb (using a double-tourniquet). Lidocaine (0.5% preservative-free, Option D) is the most appropriate and commonly used drug for this

technique. It provides a rapid onset of anesthesia and has a relatively high safety profile. Bupivacaine (Option A) is strictly contraindicated in Bier blocks because it is highly cardiotoxic; if the tourniquet fails and the drug enters the systemic circulation, it can cause fatal cardiac arrest that is difficult to resuscitate. Mepivacaine (Option B) and Procaine (Option C) are not the standard agents used for this specific procedure due to differences in toxicity or efficacy profiles. Therefore, for a Bier block, Lidocaine remains the standard of care due to its balance of effectiveness and lower risk of lethal cardiotoxicity upon systemic release. .

Question 3. Which oxygen delivery device provides a fixed and consistent FiO_2 of 0.25–0.60, independent of the patient's respiratory pattern?

A. Nasal cannula

B. Simple face mask

C. Venturi mask

D. Non-rebreathing mask

Correct answer: A

Ectopic pregnancy most commonly occurs in the ampulla of the fallopian tube, which is labeled as A in the image. The ampulla is the widest and longest part of the tube and is the usual site of fertilization. Because fertilization occurs here, any delay in the movement of the fertilized ovum toward the uterus can lead to implantation at this site.

Approximately 70% of ectopic pregnancies occur in the ampullary region. Its relatively thin wall and rich blood supply make it prone to distension and rupture if implantation occurs.

Why Other Options Are Wrong

(B)

Ovary: Ovarian pregnancy is rare

(C)

Cervix: Very rare site of ectopic implantation

(D)

Uterus: This is the normal site for implantation, not ectopic

Question 4. During a laryngeal surgical procedure, a patient develops loss of sensation above the vocal cords. Which nerve primarily supplies sensory innervation to this area?

A. Superior laryngeal nerve

B. Recurrent laryngeal nerve

C. Glossopharyngeal nerve

D. External laryngeal nerve

Correct answer: A

The internal branch of the superior laryngeal nerve is the primary structure providing sensory innervation to the laryngeal mucosa situated above the level of the vocal folds (vocal cords). This nerve pierces the thyrohyoid membrane alongside the superior laryngeal artery to supply the vestibule of the larynx. In contrast, the recurrent laryngeal nerve (Option B) is responsible for sensory innervation below the level of the vocal cords and motor supply to all intrinsic muscles of the larynx except the cricothyroid. The glossopharyngeal nerve (Option C) provides sensory supply to the oropharynx and the posterior third of the tongue, but not the internal larynx. The external laryngeal nerve (Option D) is a purely motor nerve that innervates the cricothyroid muscle. Injury to the internal laryngeal nerve typically results in a loss of the protective cough reflex, significantly increasing the risk of aspiration. Therefore, the specific anatomical boundary mentioned—above the vocal cords—definitively identifies the superior laryngeal nerve as the responsible sensory mediator.

Question 5. A patient presents with a cystic swelling in the neck located anterior to the sternocleidomastoid muscle at the junction of its upper and middle thirds. Persistence of which embryological cleft is responsible for the formation of this cyst?

A. 1st cleft

B. 2nd cleft

C. 3rd cleft

D. 4th cleft

Correct answer: B

The clinical presentation describes a branchial cyst, which characteristically appears along the anterior border of the sternocleidomastoid muscle, most frequently at the junction of its upper and middle thirds. This cyst arises from the persistence of the second pharyngeal cleft (or cervical sinus of His). During development, the second pharyngeal arch grows downward and normally covers the second, third, and fourth clefts, which then obliterate. Failure of this obliteration results in a fluid-filled cyst. A persistent first cleft (Option A) leads to preauricular cysts or fistulae near the ear or mandible. Persistence of the third (Option C) or fourth (Option D) clefts is much rarer and usually presents lower in the neck, often associated with the pyriform sinus. Branchial cysts often contain cholesterol crystals and can become infected, requiring surgical excision. The specific location anterior to the upper sternocleidomastoid is the classic anatomical landmark for a second branchial cleft anomaly, making it the most probable embryological cause.

Question 6. A 45-year-old patient presents with gait instability, particularly

noticeable
when
standing on one leg. On examination, standing
on the left leg causes the right side of the pelvis
to drop. Paralysis of which muscle group is
responsible for this finding?

A. Right gluteus maximus and gluteus medius
B. Left gluteus maximus and gluteus medius
C. Right gluteus medius and gluteus minimus
D. Left gluteus medius and gluteus minimus

Correct answer: D

The physical exam finding described is a positive Trendelenburg sign. In this case, the drooping of the right pelvis when standing on the left leg indicates that the hip abductors of the stance leg (left) are paralyzed or weak. These abductors are the gluteus medius and gluteus minimus, innervated by the superior gluteal nerve. Normally, these muscles contract on the weight-bearing side to prevent the pelvis from tilting toward the unsupported side. Paralysis of the right-sided muscles (Options A and C) would cause the left pelvis to sag. The gluteus maximus (Option B) is primarily an extensor of the hip rather than an abductor, and its weakness leads to a "lurching" gait but not pelvic sagging in the coronal plane. Instability while walking, or a "waddling gait," is common when these muscles are compromised. Therefore, the sag on the right side while weight-bearing on the left side definitively localizes the pathology to the left gluteus medius and minimus.

Question 7. Describe the structural composition of the outer
nose?

A. Upper 1/2 is bony, and lower 1/2 is
cartilaginous
B. Upper 2/3rd is bony and the lower 1/3rd is
cartilaginous
C. Upper 1/3rd bony and lower 2/3rd
cartilaginous
D. None of the above

Correct answer: C

The structural framework of the external human nose is composed of both rigid bone and flexible cartilage. The upper one-third of the nose is supported by bone, specifically the paired nasal bones and the frontal process of the maxilla. The lower two-thirds of the nose is composed of hyaline cartilage, which includes the major alar cartilages, lateral nasal cartilages, and the cartilaginous part of the nasal septum. This arrangement provides stability at the root

while allowing for flexibility and airway regulation at the tip and nostrils. Option A and Option B provide incorrect proportions for these components. Understanding this specific 1:2 ratio of bone to cartilage is essential in plastic and reconstructive surgery (rhinoplasty) and in managing nasal fractures. Fractures typically involve the upper bony bridge, whereas trauma to the lower portion often results in cartilaginous deviation or septal hematoma. Consequently, the correct anatomical description characterizes the upper third as bony and the lower two-thirds as cartilaginous.

Question 8. Identify the sinus that is labeled in the provided image.

A. Frontal sinus

B. Pyriform sinus

C. Ethmoid sinus

D. Maxillary sinus

Correct answer: D

The paranasal sinuses are air-filled cavities within the skull bones surrounding the nasal cavity. The arrow in the provided image points to the largest paranasal sinus, located within the body of the maxilla, inferior to the orbits. This is the maxillary sinus (Antrum of Highmore). The frontal sinuses (Option A) are located superior to the orbits within the frontal bone. The ethmoid sinuses (Option C) are a complex of small air cells located between the orbits and the upper nasal cavity. The pyriform sinus (Option B) is not a paranasal sinus; it is a recess in the laryngopharynx, making it an anatomical distractor. The maxillary sinus is clinically significant as it is frequently involved in sinusitis, and its close proximity to the roots of the upper molar teeth means that dental infections can sometimes spread to the sinus. Identifying these structures on imaging or diagrams is fundamental for diagnosing common otorhinolaryngological conditions and planning surgical drainage procedures.

Question 9. If a single zygote divides between 9 and 12 days after fertilization, what type of twins are most likely to result?

A. Dichorionic diamniotic

B. Conjoined twins

C. Monochorionic diamniotic

D. Monochorionic monoamniotic

Correct answer: D

The classification of monozygotic twins depends entirely on the timing of zygote cleavage. When division occurs late, specifically between 9 and 12 days after fertilization, the amnion has already formed. Consequently, the twins will share a single placenta and a single amniotic sac, resulting in monochorionic monoamniotic (MoMo) twins. Cleavage before 3 days results in

dichorionic diamniotic twins (Option A). Division between 4 and 8 days leads to monochorionic diamniotic twins (Option C), which is the most common type. If division occurs even later than 13 days, incomplete cleavage results in conjoined twins (Option B). MoMo pregnancies are high-risk due to the potential for umbilical cord entanglement and twin-to-twin transfusion syndrome. Understanding this embryological timeline is vital for obstetricians to provide appropriate prenatal monitoring and risk assessment. Since the amnion forms around day 8, a split occurring on day 9-12 inevitably forces the fetuses into a shared environment within the same amniotic cavity.

Question 10. Identify the section of the intestine shown in the barium study below

A. Ileum

B. Transverse colon

C. Jejunum

D. Splenic flexure

Correct answer: C

The barium study image displays a characteristic "feathery" or "plume-like" mucosal pattern, which is diagnostic for the jejunum. This appearance is due to the presence of numerous, prominent circular mucosal folds called plicae circulares (valvulae conniventes). In contrast, the ileum (Option A) has fewer folds, appearing smoother on barium studies. The transverse colon (Option B) and splenic flexure (Option D) would show haustrations (sacculations), which are much larger and more widely spaced than the small intestinal folds. Barium meal follow-through is a valuable radiological tool for evaluating malabsorption syndromes or obstructions. In conditions like Celiac disease, the jejunal folds may become flattened, a process known as "jejunization" of the ileum or loss of the feathery pattern. Consequently, the high density of valvulae conniventes seen in the upper small bowel loops of the provided radiograph definitively identifies the section as the jejunum rather than the distal ileum or large intestine.

Question 11. Structure passing through the foramen marked by the arrow

A. Oesophagus

B. Inferior vena cava

C. Thoracic duct

D. Sympathetic trunk

Correct answer: C

The image shows the diaphragm from its inferior aspect, with an arrow pointing to a specific opening. This opening corresponds to the aortic hiatus of the diaphragm, which is located at the level of T12 vertebra. The aortic hiatus transmits three main structures: the descending aorta, the thoracic duct, and sometimes the azygos vein.

Among the given options, the thoracic duct is the correct structure passing through this foramen. The thoracic duct is the main lymphatic channel of the body. It carries lymph from the lower limbs, abdomen, left side of the thorax, left upper limb, and left side of the head and neck. After passing through the aortic hiatus, it ascends in the posterior mediastinum and ultimately drains into the junction of the left internal jugular vein and left subclavian vein.
The oesophagus passes through the oesophageal hiatus (T10), the inferior vena cava passes through the caval opening (T8), and the sympathetic trunk passes behind the diaphragm, not through this foramen. Hence, option C is correct.

Examination Paper January 2023 Question

Question 12. What is the medical term used to describe a clavicular fracture that occurs during childbirth?

A. Craniotomy
B. Symphysiotomy
C. Zavanelli maneuver
D. Cleidotomy

Correct answer: D

Cleidotomy is the medical term for the intentional surgical division or fracture of one or both fetal clavicles. This rare and extreme procedure is performed during difficult deliveries, specifically in cases of severe shoulder dystocia where other maneuvers have failed, or in destructive operations for a dead fetus. By fracturing the clavicle, the shoulder girdle diameter is reduced, allowing the body to pass through the birth canal. Craniotomy (Option A) involves reducing the size of the fetal head. Symphysiotomy (Option B) is a surgical procedure to widen the maternal pelvis by dividing the pubic symphysis. The Zavanelli maneuver (Option C) involves pushing the fetal head back into the uterus to perform an emergency cesarean section. Cleidotomy is generally considered a procedure of last resort due to the potential for neonatal injury, but it can be life-saving for the mother when vaginal delivery is obstructed. Thus, the specific term for fetal clavicle fracture in this context is cleidotomy.

Question 13. Which pairing correctly matches the trauma patients brought to the casualty?

A. Extradural hemorrhage (EDH)- Pin point pupil
B. Penetrating injury to eustachian tube- CSF otorrhea
C. Penetrating injury to eye- Battle sign
D. Gaze palsy-Mid brain lesion

Correct answer: D

In clinical neurology and trauma assessment, specific physical signs are linked to localized brain injuries. A lesion in the midbrain (specifically the pretectal area or superior colliculi) characteristically results in vertical gaze palsy, a component of Parinaud's syndrome. Option A is incorrect because an extradural hemorrhage typically causes an ipsilateral dilated pupil (Hutchinson's pupil) due to uncal herniation compressing the oculomotor nerve, not a pinpoint pupil (which suggests pontine injury or opioid overdose). Option B is incorrect because CSF otorrhea results from a fracture of the petrous part of the temporal bone, not an isolated injury to the eustachian tube. Option C is incorrect as the Battle sign (ecchymosis over the mastoid) is a classic indicator of a base of skull fracture in the middle cranial fossa, not a direct eye injury. Therefore, the connection between gaze palsy and midbrain pathology is the only anatomically and clinically correct pairing provided in the list.

Question 14. Condition below is due to lack of fusion of which prominence?

A. Lateral nasal prominence and maxillary prominence

B. Lateral nasal prominence and mandibular prominence

C. Medial nasal prominence and maxillary prominence

D. Medial nasal prominence and mandibular prominence

Correct answer: C

The image depicts a unilateral cleft lip, a common congenital malformation. Embryologically, the upper lip is formed by the fusion of the two medial nasal prominences (which form the philtrum) and the two maxillary prominences (which form the lateral parts of the lip). A cleft lip results from the failure of one of these maxillary prominences to fuse with the medial nasal prominence on that side. Lack of fusion between the lateral nasal and maxillary prominences (Option A) would result in an oblique facial cleft, which is much rarer. The mandibular prominences (Options B and D) fuse in the midline to form the lower lip and jaw, and are not involved in upper lip formation. Understanding these developmental milestones is essential for diagnosing craniofacial anomalies. Surgical repair (cheiloplasty) is typically performed at around 3 months of age to restore normal appearance and function, highlighting the importance of precise embryological knowledge in pediatric surgery.

Question 15. Identify the histological slide shown below of the structure

A. Lymph node

B. Glomerulus

C. Spleen

D. Pancreas

Correct answer: D

The given histological slide shows closely packed acinar cells with dark-stained nuclei and granular cytoplasm, characteristic of the exocrine pancreas. In addition, there are lighter-staining regions scattered within the tissue, one of which is indicated by the arrow. These pale areas represent the Islets of Langerhans, the endocrine component of the pancreas.

This combination of dark exocrine acini and light endocrine islets is a hallmark feature of pancreatic tissue. The acini are responsible for secreting digestive enzymes, while the islets produce hormones such as insulin and glucagon.

Why Other Options Are Wrong

(A)

Lymph node: Shows lymphoid follicles and germinal centers, not acini or islets.

(B)

Glomerulus: Found in the kidney, characterized by a tuft of capillaries within Bowman’s capsule.

(C)

Spleen: Shows red pulp and white pulp, not glandular acinar arrangement.

Question 16. A patient with a diagnosed fracture is referred to a higher center. On examination, the forearm pulses are not palpable. Based on the X-ray of the upper arm shown, which artery is most likely to have been injured?

A. Radial artery

B. Ulnar artery

C. Brachial artery

D. Anterior interosseous artery

Correct answer: C

The X-ray displays a supracondylar fracture of the humerus, which is a common pediatric elbow injury. In this type of fracture, the sharp edge of the proximal bone fragment is frequently displaced anteriorly, where it can easily compress or lacerate the brachial artery. This explains the loss of distal pulses in the forearm. If untreated, this vascular compromise can lead to Volkmann's ischemic contracture. The radial artery (Option A) and ulnar artery (Option B) are branches of the brachial artery that begin distal to the elbow; while they would lose their pulse, the primary site of injury is the parent vessel. The anterior interosseous artery (Option D) is a deeper branch and is not typically the cause of major pulse loss in this context. Management requires urgent orthopedic reduction and potentially vascular repair. Identifying the high risk to the brachial artery in supracondylar fractures is a classic and life-saving requirement in

emergency medicine and orthopedics.

Question 17. At what vertebrae level does the indicated structure correspond?

A. T3-T4 intervertebral disc

B. T2-T3 intervertebral disc

C. T5-T6 intervertebral disc

D. T4-T5 intervertebral disc

Correct answer: D

The image indicates the carina, which is the site of the bifurcation of the trachea into the left and right main bronchi. In a living, upright person, this anatomical landmark typically corresponds to the level of the T4-T5 intervertebral disc. This level also coincides with the sternal angle (Angle of Louis) on the anterior chest wall. It is a critical landmark in thoracic anatomy, marking the boundary between the superior and inferior mediastinum. Options A, B, and C refer to different thoracic levels. It is important to note that the level of the carina can shift slightly during deep inspiration (descending to T6). However, the standard anatomical "textbook" level for the tracheal bifurcation is the T4-T5 disc. Identifying this level is essential for correctly positioning endotracheal tubes during intubation and for interpreting chest radiographs. Consequently, the bifurcation is fixed as a primary reference point at the T4-T5 vertebral junction.

Question 18. In a sagittal section of the brain, the green-highlighted area represents the paracentral lobule. Damage to this region would affect which neurological structures or functions?

A. Scapular region and neck

B. Trunk and shoulder

C. Perineum and leg

D. Face and neck

Correct answer: C

The paracentral lobule is located on the medial surface of the cerebral hemisphere and represents the continuation of the precentral and postcentral gyri. According to the motor and sensory homunculus, this specific region is responsible for the motor and sensory functions of the lower limb (leg and foot) and the perineum (including bladder and bowel control). Therefore, a lesion in this area, such as a stroke involving the anterior cerebral artery, typically results in contralateral lower limb paralysis and sensory loss, often accompanied by urinary incontinence. The scapular region, neck, trunk, and shoulder (Options A and B) are represented more superiorly and laterally on the convexity of the brain. The face and neck (Option D) are represented even further laterally, near the lateral sulcus. Precise knowledge of this functional

topography is essential for localizing strokes or tumors based on the patient's specific pattern of sensory and motor deficits.

PHYSIOLOGY

Question 19. During which phase of the cardiac cycle does the first heart sound occur?

A. Rapid atrial filling

Examination Paper January 2023 Question

B. Aortic ejection

C. Isovolumetric contraction

D. Isovolumetric relaxation

Correct answer: C

The first heart sound (S1), the "lub" of the "lub-dub," is produced primarily by the closure of the atrioventricular (mitral and tricuspid) valves. This occurs at the very beginning of ventricular systole, specifically during the phase of isovolumetric contraction. In this phase, the ventricles begin to contract, raising the internal pressure. As soon as the ventricular pressure exceeds the atrial pressure, the AV valves snap shut, producing S1. This sound signals the start of systole. Aortic ejection (Option B) follows this phase once the semilunar valves open. Isovolumetric relaxation (Option D) is when the second heart sound (S2) occurs due to the closure of the aortic and pulmonary valves. Rapid atrial filling (Option A) occurs during diastole. Understanding the correlation between heart sounds and the phases of the cardiac cycle is fundamental for cardiac auscultation and diagnosing valvular disorders. Therefore, S1 is definitively associated with the initiation of isovolumetric contraction.

Question 20. A 50-year-old patient with longstanding hypertension and diabetes mellitus is evaluated for renal function. In explaining the role of glomerular filtration rate (GFR), which statement correctly describes how GFR is regulated?

A. An increase in sympathetic function increases GFR

B. Afferent arteriolar constriction increases GFR

C. An increase in RPF increases GFR

D. A decrease in RPF increases GFR

Correct answer: C

The Glomerular Filtration Rate (GFR) is heavily dependent on Renal Plasma Flow (RPF). Under physiological conditions, an increase in RPF increases the GFR because it maintains a high hydrostatic pressure across the glomerular capillaries and prevents the rapid rise of oncotic pressure that would otherwise oppose filtration. Afferent arteriolar constriction (Option B) or an increase in sympathetic activity (Option A) both cause a decrease in RPF and a subsequent decrease in GFR by reducing the blood entering the glomerulus. A decrease in RPF (Option D) would lead to a decrease in GFR. GFR is also regulated by autoregulatory mechanisms (tubuloglomerular feedback) and hormones like Angiotensin II. For a patient with diabetes and hypertension, maintaining an optimal GFR is vital to prevent the progression of chronic kidney disease. Understanding that RPF and GFR are generally directly proportional is a core principle of renal physiology, making Option C the only accurate statement.

Question 21. What is the underlying cause of hypoxia in a newly arrived resident in a high-altitude region?

A. Low hemoglobin levels

B. Low partial pressure of O2

C. Low blood lactate levels

D. High partial pressure of CO2

Correct answer: B

At high altitudes, the total barometric pressure decreases, which results in a corresponding decrease in the partial pressure of inspired oxygen (PO2). This lower PO2 in the atmosphere leads to a lower PO2 in the alveoli and consequently in the arterial blood, causing hypoxia. This is the primary physiological challenge for anyone ascending to high altitudes. Low hemoglobin levels (Option A, anemia) can cause hypoxia, but it is not the cause of altitude-related distress; in fact, the body eventually increases hemoglobin as an adaptation. Low blood lactate (Option C) is not a cause of hypoxia. High partial pressure of CO2 (Option D) would indicate hypoventilation, but at high altitudes, residents typically hyperventilate to compensate for the low oxygen, leading to low CO2 levels. Understanding this fundamental relationship between atmospheric pressure and PO2 is essential for grasping the pathophysiology of acute mountain sickness and the subsequent process of acclimatization.

Question 22. While examining a patient’s jugular venous pulse, a physician observes a prominent V wave in the waveform. Which clinical condition is most commonly associated with this finding?

A. Tricuspid regurgitation

B. Aortic regurgitation

C. Tricuspid stenosis

D. Atrial fibrillation

Correct answer: A

The 'v' wave in the jugular venous pulse (JVP) waveform corresponds to atrial filling while the tricuspid valve is closed during ventricular systole. A prominent (large) 'v' wave is a classic physical sign of tricuspid regurgitation. In this condition, blood leaks backward from the right ventricle into the right atrium during systole, significantly increasing the pressure and volume in the atrium and producing an exaggerated 'v' wave. Aortic regurgitation (Option B) affects the left side of the heart and does not directly produce JVP changes. Tricuspid stenosis (Option C) would result in a prominent 'a' wave due to forceful atrial contraction against a narrowed valve. Atrial fibrillation (Option D) is characterized by the absence of the 'a' wave. Bedside assessment of the JVP waveform is a vital diagnostic skill in cardiology, allowing the clinician to differentiate between various right-sided heart pathologies. Thus, a giant 'v' wave is pathognomonic for severe tricuspid regurgitation.

Question 23. Gonadal growth corresponds with

A. Brain

B. Skeletal system

C. Lymphoid growth

D. Dental growth

Correct answer: B

According to Scammon's curves of systemic growth, the growth of the gonadal (genital) system remains very slow during childhood but undergoes a massive surge during puberty. This pattern of rapid acceleration in adolescence closely corresponds with the skeletal system's growth spurt during the same period. In contrast, the brain (Option A) and nervous system reach nearly adult size by age 6. Lymphoid growth (Option C) actually peaks around age 10–12 (reaching 200% of adult size) before regressing after puberty. Dental growth (Option D) follows a different developmental timeline related to primary and permanent tooth eruption. Understanding these distinct growth patterns is essential for pediatricians and endocrinologists to assess if a child's development is proceeding normally. The synchronization of skeletal maturation (bone age) and genital development is a hallmark of the pubertal process, making the skeletal system the most appropriate correlate for gonadal growth among the listed options.

Question 24. Which immunoglobulin is present in serum/ plasma at the highest concentration?

A. IgG

B. IgA

C. IgM

D. IgE

Correct answer: A

Immunoglobulin G (IgG) is the most abundant antibody class in the human body, accounting for approximately 75–80% of the total serum immunoglobulins. Its high concentration is vital for providing long-term immunity against bacteria and viruses, as it can neutralize toxins and facilitate phagocytosis. IgG is also the only immunoglobulin capable of crossing the placenta to provide passive immunity to the fetus. IgA (Option B) is the second most common but is primarily found in secretions like breast milk and saliva. IgM (Option C) is the first antibody produced during an initial infection but is present in much lower concentrations than IgG. IgE (Option D) is involved in allergic reactions and parasitic infections and is found in only trace amounts in the serum. Understanding the relative abundance of these antibodies is fundamental for interpreting clinical serology and immunodeficiency panels. Therefore, IgG remains the dominant immunoglobulin in both serum and plasma.

AAns

BIOCHEMISTRY

Question 25. A 65-year-old man undergoing evaluation for suspected renal dysfunction has his creatinine clearance measured. Which statement best describes the significance and interpretation of creatinine clearance?

A. Comparable to inulin clearance

B. Inferior to inulin clearance

C. Superior to inulin clearance

D. Identical to renal plasma flow

Correct answer: A

Creatinine clearance is a widely used clinical measure to estimate the Glomerular Filtration Rate (GFR). It is considered comparable to inulin clearance, which is the "gold standard" for measuring GFR. Inulin is perfect because it is freely filtered but neither reabsorbed nor secreted. Creatinine is also freely filtered and not reabsorbed; however, a small amount is actively secreted by the renal tubules. This secretion causes creatinine clearance to slightly overestimate the true GFR (by about 10-20%). Despite this, it is far more practical for clinical use than inulin, which requires a continuous infusion. It is not "superior" (Option C) in accuracy, nor "inferior" (Option B) in clinical utility. It is not identical to renal plasma flow (Option D), which is much higher. For most clinical purposes, creatinine clearance provides a sufficiently accurate estimate of kidney function. Consequently, it remains the standard-of-care proxy for GFR in everyday medical practice.

Question 26. From which of the following amino acids is melanin primarily derived?

A. Tyrosine

B. Tryptophan

C. Phenylalanine

D. Alanine

Correct answer: A

Melanin, the primary pigment responsible for skin, hair, and eye color, is biosynthetically derived from the amino acid Tyrosine. In melanocytes, the enzyme tyrosinase catalyzes the oxidation of tyrosine into DOPA and then dopaquinone, which eventually polymerizes into melanin. A congenital deficiency of tyrosinase results in albinism. Phenylalanine (Option C) is the precursor to tyrosine, but the direct substrate for the melanin pathway is tyrosine itself. Tryptophan (Option B) is the precursor for serotonin, melatonin (the hormone, not the pigment), and niacin. Alanine (Option D) is involved in glucose metabolism but not pigment synthesis. Melanin provides critical protection against ultraviolet radiation damage. Understanding this biochemical pathway is essential for grasping various dermatological conditions and inborn errors of metabolism. Therefore, while phenylalanine is part of the broader metabolic chain, tyrosine is the immediate and primary amino acid precursor for melanin production.

Question 27. Which constituent is the major determinant of serum osmolality among the given options?

A. Potassium

B. Sodium

C. Bicarbonate

D. Hydrogen ions

Correct answer: B

Sodium is the predominant cation in the extracellular fluid and the primary determinant of serum osmolality. This is evident from the standard clinical formula for estimated serum osmolality:

Sodium is multiplied by two to account for its accompanying anions (mainly chloride and bicarbonate), demonstrating that it contributes the largest share to total osmolality.

Potassium (Option A) is mainly an intracellular cation and is present in low serum concentrations, so its osmotic contribution is minimal. Bicarbonate (Option C) acts as a buffer but is present in much lower concentrations than sodium. Hydrogen ions (Option D) regulate pH and exist in extremely low concentrations, making their osmotic effect negligible.

Therefore, sodium is the principal regulator of serum osmolality and water balance, and disturbances in serum sodium directly lead to osmotic shifts causing cerebral edema or dehydration.

Question 28. Which staining method is commonly used for identifying Cryptococcus?

A. Albert's stain

B. Silver staining

C. India ink stain

D. Auramine-rhodamine stain

Correct answer: C

The India ink stain is the classic and most rapid method used for the presumptive identification of Cryptococcus neoformans, particularly in cerebrospinal fluid (CSF) samples. Cryptococcus is an encapsulated yeast; the ink particles are too large to penetrate the thick polysaccharide capsule, creating a characteristic clear halo around the budding yeast cells against a dark background. Albert's stain (Option A) is used for Corynebacterium diphtheriae. Auramine-rhodamine (Option D) is a fluorescent stain for acid-fast bacilli like Mycobacterium tuberculosis. Silver staining (Option B) can visualize Cryptococcus in tissue sections but is not the primary rapid diagnostic tool for CSF. Identifying the capsule via India ink is a life-saving diagnostic step in immuno compromised patients (like those with HIV/AIDS) presenting with meningitis. Although more sensitive antigen tests are now available, the India ink prep remains a foundational tool in clinical microbiology for the immediate visualization of this pathogen.

Question 29. Hemoglobin with iron in ferric form is :

A. Methemoglobin

B. HbA

C. Fetal hemoglobin

D. HbS

Correct answer: A

Normally, the iron present in hemoglobin is in the ferrous (Fe^{2+}) state, which allows reversible binding of oxygen. Methemoglobin is an abnormal form of hemoglobin in which the iron is oxidized to the ferric (Fe^{3+}) state. Ferric iron cannot bind oxygen, and its presence also increases the oxygen affinity of the remaining ferrous heme groups, thereby impairing oxygen release to tissues.

As a result, methemoglobinemia causes functional hypoxia, often associated with cyanosis and chocolate-colored blood that does not improve with supplemental oxygen.

HbA (Option B), fetal hemoglobin HbF (Option C), and HbS (Option D) all normally contain iron in the ferrous state to support oxygen transport.

Methemoglobinemia may be congenital (due to enzyme defects) or acquired following exposure to oxidizing agents such as nitrates, nitrites, sulfonamides, or local anesthetics. Treatment involves methylene blue, which reduces ferric iron back to the ferrous form.

Question 30. A 6-year-old child presents with hypoglycemia,

hepatomegaly, and growth retardation, raising suspicion of a glycogen storage disorder.
Deficiency of which enzyme is characteristically seen in Von Gierke’s disease?

A. Glucose-6-phosphatase
B. Branching enzyme
C. Debranching enzyme
D. Muscle glycogen phosphorylase

Correct answer: A

Von Gierke's disease (Glycogen Storage Disease Type I) is caused by a deficiency of the enzyme Glucose-6-phosphatase. This enzyme is the final common step in both gluconeogenesis and glycogenolysis, responsible for converting glucose-6-phosphate into free glucose in the liver. Its deficiency prevents the liver from releasing glucose into the blood, leading to severe fasting hypoglycemia. The trapped glycogen leads to massive hepatomegaly. Other features include lactic acidosis, hyperuricemia, and growth retardation. Branching enzyme deficiency (Option B) causes GSD IV (Andersen disease). Debranching enzyme deficiency (Option C) causes GSD III (Cori disease), which is milder than Type I. Muscle glycogen phosphorylase deficiency (Option D) causes GSD V (McArdle disease), which affects muscles but not the liver. Treatment for Von Gierke's focuses on maintaining blood glucose levels through frequent feedings and uncooked cornstarch. This enzyme defect is a classic example of an inborn error of metabolism affecting carbohydrate homeostasis.

Question 31. Allopurinol and vitamin C are used to reduce uric acid levels and prevent gout-like symptoms.
Which of the following factors plays a key role in the maturation of collagen?

A. Proline
B. Copper and zinc
C. Ascorbic acid
D. Phenylalanine

Correct answer: C

Ascorbic acid (Vitamin C) is essential for the maturation of collagen. It acts as a vital cofactor for the enzymes prolyl hydroxylase and lysyl hydroxylase, which are responsible for the hydroxylation of proline and lysine residues in the procollagen chain. This post-translational modification is necessary for the formation of stable hydrogen bonds that hold the collagen triple helix together. A deficiency in Vitamin C leads to scurvy, characterized by fragile connective tissue, bleeding gums, and poor wound healing. Proline (Option A) is an amino acid component of collagen, but not the "maturing" agent. Copper and zinc (Option B) are cofactors

for other enzymes (like lysyl oxidase for cross-linking), but the primary "maturation" step of hydroxylation is Vitamin C-dependent. Phenylalanine (Option D) is unrelated to collagen synthesis. In the context of the question, Vitamin C serves dual roles: aiding collagen health and facilitating the excretion of uric acid. Thus, ascorbic acid is the indispensable factor for collagen structural integrity.

Question 32. While studying metabolic pathways and their intracellular locations, which metabolic pathway is known to occur exclusively in the cytoplasm?

A. Beta oxidation

B. TCA cycle

C. Glycolysis

D. Urea cycle

Correct answer: C

Glycolysis is the metabolic pathway that converts glucose into pyruvate, and it occurs exclusively within the cytoplasm of all human cells. Every enzyme required for this ten-step process is located in the cytosol. Beta oxidation of fatty acids (Option A) and the TCA (Krebs) cycle (Option B) occur exclusively within the mitochondrial matrix. The urea cycle (Option D) is unique because it is split between the mitochondria (the first two steps) and the cytoplasm (the remaining steps). Other purely cytoplasmic pathways include the HMP shunt and fatty acid synthesis. Understanding the sub-cellular compartmentalization of these pathways is essential for grasping how the cell regulates metabolic flux; for example, the separation of fatty acid synthesis (cytoplasm) from beta-oxidation (mitochondria) prevents a futile cycle. Therefore, glycolysis stands out as the fundamental energy-generating pathway that does not require mitochondrial involvement for its initial steps.

Question 33. From which amino acid is nitric oxide synthesized?

A. Tryptophan

B. Lysine

C. Arginine

D. Tyrosine

Correct answer: C

Nitric oxide (NO), a potent vasodilator and signaling molecule, is synthesized from the amino

acid Arginine. The reaction is catalyzed by the enzyme Nitric Oxide Synthase (NOS), which converts L-arginine into L-citrulline and NO in the presence of oxygen and NADPH. NO plays a critical role in regulating blood pressure, inhibiting platelet aggregation, and acting as a neurotransmitter. Tryptophan (Option A) is the precursor for serotonin and melatonin. Lysine (Option B) is an essential amino acid involved in protein synthesis and collagen cross-linking. Tyrosine (Option D) is the precursor for catecholamines, thyroid hormones, and melanin. Because of its vasodilatory properties, pharmacological agents that increase NO (like nitroglycerin) are used to treat angina. Understanding the arginine-NO pathway is fundamental to cardiovascular physiology and pharmacology. Thus, arginine serves as the unique and indispensable nitrogen source for the production of this essential gaseous mediator.

Question 34. Which of the following factors is least likely to be involved in the development of beriberi?

A. Chronic use of diuretics

B. Vegan diet

C. Bariatric surgery

D. Chronic alcohol intake

Correct answer: B

Beriberi is caused by a severe deficiency of Thiamine (Vitamin B1). A Vegan diet (Option B) is least likely to cause this deficiency because thiamine is widely available in many plant-based foods, including whole grains, legumes, seeds, and nuts. In contrast, the other options are significant risk factors. Chronic alcohol intake (Option D) is a leading cause of deficiency due to impaired absorption and poor diet. Bariatric surgery (Option C) leads to severe malabsorption and is a well-recognized trigger for acute thiamine deficiency. Chronic use of diuretics (Option A), particularly loop diuretics, increases the renal excretion of thiamine, potentially leading to depletion in patients with heart failure. Beriberi can manifest in "dry" (neurological) or "wet" (cardiovascular) forms. While vegans must be careful about Vitamin B12, they typically have adequate thiamine intake, making it an improbable cause for beriberi compared to clinical malabsorption or metabolic depletion scenarios.

Question 35. Which of the following elements is not considered a microelement (trace element) required in very small quantities for normal human health?

A. Copper

B. Zinc

C. Calcium

D. Selenium

Correct answer: C

In human nutrition, elements are classified based on the required daily intake. Calcium is classified as a macroelement (or macromineral) because the body requires it in large amounts (typically) for bone structure, muscle contraction, and nerve signaling. In contrast, Copper (Option A), Zinc (Option B), and Selenium (Option D) are all microelements (trace elements). These are essential for health but are required only in minute quantities (typically), usually acting as cofactors for specific enzymes. Other macroelements include sodium, potassium, and magnesium. Other microelements include iron, iodine, and manganese. Understanding this distinction is vital for clinical nutrition; macroelement deficiencies often manifest with structural or major electrolyte issues, while trace element deficiencies typically present with specific metabolic or enzymatic dysfunctions. Therefore, due to its high daily requirement and structural role in the skeleton, calcium is definitively not a trace element.

Question 36. A 48-year-old man presents with chronic gait imbalance, numbness in the feet, and generalized muscle weakness. He reports long-term self-administration of high-dose multivitamins for over a year. Based on his symptoms and history, which vitamin toxicity is most likely responsible?

A. Vitamin D toxicity

B. Vitamin B6 toxicity

C. Vitamin C toxicity

D. Vitamin A toxicity

Correct answer: B

While most B-vitamins are water-soluble and safely excreted, Vitamin B6 (Pyridoxine) is unique because chronic megadosing (typically) can lead to severe sensory neuropathy. This toxicity characteristically manifests as foot numbness, "pins and needles" sensations, and significant imbalance (sensory ataxia) due to damage to the dorsal root ganglia. This perfectly matches the patient's symptoms of imbalance and numbness. Vitamin D toxicity (Option A) causes hypercalcemia, leading to kidney stones and confusion. Vitamin C toxicity (Option C) is rare but may cause diarrhea or kidney stones. Vitamin A toxicity (Option D) causes headache, bone pain, and skin changes. The paradoxical nature of B6 is a classic board exam topic: while it is used to treat certain neuropathies (like those from isoniazid), excessive intake is a well-documented cause of nerve damage. Therefore, the combination of sensory deficits and a history of multivitamin megadosing identifies B6 as the toxic agent.

Question 37. Which class of enzymes uses molecular oxygen as the hydrogen acceptor, resulting in the formation of water?

A. Catalase

B. Superoxide dismutase

C. Cytochrome c oxidase

D. Pyruvate dehydrogenase

Correct answer: C

In the mitochondrial electron transport chain, Cytochrome c oxidase (Complex IV) is the terminal enzyme responsible for the final reduction of oxygen. It transfers electrons to molecular oxygen, which then combines with hydrogen ions (protons) to generate water. This is the fundamental oxygen-consuming step of aerobic respiration. Catalase (Option A) breaks down hydrogen peroxide into water and oxygen, but does not use molecular oxygen as a hydrogen recipient. Superoxide dismutase (Option B) converts superoxide radicals into oxygen and hydrogen peroxide. Pyruvate dehydrogenase (Option D) is a mitochondrial enzyme that links glycolysis to the TCA cycle but is not part of the respiratory chain's oxygen reduction. Inhibition of cytochrome c oxidase by poisons like cyanide or carbon monoxide is lethal because it completely halts ATP production. Understanding this specific role of Complex IV is essential for grasping how the body utilizes inhaled oxygen to drive cellular energy production.

Question 38. A 34-year-old man presents with chronic diarrhea, cognitive changes, and a photosensitive skin rash, with a diet mainly consisting of maize. Which vitamin deficiency is most likely causing these symptoms?

A. Niacin

B. Vitamin B6

C. Ascorbic acid

D. Biotin

Correct answer: A

The patient exhibits the classic triad of the "3 Ds": Diarrhea, Dermatitis (on sun-exposed areas), and Dementia (cognitive impairment). This is the hallmark of Pellagra, caused by a deficiency of Niacin (Vitamin B3). The dietary history of a maize-based diet is a significant clinical clue, as maize is deficient in both niacin and its precursor amino acid, tryptophan. Furthermore, the niacin in maize is often chemically bound and unabsorbable unless treated with lime. Vitamin B6 (Option B) and Biotin (Option D) deficiencies cause different skin and neurological issues but not the specific photosensitive rash of pellagra. Ascorbic acid (Option C) deficiency causes scurvy. Pellagra was historically common in populations where corn was the primary staple. Modern management involve niacin supplementation and dietary diversification. Recognizing the link between maize consumption and the "3 Ds" is a fundamental requirement for diagnosing nutritional deficiencies in clinical practice.

Question 39. A 45-year-old woman presents with acute pain and swelling of the great toe, and laboratory tests show hyperuricemia. To manage her condition, which enzyme should be inhibited by the chosen medication to lower uric acid levels?

A. Urease

B. Homogentisate oxidase

C. Lysyl oxidase

D. Xanthine oxidase

Correct answer: D

The patient is suffering from an acute attack of gout, caused by hyperuricemia. To long-term reduce uric acid levels and prevent further attacks, the standard pharmacological approach is to inhibit the enzyme Xanthine oxidase. This enzyme is responsible for the final steps of purine catabolism, converting hypoxanthine to xanthine and then xanthine to uric acid. Medications like Allopurinol and Febuxostat work by inhibiting this enzyme, thereby lowering the production of uric acid. Urease (Option A) is a bacterial enzyme not found in humans. Homogentisate oxidase (Option B) is the enzyme deficient in Alkaptonuria. Lysyl oxidase (Option C) is involved in collagen cross-linking. While acute gout is treated with NSAIDs or colchicine, xanthine oxidase inhibitors are the mainstay for chronic urate-lowering therapy. Understanding this biochemical pathway is essential for managing metabolic disorders related to purine metabolism and preventing the painful joint destruction and renal stones associated with chronic gout.

Question 40. Which drug is known to elevate the levels of uric acid in urine?

A. Colchicine

B. Febuxostat

C. Probenecid

D. Allopurinol

Correct answer: C

Probenecid is a uricosuric agent, meaning its primary mechanism of action is to elevate the levels of uric acid in the urine. It achieves this by inhibiting the reabsorption of uric acid in the proximal convoluted tubules of the kidney, thereby increasing its renal excretion and lowering the concentration of uric acid in the blood. In contrast, Allopurinol (Option D) and Febuxostat (Option B) are xanthine oxidase inhibitors that lower blood uric acid by decreasing its production; consequently, they actually reduce the total amount of uric acid excreted in the urine over time. Colchicine (Option A) is an anti-inflammatory drug used for acute gout flares and does not significantly affect uric acid levels in the blood or urine. Probenecid is used for

chronic gout management but is contraindicated in patients with a history of renal stones, as the high urinary uric acid concentration can promote stone formation. Understanding this "production vs. excretion" distinction is vital for choosing the appropriate gout therapy.

Question 41. Which of the following hepatitis viruses is most commonly transmitted via the fecal–oral route?

A. Hepatitis A

B. Hepatitis B

C. Hepatitis C

D. Hepatitis D

Correct answer: C

The diagram illustrates the Renin-Angiotensin-Aldosterone System (RAAS). Drug 'X' is shown blocking the very first and rate-limiting step of this cascade: the enzymatic conversion of Angiotensinogen to Angiotensin I. This specific action identifies the drug as Aliskiren, the only clinically available direct renin inhibitor. Captopril (Option A) is an ACE inhibitor that blocks the conversion of Angiotensin I to Angiotensin II. Losartan (Option D) is an Angiotensin Receptor Blocker (ARB) that prevents Angiotensin II from binding to the receptor. Spironolactone (Option B) is an aldosterone antagonist acting further downstream in the kidney. Aliskiren is used for the management of primary hypertension. By blocking renin at its source, it prevents the entire downstream production of vasoconstrictive and salt-retaining hormones. Clinicians must avoid combining aliskiren with ACE inhibitors or ARBs, especially in diabetic patients, due to an increased risk of hyperkalemia and renal impairment. Understanding the precise site of action in the RAAS is fundamental for cardiovascular pharmacology .

Question 42. Which organisms are characterized by the presence of the given inclusion bodies?

A. Human papillomavirus

B. Cytomegalovirus

C. Ebstein Barr virus

D. Herpes simplex virus

Correct answer: B

The image provided is the pathognomonic histological finding for Cytomegalovirus (CMV) infection. These are large cells (cytomegaly) containing prominent, basophilic, "Owl's Eye" intranuclear inclusion bodies surrounded by a clear halo. These inclusions consist of concentrated viral particles and proteins. CMV is a significant opportunistic pathogen that can cause severe disease in immuno compromised hosts, such as pneumonitis, retinitis, or esophagitis. Human papillomavirus (Option A) is characterized by koilocytes (cells with clear perinuclear halos and shrunken nuclei) in pap smears. EBV (Option C) is associated with atypical lymphocytes (Downey cells) but not these specific intranuclear inclusions. Herpes

simplex virus (Option D) produces Cowdry Type A intranuclear inclusions, which are typically smaller and lack the classic symmetrical owl-eye appearance. Recognizing these inclusions in tissue biopsies or cytological samples is a vital diagnostic task for pathologists and infectious disease specialists to initiate targeted antiviral therapy with agents like ganciclovir. This visual marker is one of the most classic "spotters" in medical microbiology and pathology exams .

Question 43. A 70-year-old man presents with chronic hip pain. Imaging reveals lytic lesions on hip X-ray, laboratory tests show hypercalcemia, and bone marrow examination demonstrates 42% plasma cells. What is the most likely diagnosis?

A. Multiple Myeloma

B. Chronic
Lymphocytic
Leukemia (CLL)

C. Acute
Lymphoblastic
Leukemia (ALL)

D. Chronic Myelogenous Leukemia (CML)

Correct answer: A

The clinical constellation of persistent bone pain, lytic lesions on X-ray, and hypercalcemia in an elderly patient is highly suggestive of Multiple Myeloma. The definitive diagnostic clue provided is the bone marrow biopsy revealing 42% plasma cells; the standard diagnostic threshold is clonal plasma cells. Multiple Myeloma is a malignant proliferation of plasma cells that secrete cytokines (like IL-6) which activate osteoclasts, leading to "punched-out" bone destruction and the release of calcium into the blood. CLL (Option B) involves a proliferation of mature small lymphocytes and presents with lymphadenopathy and splenomegaly. ALL (Option C) involves immature lymphoblasts and is primarily a disease of childhood. CML (Option D) is characterized by a massive increase in mature and immature granulocytes and is associated with the Philadelphia chromosome. Multiple Myeloma is often remembered by the "CRAB" mnemonic: Calcium elevation, Renal insufficiency, Anemia, and Bone lesions. This case perfectly illustrates the pathological and biochemical hallmarks of this common hematological malignancy .

Question 44. Identify the type of inhibition shown in the graph.

A. Competitive inhibition

B. Allosteric Inhibition

C. Uncompetitive inhibition

D. Noncompetitive inhibition

Correct answer: D

The given graph is a Lineweaver–Burk plot (1/V vs 1/[S]), commonly used to analyze enzyme inhibition. In the image, both the inhibited (red) and uninhibited (black) lines intersect at the same point on the X-axis, indicating that Km (Michaelis constant) remains unchanged. However, the Y-intercept is increased in the inhibited line, which means Vmax is decreased.

This pattern is characteristic of noncompetitive inhibition, where the inhibitor binds to a site other than the active site (allosteric site). As a result, enzyme activity is reduced regardless of substrate concentration, leading to a decrease in Vmax but no change in Km.

Why Other Options Are Wrong

(A)

Competitive inhibition: Km increases (lines intersect on Y-axis), not X-axis.

(B)

Allosteric inhibition: General term, not specific to this LB plot pattern.

(C)

Uncompetitive inhibition: Produces parallel lines, not intersecting ones.

Question 45. Which statement correctly explains the mechanism of action of labetalol?

A. Directly acts as arterial vasodilator resulting in indirect effect tachycardia.

B. Blocks both alpha and beta-adrenergic receptors.

C. Primarily acts as a vasodilator with little effect on arterioles

D. Decreases peripheral vascular resistance by directly acting as a relaxant for vascular smooth muscles.

Correct answer: B

Labetalol is a unique antihypertensive agent classified as a combined alpha- and beta-adrenergic antagonist. Specifically, it blocks both alpha-1 and non-selective beta (and) receptors. The -blockade causes systemic vasodilation, which lowers blood pressure by reducing peripheral vascular resistance. Simultaneously, its -blockade prevents the reflex tachycardia that would normally occur in response to a drop in blood pressure. This dual action makes it highly effective and safe. Option A describes pure vasodilators like hydralazine.

Options C and D are inaccurate descriptions of its direct receptor-mediated effects. Labetalol is especially notable for its safety in managing hypertensive emergencies and is a first-line drug for treating hypertension during pregnancy (e.g., pre-eclampsia). It has a ratio of alpha-to-beta blockade of approximately 1:3 for oral dosing and 1:7 for intravenous use. Understanding this combined blockade is essential for utilizing labetalol correctly in clinical scenarios where both rapid pressure reduction and heart rate control are required .

Question 46. Identify which one is inaccurately describing lithium's characteristics or management guidelines:

A. Lithium is teratogenic if given to pregnant females

B. Lithium toxicity is exacerbated with thiazide diuretics

C. Lithium can decrease thyroid hormone level

D. Hemodialysis is not useful in lithium overdose

Correct answer: D

Statement D is incorrect because hemodialysis is, in fact, highly effective and the definitive treatment for severe lithium toxicity. Lithium is a small, water-soluble ion, has negligible protein binding, and a low volume of distribution, making it readily removable by hemodialysis. Indications for dialysis include severe neurologic symptoms, acute lithium levels ≥4.0 mEq/L, or ≥2.5 mEq/L with symptoms or renal impairment.

Statement A is correct: lithium is teratogenic, particularly associated with Ebstein’s anomaly

when
used
during
pregnancy.
Statement
B
is
correct:
thiazide
diuretics
increase
lithium
toxicity
by
reducing
renal
lithium
clearance
through
enhanced
proximal
tubular
reabsorption.
Statement C is correct: chronic lithium therapy can cause hypothyroidism by inhibiting thyroid hormone synthesis and release.
Because lithium has a narrow therapeutic index (0.6–1.2 mEq/L), regular monitoring and prompt recognition of toxicity are essential. Understanding lithium's interactions and management principles is critical, as it remains a cornerstone therapy for bipolar disorder.

Question 47. A specific class of medications targets the peroxisome proliferator-activated receptor alpha (PPAR-alpha) to modulate lipid metabolism. Identify the drug that is known for its ability to activate PPAR-alpha?

A. Gemfibrozil

Examination Paper January 2023 Question

D. Herpes simplex virus

Correct answer: D

The image shows multiple round viral particles with a dense central core and surrounding capsid, arranged in a clustered pattern within a host cell. This morphology is characteristic of the Herpes simplex virus (HSV) on electron microscopy. HSV is a large, enveloped DNA virus with an icosahedral capsid and a distinct electron-dense core, often seen in groups within infected cells.

The presence of uniform spherical particles with clear capsid outlines and internal density helps distinguish HSV from other viruses.

Why Other Options Are Wrong

(A)

HIV: Appears pleomorphic with a conical core, not uniform icosahedral particles.

(B)

Hepatitis B virus: Shows Dane particles with smaller spherical and filamentous forms, not clustered capsids like this.

(C)

Human papillomavirus: Non-enveloped virus with different capsid appearance and not typically seen in such clustered intracellular EM patterns.

Question 48. True statement for dose-response curve:

A. Drug C is the most potent

B. Drug B is the most efficacious

C. Drug C is as efficacious as
drug D

D. Drug D is more potent than
drug C

Correct answer: B

In a log dose–response curve, potency refers to the dose required to produce a given effect, commonly expressed as EC_{50}. A curve positioned further to the left indicates greater potency. Efficacy, on the other hand, refers to the maximum effect (Emax) a drug can produce and is represented by the height of the curve's plateau.

From the graph, Drug B reaches the highest maximum response (100%), indicating maximal efficacy. Drug C also reaches a similar maximum effect, meaning Drug B and Drug C are equally efficacious, but among the answer choices, Drug B being most efficacious is the best correct statement.

Option A is incorrect because Drug B is more potent than Drug C.

Option C is incorrect because Drug D has a lower maximum response than Drug C.

Option D is incorrect because Drug D is positioned to the right of Drug C, making it less potent, not more.

Thus, based on Emax (efficacy), Drug B is correctly identified as the most efficacious option given.

Question 49. What is the most common clinical effect observed with cannabis use?

A. Anxiety

B. Depressed mood

C. Dream-like state

D. Decreased appetite

Correct answer: C

Cannabis is a psychoactive substance derived from the hemp plant. Its most characteristic and predominant manifestation is the induction of a dream-like state or "high," marked by altered perception of time, heightened sensory awareness, and euphoria. Other common acute features include conjunctival injection ("red eyes") and a significant increase in appetite (the "munchies"), making Option D incorrect. While anxiety (Option A) can occur—especially in high doses or "bad trips"—it is not the typical primary desired effect. Depressed mood (Option B) is generally not the immediate effect of cannabis use. Long-term use is associated with an "amotivational syndrome" characterized by apathy and social withdrawal. In a psychiatric and forensic context, recognizing this dream-like state and the characteristic physical signs is essential for identifying cannabis intoxication. The primary active component, THC, acts on receptors in the brain to modulate neurotransmission and produce these classic psychological effects.

MICROBIOLOGY

Question 50. In a patient with suspected gastrointestinal infection, which culture medium is commonly used in the laboratory to differentiate lactose-fermenting bacteria from non-lactose fermenters?

A. Bile salt agar

B. Thayer-Martin agar

C. MacConkey agar

D. Sabouraud Dextrose Agar

Correct answer: C

MacConkey agar is a specialized differential and selective culture medium widely used in microbiology. It contains bile salts and crystal violet, which inhibit the growth of gram-positive

bacteria, making it selective for gram-negative organisms (like Enterobacteriaceae). Crucially, it contains the sugar lactose and a neutral red pH indicator. Bacteria that are lactose fermenters (e.g., E. coli) produce acid, which turns the colonies pink. Non-lactose fermenters (e.g., Salmonella or Shigella) do not produce acid and appear as pale or colorless colonies. Bile salt agar (Option A) is used for isolating Vibrio cholerae. Thayer-Martin agar (Option B) is selective for Neisseria species. Sabouraud Dextrose Agar (Option D) is used for the growth of fungi. Identifying the lactose fermentation pattern on MacConkey agar is the foundational first step in the laboratory identification of aerobic gram-negative bacilli, helping clinicians narrow down the etiological agent of a gastrointestinal or urinary tract infection .

Question 51. A truck driver presents with a painless, indurated genital ulcer after unprotected sexual contact. Which diagnostic test can be performed to identify the causative organism?

A. Dark Field microscopy

B. HSV 2 antibody

C. Albert stain

D. Acid-fast stain

Correct answer: A

A painless, hardened genital ulcer (chancre) in a sexually active individual is the classic clinical presentation of primary syphilis, caused by the spirochete Treponema pallidum. Because spirochetes are too thin to be seen with standard light microscopy, the gold standard for immediate visualization and diagnosis is Dark Field microscopy. In this technique, light is directed from the side, making the motile, spiral-shaped organisms appear bright against a dark background. HSV-2 antibody testing (Option B) would be used for genital herpes, which presents with painful vesicles. Albert stain (Option C) is for Corynebacterium diphtheriae. Acid-fast stain (Option D) is for Mycobacteria. Early diagnosis of syphilis is critical to initiate treatment with penicillin and prevent progression to secondary and tertiary stages. Dark field microscopy of the chancre fluid is particularly valuable because it can confirm the diagnosis even before serological tests (like VDRL or RPR) become positive .

Question 52. Which of the following organisms is acid-fast in nature?

A. Streptococcus pneumoniae

B. Escherichia coli

C. Mycobacterium avium

D. Actinomyces

Correct answer: C

Acid-fast organisms are those that have a high concentration of mycolic acids in their cell walls,

making them resistant to decolorization by acid-alcohol during staining procedures (like Ziehl-Neelsen staining). The genus Mycobacterium is the classic group of acid-fast bacteria. Mycobacterium avium complex (MAC) is an important opportunistic pathogen, especially in patients with advanced HIV/AIDS, and characteristically stains positive with acid-fast techniques. Streptococcus pneumoniae (Option A) and Escherichia coli (Option B) are standard gram-positive and gram-negative bacteria, respectively, and are not acid-fast. Actinomyces (Option D) are filamentous branching bacteria that are typically gram-positive but not acid-fast (differentiating them from Nocardia, which is weakly acid-fast). Recognizing the acid-fast property is essential for the rapid laboratory diagnosis of mycobacterial infections. Clinically, finding acid-fast bacilli (AFB) in sputum or tissue is a critical "red flag" that necessitates the initiation of targeted multi-drug therapy and, in many cases, respiratory isolation for the patient .

Question 53. For a woman who already has a 2-year-old child and received all the recommended vaccines during her previous pregnancy, what immunization advice should be given for her current pregnancy?

A. Give a booster dose of TT

B. Give a booster dose of Td

C. Give 2 doses of TT

D. Give 2 doses of Td

Correct answer: B

According to the National Immunization Schedule in India, if a woman becomes pregnant within 3 years of a previous pregnancy where she received the complete primary series of vaccinations, she requires only a single booster dose for the current pregnancy. In modern practice, the Tetanus-diphtheria (Td) vaccine has replaced the older Tetanus Toxoid (TT) vaccine (Options A and C) to provide added protection against diphtheria in the adult population.

Giving two doses (Option D) is necessary if the previous pregnancy was more than 3 years ago or if her immunization status is unknown. The booster dose ensures high levels of circulating maternal antibodies, which are transferred across the placenta to provide passive immunity to the newborn against neonatal tetanus—a potentially fatal condition.

Clinical guidelines emphasize using the Td formulation for all doses during pregnancy. For this patient with a 2-year-old child and a documented complete history, a single Td booster is the correct evidence-based recommendation.

Question 54. During a vaccination campaign, a man fears that the vaccine may cause impotence. Which type

of barrier to immunization is the healthcare provider addressing in this situation?

A. Physical barrier

B. Environmental barrier

C. Physiological barrier

D. Cultural barrier

Correct answer: D

In health communication, a Cultural barrier arises when a patient's beliefs, values, or traditional myths interfere with the acceptance of medical advice or interventions. The patient's concern that a vaccine causes impotency is a classic example of a "health myth" or deep-seated cultural anxiety often used to resist public health programs.

A physical barrier (Option A) would be an actual obstacle to receiving the vaccine, such as distance or lack of supply. An environmental barrier (Option B) refers to external conditions like noise or weather. A physiological barrier (Option C) would be an actual physical impairment in the patient, like hearing loss, that prevents them from understanding the doctor.

Addressing cultural barriers requires sensitivity, community engagement, and the involvement of trusted leaders to dispel myths with scientific facts. Overcoming these misconceptions is essential for achieving high immunization coverage and successfully eradicating infectious diseases in populations where such rumors may be prevalent.

Question 55. After a normal delivery of a healthy baby, how soon should a primigravida initiate breastfeeding?

A. Within 1 hour

B. After 1 hour

C. After 4-6 hours

D. After 24 hours

Correct answer: A

According to WHO and national health guidelines, the initiation of breastfeeding for a healthy baby delivered via a normal vaginal delivery should occur within 1 hour of birth. This "golden hour" is critical for establishing successful long-term lactation and promoting maternal-infant bonding through skin-to-skin contact.

Waiting for 1 hour or more (Option B) or several hours (Option C and D) is unnecessary and detrimental, as it delays the baby's intake of colostrum—the first milk rich in antibodies and essential nutrients. Early suckling also stimulates the release of oxytocin in the mother, which helps in uterine contraction and reduces the risk of postpartum hemorrhage.

Options C and D reflect outdated practices. For a primigravida (a first-time mother), early initiation is especially important for building confidence and ensuring a proper latch under the

guidance of healthcare staff. Universal adherence to the "within 1 hour" rule is a foundational component of the Baby-Friendly Hospital Initiative (BFHI).

Question 56. What level of prevention is involved when a government intends to establish tobacco control regulations?

A. Primordial prevention

B. Primary prevention

C. Secondary prevention

D. Tertiary prevention

Correct answer: A

Primordial prevention is the level of prevention that targets the social, economic, and environmental factors that contribute to the emergence of risk factors. By establishing tobacco control regulations (such as bans on advertising or public smoking), the government is working to prevent the emergence of the habit in the population, effectively stopping the development of a major cardiovascular and oncological risk factor before it even starts.

Primary prevention (Option B) focuses on individuals who already have the risk factor (e.g., advising a current smoker to quit) to prevent the disease. Secondary prevention (Option C) involves early diagnosis (e.g., screening for lung cancer). Tertiary prevention (Option D) focuses on rehabilitation after a disease has occurred.

Primordial prevention is considered the most cost-effective and population-wide strategy for managing non-communicable diseases. It targets the "causes of the causes," aiming to change the underlying societal norms and environments to promote a tobacco-free lifestyle for future generations.

Question 57. During the COVID-19 pandemic, regular hand washing is advised to prevent disease transmission. Which level of prevention does this measure represent?

A. Primordial prevention

B. Primary prevention

C. Secondary prevention

D. Tertiary prevention

Correct answer: B

Primary prevention aims to prevent the onset of a disease in a person who is currently healthy. Hand washing is a classic example of this level of prevention; it is a specific protective measure designed to interrupt the transmission of pathogens (like the SARS-CoV-2 virus) to a susceptible individual, thereby preventing the initial infection.

Primordial prevention (Option A) would involve broad social policies like establishing a national

sanitation infrastructure. Secondary prevention (Option C) involves the early detection of the virus through testing in an asymptomatic person. Tertiary prevention (Option D) involves the treatment and rehabilitation of a patient with severe COVID-19 pneumonia to prevent long-term disability.

Hand washing, along with wearing masks and vaccination, constitutes the core of primary preventive strategies used to control the spread of communicable diseases during a pandemic. These actions empower the individual to reduce their own risk of illness through simple, effective, and evidence-based behavioral interventions.

Question 58. Which of the following should not be included in the school health service?

A. Education of handicapped children

B. Doctor on premises

C. Dental and eye health services

D. School health records

Correct answer: B

According to established public health guidelines for school health programs, it is not mandatory or standard practice to have a Doctor on the premises (Option B) at all times in every school. Instead, medical care is typically provided through periodic visits by mobile health teams or through a designated referral system to a nearby Primary Health Centre (PHC).

The essential components that should be included are: the education and rehabilitation of handicapped children (Option A) to ensure inclusive learning; regular dental and eye health services (Option C) to detect vision and hearing problems early; and the maintenance of comprehensive School health records (Option D) for every student to track their growth and immunization status.

Other key components include nutrition (Mid-Day Meal), environmental sanitation, and health education. While a nurse or first-aid provider may be present, the structural leadership of the school health service is community-based and integrated with the broader primary health care system rather than requiring an on-site full-time physician.

Question 59. Conducting a village-based session on wound care after a dog bite by demonstrating it through enactment represents which method of health communication?

A. Lecture

B. Group discussion

C. Flash cards

D. Demonstration

Correct answer: D

In health communication and community education, Demonstration is a highly effective method involving the physical enacting or showing of a specific skill or procedure. By acting out the steps of wound care after a dog bite (e.g., washing with soap and water for 15 minutes), the health worker provides a visual and practical model that is easier for villagers to understand and replicate than verbal instructions alone.

A Lecture (Option A) is a one-way verbal communication of information. A Group discussion (Option B) is a multi-way exchange of ideas among a small group. Flash cards (Option C) are a visual aid used to support a presentation but are not the primary mode of enacting a skill.

Demonstration is based on the principle of "learning by seeing and doing." It is particularly useful in rural public health for teaching life-saving skills like ORS preparation, hand-washing techniques, or immediate first aid for common injuries, significantly improving the community's health literacy and emergency response.

Question 60. What is the serial interval?

A. Time take to develop a Primary case

B. Time gap between entry of organism till maximum infectivity

C. Interval between Primary and secondary case

D. Time gap between onset till first detection

Correct answer: C

In epidemiology, the serial interval is defined as the time interval between the onset of symptoms in a primary (index) case and the onset of symptoms in a secondary case that has been infected by the primary case. It reflects the speed at which an infectious disease spreads from one generation of cases to the next.

Option A refers to the incubation period, which is the time between exposure

to an infectious agent and the appearance of symptoms in the same individual. Option B describes the period of maximum infectivity or communicability, not the relationship between two cases.

Option D refers to the diagnostic delay, which is unrelated to transmission dynamics.

The serial interval is a crucial parameter in outbreak investigation and epidemic modeling. It is commonly used along with the basic reproduction number (R_0) to estimate transmission potential and epidemic growth. When the serial interval is shorter than the incubation period, it suggests pre-symptomatic transmission, which complicates disease control measures. Accurate estimation of the serial interval through contact tracing helps public health authorities design effective isolation, quarantine, and containment strategies.

Question 61. Which of the following statements correctly

describes the true nature of health propaganda?

A. It is actively acquired

B. It appeals to emotions

C. It is behavior centered

D. It aids in developing a reflective behavior

Correct answer: B

Health communication can be classified into health education and health propaganda. Health propaganda is characteristically defined by the fact that it appeals to emotions rather than logic or reason to achieve rapid behavioral change. It is often a one-way communication ("top-down") that provides pre-packaged "truths" to the public.

In contrast, health education is actively acquired (Option A) by the learner, it is behavior-centered (Option C), and it aids in developing a reflective behavior (Option D) where individuals make informed choices based on scientific understanding. Propaganda aims for immediate obedience (e.g., "Don't spit") without necessarily explaining the underlying biological reasons.

While propaganda can be useful for mass communication during emergencies (like "Wear a mask" during a pandemic), it is generally less sustainable than education for long-term health behavior modification. Understanding this distinction is vital for public health workers to choose the right communication strategy to empower communities and ensure lasting improvements in health outcomes.

Question 62. What proportion of a country’s Gross National Product (GNP) is recommended by the World Health Organization (WHO) to be allocated toward healthcare expenditure?

A. 2.0%

B. 2.5%

C. 3.5%

D. 5%

Correct answer: D

The World Health Organization (WHO) has historically and globally recommended that a nation should allocate at least 5% of its Gross National Product (GNP) for expenditure on the healthcare sector to ensure adequate provision of essential services. This target is considered the minimum investment required to achieve significant improvements in public health indicators and progress toward Universal Health Coverage.

Options A (2.0%), B (2.5%), and C (3.5%) represent lower expenditure levels often seen in many developing nations, including India, which has set an intermediate national goal of reaching 2.5% of GDP by 2025.

Adequate healthcare financing is critical for strengthening primary health infrastructure, ensuring the availability of essential medicines, and reducing the catastrophic out-of-pocket expenditure that often pushes families into poverty. National health accounts track this spending to monitor the government's commitment to the health and well-being of its citizens. Achieving the 5% GNP target is a key barometer of a country's health system performance.

Question 63. During a post-mortem examination, the hands are found to be clenched with no evidence of primary relaxation. What does this finding indicate?

A. Rigor mortis

B. Livor mortis

C. Cadaveric spasm

D. Algor mortis

Correct answer: C

Cadaveric spasm (instantaneous rigor) is a rare post-mortem finding where the muscles that were in a state of high tension or voluntary contraction at the moment of death remain contracted, bypassing the usual stage of primary muscular relaxation. This is most characteristically observed as contracted hands tightly grasping an object (like a weapon or weeds in drowning).

Rigor mortis (Option A) is the gradual stiffening of all muscles that develops 1–2 hours after a period of primary relaxation. Livor mortis (Option B) is the post-mortem settling of blood. Algor mortis (Option D) is the cooling of the body.

Cadaveric spasm is of great medico-legal importance as it serves as definitive proof that the individual was actively performing a movement at the exact moment they died, which can help differentiate between suicide and homicide. It cannot be imitated post-mortem. Therefore, the immediate "frozen" state of contraction without prior relaxation is the defining feature of this rare phenomenon.

Question 64. What term is used to describe the complete and systematic study of death in all its aspects?

A. Thanatology

B. Forensic anthropology

C. Toxicology

D. Molecular death

Correct answer: A

Thanatology is the scientific and comprehensive study of death in all its aspects, including the physical, psychological, and social changes that accompany it. In a medical and forensic context, it focuses on the mechanism, cause, and timing of death, as well as the various

post-mortem changes the body undergoes.

Forensic anthropology (Option B) is a specialized subfield focused on identifying human remains, especially skeletal remains. Toxicology (Option C) is the study of poisons and their effects on the body. Molecular death (Option D) refers to the final stage of death when all individual cells and tissues have permanently ceased their metabolic activities, typically occurring several hours after clinical death.

Understanding thanatology is essential for forensic pathologists to accurately perform autopsies and establish the medico-legal "Time Since Death." It encompasses the study of the "signs of death" and is a foundational discipline within forensic medicine, aiming to provide scientific certainty regarding the end of human life.

Question 65. Which method is used to establish the identity of an individual by matching a beheaded skull with a photograph of the person?

A. Superimposition

B. Anthropometry

C. DNA fingerprinting

D. Cheiloscopy

Correct answer: A

Superimposition (specifically photo-craniofacial superimposition) is the forensic technique used to establish identity by comparing a recovered skull with a photograph of a missing person. The process involves overlaying a life-size photograph of the suspect's face onto a photograph or a digital scan of the skull to check if the anatomical landmarks, such as the eyes, nose, and teeth, align precisely.

Anthropometry (Option B, Bertillonage) is an obsolete system of identification using body measurements. DNA fingerprinting (Option C) is the gold standard for definitive identification but requires a biological reference sample from relatives. Cheiloscopy (Option D) is the study of lip prints, which are absent in a beheaded skull.

While superimposition is a valuable tool for exclusion or supportive identification, it is generally not considered definitive on its own in many courts. However, in cases of beheaded remains where soft tissues are lost, it provides a critical anatomical link that guides the identification process.

Question 66. Which of the following is least likely to suggest a medical cause of her mental illness?

A. Elderly age

B. Loss of consciousness

C. Auditory hallucination

D. Acute onset

Correct answer: C

In psychiatric evaluation, it is essential to distinguish between primary mental disorders and those secondary to a general medical condition. Auditory hallucinations (Option C) are a hallmark feature of primary psychiatric disorders like schizophrenia and are least likely to suggest an underlying medical cause.

Conversely, the other options are significant "red flags" for organic (medical) brain syndromes. Elderly age (Option A) of onset for first-time psychiatric symptoms strongly suggests dementia or metabolic issues. A history of loss of consciousness (Option B) points toward trauma, epilepsy, or hypoxia. An acute onset (Option D) of confusion or behavioral changes is typical of delirium caused by infections, drug toxicity, or electrolyte imbalances.

Primary psychiatric conditions usually have an insidious onset in younger adulthood and do not typically involve fluctuations in consciousness. Clinicians must always rule out these "medical" indicators before concluding that a patient's symptoms are purely functional or psychiatric in nature.

Question 67. Which mental functions are examined in the Mental State Examination (100-7)?

A. Judgment

B. Language

C. Orientation

D. Concentration

Correct answer: D

In a Mental State Examination (MSE), the specific test of asking a patient to perform "100-7" (serial subtractions of 7 starting from 100) is used to evaluate the patient's Concentration and sustained attention. This task requires the patient to hold a number in their memory while performing a calculation, making it a sensitive indicator of cognitive focus.

Judgment (Option A) is assessed by asking the patient how they would react to a social scenario (e.g., finding a stamped letter). Orientation (Option C) is assessed by checking the patient's knowledge of time, place, and person. Language (Option B) is evaluated through general conversation, naming objects, and comprehension tasks.

Impairment in the "serial 7s" task is commonly seen in patients with delirium, dementia, or severe depression (pseudo-dementia). It is a standard component of the Mini-Mental State Examination (MMSE). Accurately identifying which cognitive domain is being tested allows the psychiatrist to localize the mental dysfunction during the clinical evaluation.

AAns

AAns

AAns

AAns

ENT

Question 68. A 16-year-old boy presents with recurrent epistaxis and a firm, purplish mass arising from the left posterior choana, with no history of trauma. What is the most appropriate management for this condition?

A. Needle biopsy

B. Fine needle aspiration cytology (FNAC)

C. Radiotherapy

D. Surgical excision

Correct answer: D

The presentation of an adolescent male with recurrent epistaxis and a firm purplish mass in the posterior nasal aperture (choana) is the classic clinical picture of a Juvenile Nasopharyngeal Angiofibroma (JNA). JNA is a benign but locally aggressive vascular tumor. The most suitable and definitive management approach is Surgical excision, typically performed after preoperative embolization to minimize bleeding.

Both Needle biopsy (Option A) and FNAC (Option B) are strictly contraindicated in a suspected JNA, as these tumors are extremely vascular and lack a muscular coat in their vessels, leading to profuse, uncontrollable hemorrhage if punctured. Radiotherapy (Option C) is generally reserved for recurrent or inoperable cases with intracranial extension.

Modern management often utilizes an endoscopic approach or a combined approach for larger tumors. Rapid diagnosis through imaging (CT/MRI showing the "Holman-Miller sign") and urgent surgical planning are essential to prevent life-threatening nosebleeds and permanent facial disfigurement.

Question 69. Function of utricle and saccule?

A. Hearing high-frequency sounds

B. Linear acceleration and deceleration

C. Angular acceleration

D. Hearing low-frequency sounds

Correct answer: B

The utricle and saccule are the two otolith organs located within the vestibule of the inner ear. Their primary physiological function is the detection of linear acceleration and deceleration, as well as the position of the head relative to gravity (static equilibrium). The utricle primarily

detects horizontal movement, while the saccule is more sensitive to vertical movement.
Angular acceleration (Option C) is the function of the semicircular canals, which detect rotational movements of the head. Hearing (Options A and D) is exclusively the function of the cochlea.
Inside the utricle and saccule, specialized sensory areas called maculae contain hair cells embedded in a gelatinous membrane covered with calcium carbonate crystals (otoliths). When the head moves linearly, the inertia of these crystals bends the hair cells, sending signals to the brain via the vestibular nerve. Understanding these distinct vestibular roles is essential for diagnosing different types of vertigo and balance disorders in clinical practice.

Question 70. Which of the following is true about laryngeal cancer stage T1bNOMO?

A. Both vocal cords involved and fixed
B. Both vocal cords involved, and No metastasis
C. One vocal cord involved and metastasis
D. One vocal cord involved, and mobile

Correct answer: B

According to the TNM staging for glottic laryngeal cancer:
T1a
: Tumor limited to one vocal cord; normal mobility.
T1b
: Tumor involves both vocal cords; normal mobility.
T2
: Tumor extends to supra- or subglottis, or impaired cord mobility.
N0: No regional lymph node metastasis.
M0: No distant metastasis.
Therefore, the statement "Both vocal cords involved, and No metastasis" accurately describes the T1bN0M0 stage. Option A is incorrect as vocal cord "fixation" would make it a T3 tumor. Option C is incorrect due to the "M0" status. Option D describes a T1a tumor.
Stage T1b tumors are early-stage cancers with an excellent prognosis. They are typically treated with either radiotherapy or endoscopic CO2 laser excision. Preserving the quality of the voice while ensuring oncological cure is the primary goal of management at this stage. Accurate knowledge of these staging nuances is critical for planning the appropriate surgical or radiation therapy.

Question 71. A 35-year-old woman develops wheezing and breathlessness after taking aspirin for a headache. In addition to these symptoms, which other clinical features are most likely to

be present in this condition?

A. IgE release

B. Nasal polyp

C. Extrinsic asthma

D. Drug interaction

Correct answer: B

The patient is presenting with Aspirin-Exacerbated Respiratory Disease (AERD), also known as Samter's Triad. This condition is defined by a characteristic clinical triad: Aspirin sensitivity, Asthma (manifesting as wheezing and breathlessness), and the presence of Nasal polyps. Therefore, finding a nasal polyp (Option B) is highly likely in this patient.

AERD is not an IgE-mediated allergy (Option A); instead, it results from an imbalance in arachidonic acid metabolism, specifically an overproduction of leukotrienes when the COX-1 pathway is inhibited by aspirin. It is a form of intrinsic, not extrinsic (Option C), asthma. While this is a reaction to a drug, "Nasal polyp" is the specific clinical entity belonging to the diagnostic triad.

On examination, these polyps are typically bilateral, pale, and insensitive to pain. Management involves a strict avoidance of NSAIDs, the use of leukotriene modifiers (like montelukast), and often surgical removal of the polyps if they cause significant nasal obstruction.

Question 72. A patient who works as a teacher presents to the clinic with hoarseness of voice. What is the most likely diagnosis?

A. Vocal polyp

B. Vocal cyst

C. Vocal nodule

D. Reinke's oedema

Correct answer: C

The clinical history of a teacher—a professional voice user prone to vocal abuse—presenting with chronic hoarseness is the classic scenario for Vocal nodules (Singer’s or Screamer’s nodules). These are small, symmetrical, whitish callosities that typically develop at the junction of the anterior one-third and posterior two-thirds of the vocal cords, which is the point of maximum vibration.

A vocal polyp (Option A) is usually unilateral and often results from a single traumatic vocal event. A vocal cyst (Option B) is also typically unilateral and deeper within the cord tissue. Reinke's oedema (Option D) involves a diffuse swelling of the vocal cords, most commonly seen in middle-aged female smokers.

Management of vocal nodules is initially conservative, focusing on intensive voice therapy to correct vocal habits. Surgical excision (microlaryngoscopy) is only reserved for mature, large

nodules that do not respond to voice rest and therapy. This diagnosis is a foundational "spotter" in ENT clinics.

Question 73. A patient presents with unilateral nasal obstruction associated with watery nasal discharge and episodes of bleeding. The diagnosis is inverted papilloma. Which statement correctly describes this condition?

A. Malignant and invasive

B. Benign and non-invasive

C. Benign and invasive

D. Malignant and non-invasive

Correct answer: C

An inverted papilloma (Schneiderian papilloma) is a unique tumor of the nasal cavity and paranasal sinuses. Histologically, it is benign, but clinically it is highly locally invasive, frequently destroying surrounding bone as it grows. The term "inverted" refers to its characteristic growth pattern where the surface epithelium proliferates inward into the underlying stroma rather than outward.

Key features include a high rate of local recurrence after surgery and a significant risk (approximately 10%) of synchronous or metachronous transformation into Squamous Cell Carcinoma. Options A, B, and D are incorrect characterizations of its behavior. Clinically, it presents in middle-aged adults with unilateral nasal obstruction and epistaxis. On examination, it often resembles a firm, opaque, vascularized nasal polyp. The standard treatment is wide surgical excision, typically via Functional Endoscopic Sinus Surgery (FESS) or a medial maxillectomy, to ensure complete removal of the tumor and its bony attachments to prevent recurrence.

Question 74. Among the following options, which is commonly associated with cerebrospinal fluid (CSF) otorrhea?

A. Battle sign

B. Traumatic rupture of the

tympanic
membrane
C. Penetrating injury to the eye
D. Fracture of the roof of the nose
Correct answer: A
CSF otorrhea is the leakage of cerebrospinal fluid through the ear, indicating a fracture of the petrous part of the temporal bone and a tear in the dura mater. This type of base-of-skull fracture in the middle cranial fossa is classically associated with the Battle sign—ecchymosis (bruising) over the mastoid process.
Traumatic rupture of the tympanic membrane (Option B) causes bleeding but not CSF leakage unless there is an associated skull fracture. A penetrating injury to the eye (Option C) is unrelated. A fracture of the roof of the nose (Option D) or the cribriform plate results in CSF rhinorrhea (leakage through the nose), not otorrhea.
Bedside diagnosis of CSF leakage can be supported by the "halo sign" on a tissue or definitively confirmed by testing the fluid for beta-2 transferrin. Management involves conservative measures like bed rest and head elevation, but patients must be monitored closely for meningitis, as the leak creates a pathway for bacteria to enter the brain.

Question 75. A patient presents with headache and thick nasal discharge. On examination, the inferior turbinate appears hypertrophied with a characteristic mulberry-like appearance. What is the most likely diagnosis?
A. Atrophic rhinitis
B. Common cold
C. Hypertrophic rhinitis
D. Nasal polyp
Correct answer: C
Chronic Hypertrophic rhinitis is a condition of permanent, irreversible thickening of the nasal mucosa, most commonly involving the inferior turbinates. On physical examination, the posterior end of the inferior turbinate characteristically exhibits a "mulberry appearance"—pitted and irregular due to chronic edema and fibrosis. This leads to persistent nasal obstruction, headache, and thick discharge.
Atrophic rhinitis (Option A) involves the thinning of the mucosa and a spacious cavity with

foul-smelling crusts. The common cold (Option B) is an acute viral infection. A nasal polyp (Option D) is a smooth, greyish-white, insensitive mass that arises from the ethmoid sinuses, not a primary hypertrophy of the turbinate itself.

Management of hypertrophic rhinitis initially involves nasal steroid sprays, but definitive treatment often requires surgical reduction of the turbinate tissue (e.g., partial turbinectomy or radiofrequency ablation). Identifying the "mulberry" turbinate is a classic clinical task for diagnosing the end-stage results of chronic rhinitis or allergic rhinosinusitis.

Question 76. What are the characteristic symptoms commonly observed in a patient with Reinke's edema?

A. Diplophonia

B. Dysphonia

C. Dysphagia of liquids more than solids

D. Dysphagia of solids more than liquids

Correct answer: A

Reinke’s edema involves accumulation of fluid in the superficial lamina propria (Reinke’s space) of the vocal cords, leading to bulky, floppy, and often asymmetrical vocal folds. Because of this uneven mass and laxity, the two vocal cords may vibrate at different frequencies, producing two distinct tones simultaneously. This phenomenon is known as diplophonia (double voice) and is considered a characteristic feature in such questions.

Although dysphonia (hoarseness) is commonly present, it is a nonspecific symptom seen in many laryngeal disorders. In contrast, diplophonia reflects abnormal, asynchronous vibration, making it more specific to conditions like Reinke’s edema in exam settings.

Why Other Options Are Wrong

(B)

Dysphonia: Common but nonspecific

(C)

& (D) Dysphagia: Not related to vocal cord pathology

Question 77. A 35-year-old woman presents with hearing loss and pulsatile tinnitus. Examination reveals conductive hearing loss with a negative Rinne test (bone conduction better than air conduction), and a reddish mass is seen behind the tympanic membrane. What is the most likely

diagnosis?

A. Acute otitis media

B. Chronic otitis media

C. Glomus tumour

D. Serous otitis media

Correct answer: C

The clinical combination of hearing loss, pulsatile tinnitus (hearing a heartbeat in the ear), and a reddish-blue mass visible behind an intact tympanic membrane is pathognomonic for a Glomus tumour (paraganglioma). Specifically, this could be a Glomus tympanicum or a Glomus jugulare. The reddish mass is often described as the "Rising Sun" sign.

Acute otitis media (Option A) presents with severe pain and a bulging, opaque eardrum. Chronic otitis media (Option B) typically involves a perforation and discharge. Serous otitis media (Option D) involves fluid but appears amber or yellowish with bubbles, and lacks pulsatile tinnitus.

Glomus tumors are highly vascular, benign growths arising from the chemoreceptor cells. Conductive hearing loss occurs because the mass restricts ossicular movement. Diagnosis is confirmed through imaging like CT (showing "moth-eaten" bone) and MRI. Management typically involves surgical excision or radiotherapy for large or inoperable cases. Recognizing pulsatile tinnitus and a vascular mass is the key to identifying this rare middle ear neoplasm.

OPHTHALMOLOGY

Question 78. A young patient presents with recurrent seasonal conjunctivitis marked by intense itching and excessive watering of the eyes. Given that this is an immediate hypersensitivity reaction, which cell type primarily mediates these symptoms?

A. Eosinophils

B. Mast cells

C. Neutrophils

D. Lymphocytes

Correct answer: B

The clinical presentation of seasonal conjunctivitis, characterized by recurring intense itching and tearing, is a classic Type I hypersensitivity reaction. Mast cells are the primary mediators in this immediate allergic response. When a sensitized individual is exposed to seasonal allergens like pollen, IgE antibodies already bound to the surface of mast cells trigger degranulation. This release of pre-formed inflammatory mediators, most notably histamine, causes the characteristic symptoms of redness, itching, and chemosis. While eosinophils (Option A) are often recruited later in the allergic cascade and contribute to chronic inflammation, they are not

the primary cells responsible for the immediate, acute symptoms. Neutrophils (Option C) are typically associated with acute bacterial infections and are not central to the allergic pathway. Lymphocytes (Option D), particularly T-cells, play roles in delayed hypersensitivity but are not the primary drivers of the rapid, IgE-mediated symptoms seen in seasonal allergic conjunctivitis. Therefore, mast cell stabilization and histamine blocking are key therapeutic strategies for these patients.

Question 79. A patient presents with reduced visual acuity after cataract surgery and is found to have posterior capsular opacification on examination. Which type of laser is used for its treatment?

A. Femto laser

B. Nd YAG laser

C. Argon fluoride

D. Argon

Correct answer: B

Posterior capsular opacification (PCO), often referred to as "after-cataract," is the most common late complication following successful cataract surgery. It occurs when remaining lens epithelial cells migrate and proliferate across the posterior capsule, causing blurred vision and glare. The Neodymium-doped Yttrium Aluminum Garnet (Nd:YAG) laser is the gold standard for treating this condition through a procedure called a YAG laser capsulotomy. This laser uses photodisruption to create a small, clear opening in the center of the clouded capsule, instantly restoring visual clarity without the need for invasive surgery. Femto lasers (Option A) are used for precision incisions during the initial cataract surgery but not for PCO. Argon lasers (Option D) and Argon fluoride (Option C) produce thermal or photoablative effects used in retinal photocoagulation or refractive surgery (LASIK), respectively, but they lack the photodisruptive properties required to "punch" a hole in the posterior capsule. Consequently, the Nd:YAG laser remains the primary and most effective non-invasive treatment for secondary opacification.

Question 80. In the context of pediatric advanced life support (PALS), which component does not correctly correspond to the ABCD approach?

A. Airway

B. Breathing

C. Circulation

D. Dehydration

Correct answer: D

The "ABCD" mnemonic is a standardized approach used in emergency medicine and Pediatric Advanced Life Support (PALS) for the primary assessment of a critically ill child. The

components are:

A

: Airway (Option A) – Ensure the airway is clear and maintainable.

B

: Breathing (Option B) – Assess respiratory rate, effort, and oxygen saturation.

C

: Circulation (Option C) – Assess heart rate, pulses, and capillary refill.

D

: Disability – Assess neurological status using GCS or AVPU.

"Dehydration" (Option D) is NOT a component of the primary ABCD survey. While assessing hydration status is important in a pediatric history, it is part of the secondary or more detailed systemic assessment, not the initial life-saving survey meant to identify immediate threats to life. Therefore, Disability is the correct fourth component, making "Dehydration" the inaccurate choice in this context.

Question 81. A 68-year-old woman is diagnosed with a diabetic cataract that has developed over the past three months. Which substance is responsible for the formation of this type of cataract?

A. Glucose

B. Fructose

C. Lactose + Glucose

D. Sorbitol + Fructose

Correct answer: D

The pathophysiology of diabetic cataracts is primarily linked to the polyol pathway. In a state of chronic hyperglycemia, the enzyme aldose reductase becomes active in the crystalline lens. This enzyme converts excess intracellular glucose into sorbitol. Because sorbitol is a sugar alcohol that does not easily diffuse out of the lens cells and is only slowly metabolized by sorbitol dehydrogenase into fructose, it accumulates significantly. This accumulation creates a high osmotic gradient, drawing water into the lens fibers, leading to swelling, hydropic degeneration, and eventually permanent lenticular opacification. While glucose (Option A) is the starting substrate and fructose (Option B) is the final product, it is the combination of the osmotic effect of sorbitol and its subsequent conversion to fructose that drives the structural damage. Lactose (Option C) is relevant to galactosemic cataracts but not diabetic ones. Therefore, the accumulation of sorbitol and fructose is the critical metabolic event leading to the rapid development of cataracts in patients with poorly controlled diabetes.

Question 82. In relation to the orbital wall, where are the canaliculi located as they open into the lacrimal

sac?

A. Lateral wall

B. Medial wall

C. Superior wall

D. Inferior wall

Correct answer: B

The lacrimal drainage system is strategically located at the medial aspect of the orbit. Tears enter the system through the superior and inferior puncta, travel through the canaliculi, and eventually empty into the lacrimal sac. The lacrimal sac sits within the lacrimal fossa, which is formed by the lacrimal bone and the frontal process of the maxilla, both located on the medial orbital wall. The canaliculi typically join to form a common canaliculus before entering the lateral wall of the lacrimal sac, but this entire complex is situated at the medial canthus. The lateral wall (Option A) contains the lacrimal gland, which produces tears, but not the drainage sac. The superior (Option C) and inferior (Option D) walls form the roof and floor of the orbit, respectively, and do not house the primary lacrimal drainage structures. Clinically, knowledge of this medial location is vital during procedures like dacryocystorhinostomy (DCR) or when managing medial canthal trauma to avoid permanent damage to the tear drainage pathway.

Question 83. A 3-year-old child is diagnosed with amblyopia affecting the right eye. To promote visual development in the weaker eye, which management option is most appropriate to recommend?

A. Observation

B. Spectacles or refraction with a near addition

C. Occlusion Therapy

D. Radial keratotomy

Correct answer: C

Amblyopia, often called "lazy eye," is a developmental disorder where the brain fails to process inputs from one eye, favoring the other. At age three, the visual system is still plastic, making early intervention critical. Occlusion therapy, which involves patching the stronger "good" eye for several hours a day, is the gold-standard treatment. By forcing the brain to use the weaker, amblyopic eye, it stimulates the development of the corresponding visual cortex. Observation (Option A) is inappropriate as amblyopia does not resolve spontaneously and can lead to permanent vision loss. While refractive correction (Option B) is often the first step if an error exists, it is frequently insufficient on its own and must be followed by patching. Radial keratotomy (Option D) is an obsolete refractive surgery for myopia and is never used in pediatric amblyopia management. Therefore, occlusion therapy remains the most effective and

widely used method to restore balanced vision in young children before the critical period of visual development ends around age seven to nine.

Question 84. A 3-year-old boy shows progressive loss of coordination over six months. Examination reveals a cauliflower-like mass in the left eye, leukocoria, and absence of the red reflex. Histopathology demonstrates Flexner–Wintersteiner rosettes. Which gene is implicated in this condition?

A. Rb gene

B. ATP 7B gene

C. Rhodopsin gene

D. FBN 1 gene

Correct answer: A

The presentation of leukocoria (white pupillary reflex), an absent red reflex, and a cauliflower-like intraocular mass in a young child is highly suggestive of retinoblastoma, the most common primary intraocular malignancy of childhood. The microscopic finding of Flexner-Wintersteiner rosettes—clusters of cuboidal or columnar cells arranged around a central lumen—is a pathognomonic histological feature of this tumor. Retinoblastoma is caused by a mutation in the RB1 tumor suppressor gene located on chromosome 13q14. According to Knudson’s "two-hit" hypothesis, both alleles of the RB1 gene must be inactivated for the tumor to develop. The ATP7B gene (Option B) is associated with Wilson's disease, which causes Kayser-Fleischer rings. The rhodopsin gene (Option C) is linked to retinitis pigmentosa. The FBN1 gene (Option D) is mutated in Marfan syndrome, often causing ectopia lentis. Thus, given the classic clinical and histological findings, the RB1 gene mutation is the definitive genetic cause. Early diagnosis is vital to save the patient's life and, if possible, preserve vision and the eye.

Question 85. In which of the following conditions is ovarian drilling commonly indicated?

A. Ovarian tumor

B. Polycystic ovarian syndrome

C. Ovarian hyperstimulation syndrome

D. Endometriosis

Correct answer: B

Laparoscopic Ovarian Drilling (LOD) is a specialized surgical procedure indicated for women

with Polycystic Ovarian Syndrome (PCOS) who suffer from infertility and have not responded to medical treatments like clomiphene citrate. The procedure involves using heat or a laser to destroy small portions of the ovarian stroma. This reduces the production of excessive androgens, which often restores regular ovulation and improves pregnancy rates. Ovarian tumors (Option A) require resection or staging surgery, not drilling. Ovarian hyperstimulation syndrome (Option C) is a medical complication of IVF that requires fluid management, as surgery can be dangerous. Endometriosis (Option D) is treated via laparoscopic ablation of implants or cystectomy for endometriomas, not stromal drilling. Therefore, ovarian drilling is a specific second-line treatment for the management of anovulatory infertility in PCOS patients.

Question 86. A 70-year-old individual with a history of presbyopia suddenly finds they can read fine print, such as a newspaper, without using glasses. What is the most likely diagnosis explaining this change in vision?

A. Index myopia

B. Index hypermetropia

C. Regression of presbyopia

D. None of the above

Correct answer: A

The phenomenon where an elderly patient suddenly regains the ability to read without glasses is colloquially known as "second sight." This is most commonly caused by nuclear sclerosis, a type of age-related cataract. As the lens nucleus becomes more dense and dehydrated, its refractive index increases. This "index myopia" shifts the patient's overall refraction toward nearsightedness. For a presbyopic patient who previously required plus-powered reading glasses, this new myopic shift compensates for their loss of accommodation, allowing them to focus on near objects again without assistance. Index hypermetropia (Option B) would worsen the ability to see near objects. "Regression of presbyopia" (Option C) is a misnomer, as the physiological hardening of the lens that causes presbyopia is irreversible; the change is refractive, not accommodative. While the improved near vision is a temporary convenience, it usually signals the progression of a cataract that will eventually blur distant vision significantly. Therefore, index myopia due to nuclear cataract is the correct clinical diagnosis for this specific visual change.

Question 87. A child presents with elevated liver enzyme levels, and ocular examination reveals a golden to greenish-brown ring at the periphery of the cornea. What is the underlying cause of this clinical finding?

A. Copper

B. Glucose

C. Galactose

D. Mannose

Correct answer: A

The clinical description points toward the Kayser-Fleischer (KF) ring, a pathognomonic sign of Wilson's disease (hepatolenticular degeneration). This condition is an autosomal recessive disorder caused by mutations in the ATP7B gene, leading to defective copper transport and its subsequent accumulation in various tissues. In the eye, copper deposits in the Descemet's membrane at the periphery of the cornea, creating the characteristic golden-brown or greenish ring. The child's concurrent elevated liver enzymes reflect the primary hepatic involvement of Wilson's disease, where copper toxicity causes cirrhosis and chronic hepatitis. Glucose (Option B), galactose (Option C), and mannose (Option D) are sugars. While galactose is associated with early-onset "oil droplet" cataracts, it does not cause corneal rings. KF rings are best visualized using a slit-lamp examination and are present in nearly all patients with the neurological form of the disease and about 50-60% of those with primarily hepatic presentation. Early identification is crucial as the disease is treatable with copper-chelating agents like penicillamine.

Question 88. A 65-year-old man presents with persistent fever and prolonged respiratory distress despite adequate treatment, with a past history of exposure to tuberculosis. Which combination of diagnostic findings is most likely in this case?

A. Positive skin tuberculin test and negative chest X-ray

B. Positive skin tuberculin test and positive chest X-ray

C. Negative skin tuberculin test and negative chest X-ray

D. Negative skin tuberculin test and positive chest X-ray

Correct answer: C

Cryptic tuberculosis is a form of TB where classical diagnostic findings are absent, making it difficult to detect. It is often seen in elderly or immuno compromised patients.

In such cases:

1.

The tuberculin skin test (TST) may be negative due to anergy (poor immune response)

2.

The chest X-ray may also appear normal or non-specific, lacking typical TB features like cavitation or infiltrates

Despite this, the patient may still have systemic symptoms like fever and respiratory distress, which raises suspicion.

Why Other Options Are Ruled Out

(A)

Positive TST + normal X-ray → suggests latent TB

(B)

Positive TST + positive X-ray → typical active TB, not cryptic

(D)

Negative TST + positive X-ray → suggests pathology but not “cryptic” presentation

Question 89. A patient with a history of liver dysfunction presents to the outpatient department, and characteristic ocular changes are noted on examination. Considering the underlying liver pathology, which substance is most likely responsible for these ocular findings?

A. Copper

B. Zinc

C. Selenium

D. Iron

Correct answer: A

This question reinforces the clinical link between liver dysfunction and specific ocular findings, namely Wilson's disease. As discussed previously, Wilson's disease is a disorder of copper metabolism. In this condition, the liver's ability to excrete copper into bile is impaired, and its incorporation into ceruloplasmin is also defective. This leads to the systemic accumulation of copper. The liver is the first organ affected, presenting as anything from asymptomatic enzyme elevation to fulminant hepatic failure or cirrhosis. The "notable changes" in the eyes refer to Kayser-Fleischer rings (copper in Descemet's membrane) and sometimes "sunflower cataracts" (copper in the lens capsule). Zinc (Option B) is actually used as a treatment for Wilson's disease because it blocks intestinal copper absorption. Selenium (Option C) is a trace element whose deficiency is linked to Keshan disease. Iron (Option D) accumulation causes hemochromatosis, which primarily affects the liver, pancreas, and skin ("bronze diabetes") but does not typically

produce the specific corneal rings seen with copper toxicity. Thus, copper is the primary pathological substance.

Question 90. Thickest portion of sclera is -

A. Anterior to rectus muscle insertion

B. Posterior to rectus muscle insertion

C. Posterior pole

D. Anterior pole

Correct answer: C

The sclera is the tough, fibrous outer coat of the eye that maintains its shape and protects internal structures. Its thickness varies significantly throughout the globe. The sclera is thickest at the posterior pole, near the optic nerve head, where it measures approximately 1.0 mm. Conversely, it is thinnest at the points just posterior to the insertions of the extraocular rectus muscles (Option B), where it can be as thin as 0.3 mm. This thinness makes the areas behind the muscle insertions particularly vulnerable to rupture during trauma or perforation during surgical procedures like strabismus surgery. The thickness anterior to the rectus insertions (Option A) is intermediate, roughly 0.6 mm. The "anterior pole" (Option D) refers to the center of the cornea; the sclera itself begins at the limbus. Understanding these anatomical variations is critical for surgeons to avoid accidental globe penetration and for clinicians assessing the severity of ocular injuries. Therefore, the posterior pole is the thickest region of the scleral shell.
MEDICINE

Question 91. In evaluating occupational health hazards related to long-term asbestos exposure, which type of cancer is most strongly associated with asbestos, particularly among workers in industries such as construction, shipbuilding, and automotive repair?

A. Mesothelioma

B. Acute myeloid leukemia

C. Hepatic angiosarcoma

D. Skin carcinoma

Correct answer: A

Mesothelioma is an aggressive and rare form of cancer that develops in the mesothelium, the thin protective lining covering most internal organs. The strongest and most well-documented risk factor for mesothelioma is exposure to asbestos fibers. When asbestos is disturbed, it releases microscopic fibers that can be inhaled or swallowed, eventually lodging in the pleura (the lining of the lungs) or peritoneum (the lining of the abdomen). These fibers cause chronic inflammation and genetic damage, leading to malignant transformation, often with a long

latency period of 20 to 50 years. While asbestos also increases the risk of bronchogenic carcinoma (lung cancer), mesothelioma is the most specific and notable occupational cancer associated with it. Acute myeloid leukemia (Option B) is linked to benzene or radiation. Hepatic angiosarcoma (Option C) is classically associated with vinyl chloride exposure. Skin carcinoma (Option D) is primarily caused by UV radiation or arsenic. Thus, for workers in construction or shipbuilding, mesothelioma remains the hallmark malignancy of asbestos exposure.

Question 92. 167.An 8-year-old boy is brought by his parents due to progressively worsening difficulty in walking and increasing muscle weakness. On examination, there is apparent enlargement of the calf muscles due to pseudohypertrophy. With respect to this condition, which of the following statements is true?

A. Abnormal collagen

B. Absent dystrophin

C. Expansions of CTG triplet repeats

D. Defective fibrillin

Correct answer: B

The clinical presentation of progressive muscle weakness in an 8-year-old boy, specifically with calf "pseudohypertrophy" (where muscle is replaced by fat and fibrous tissue), is the classic description of Duchenne Muscular Dystrophy (DMD). DMD is an X-linked recessive disorder caused by a mutation in the DMD gene, leading to a complete absence of the protein dystrophin. Dystrophin is essential for maintaining the structural integrity of the muscle fiber's sarcolemma; without it, muscle fibers undergo repeated damage and necrosis during contraction. Abnormal collagen (Option A) is seen in conditions like Osteogenesis Imperfecta or Ehlers-Danlos syndrome. Expansions of CTG repeats (Option C) cause Myotonic Dystrophy, which typically presents later with myotonia and distal weakness. Defective fibrillin (Option D) is the cause of Marfan syndrome. In DMD, the weakness typically starts proximally in the pelvic girdle, leading to the characteristic Gowers' sign. Since the question asks for the true statement regarding the underlying pathology of DMD, the absence of dystrophin is the correct answer.

Question 93. A patient presents with worsening cough, progressive breathlessness, reduced exercise tolerance, and imaging evidence of pulmonary fibrosis. Which medication is appropriate for the treatment of this condition?

A. Bortezomib

B. Roflumilast

C. Imatinib

D. Pirfenidone

Correct answer: D

Pulmonary fibrosis, particularly Idiopathic Pulmonary Fibrosis (IPF), is a progressive, irreversible lung disease characterized by scarring of the lung tissue. This leads to symptoms of chronic dry cough and exertional dyspnea as the lungs become stiff and oxygen exchange is impaired. Pirfenidone is one of the few FDA-approved antifibrotic medications specifically indicated to slow the progression of IPF. It works by inhibiting TGF-beta, a key pro-fibrotic cytokine, thereby reducing fibroblast proliferation and collagen synthesis. Bortezomib (Option A) is a proteasome inhibitor used for multiple myeloma. Roflumilast (Option B) is a PDE4 inhibitor used to reduce exacerbations in severe COPD. Imatinib (Option C) is a tyrosine kinase inhibitor primarily used for Chronic Myeloid Leukemia (CML) and Gastrointestinal Stromal Tumors (GIST). While none of these drugs can cure or reverse the existing fibrosis, pirfenidone has been clinically proven to significantly decline the rate of loss of forced vital capacity (FVC) in these patients, thereby improving survival and quality of life.

Question 94. Which medication has been shown to reduce mortality in patients with heart failure with reduced ejection fraction (HFrEF)?

A. Metoprolol

B. Furosemide

C. Torsemide

D. Prazosin

Correct answer: A

In the management of heart failure with reduced ejection fraction (HFrEF), the primary therapeutic goal is to inhibit the neurohormonal pathways that drive disease progression. Beta-blockers, specifically Metoprolol succinate, Bisoprolol, and Carvedilol, are cornerstone therapies proven in large clinical trials to reduce mortality and hospitalizations. These drugs work by counteracting the chronic, deleterious effects of the sympathetic nervous system on the failing heart. Furosemide (Option B) and Torsemide (Option C) are loop diuretics; while they are essential for managing fluid overload and improving symptoms of congestion, they have never been shown to provide a mortality benefit. Prazosin (Option D) is an alpha-1 blocker used primarily for hypertension or BPH; it is not a standard treatment for heart failure and can occasionally worsen symptoms. Therefore, metoprolol (in its extended-release form) is the correct choice for a drug that extends life in HFrEF. It is typically initiated at a low dose once the patient is clinically stable and gradually up-titrated.

Question 95. A 28-year-old man presents with ptosis and muscle weakness that worsens by evening and

improves after rest in the morning. His symptoms show improvement following administration of neostigmine. What is the most likely diagnosis?

A. Myasthenia gravis

B. Huntington chorea

C. Amyotrophic lateral sclerosis

D. External ophthalmoplegia

Correct answer: A

Myasthenia Gravis (MG) is an autoimmune disorder characterized by the production of antibodies against the nicotinic acetylcholine receptors at the neuromuscular junction. This leads to "fatigable" muscle weakness, meaning the weakness worsens with repetitive use or as the day progresses (diurnal variation). Ptosis and diplopia (ocular myasthenia) are the most common presenting symptoms. The hallmark of MG is the clinical improvement of symptoms with acetylcholinesterase inhibitors like neostigmine or edrophonium (Tensilon test). These drugs increase the availability of acetylcholine in the synaptic cleft, briefly overcoming the receptor blockade. Huntington chorea (Option B) is a genetic disorder presenting with choreiform movements and cognitive decline. Amyotrophic Lateral Sclerosis (ALS, Option C) involves progressive upper and lower motor neuron degeneration, causing permanent, non-fatigable weakness and atrophy. External ophthalmoplegia (Option D) refers to restricted eye movements but is a descriptive term, not a primary diagnosis, and would not respond to neostigmine. Thus, the classic presentation of fatigable ptosis responsive to anticholinesterases confirms Myasthenia Gravis.

Question 96. A diabetic patient presents with deep vein thrombosis along with a characteristic necrolytic migratory rash. Based on this clinical presentation, what is the most likely diagnosis?

A. Insulinoma

B. Gastrinoma

C. Glucagonoma

D. VIPoma

Correct answer: C

A glucagonoma is a rare neuroendocrine tumor of the pancreatic alpha cells that secretes excessive amounts of glucagon. This results in a clinical syndrome often referred to as the "4

Ds": Diabetes mellitus (usually mild), Dermatitis (specifically Necrolytic Migratory Erythema), DVT (thromboembolism), and Depression. Necrolytic migratory erythema (NME) is the most characteristic finding, presenting as painful or itchy erythematous plaques that blister and crust, typically starting in the groin or perineum and spreading. The excess glucagon drives hyperglycemia and a catabolic state, leading to weight loss and anemia. Insulinoma (Option A) causes hypoglycemia. Gastrinoma (Option B) causes Zollinger-Ellison syndrome with severe peptic ulcers. VIPoma (Option D) leads to Verner-Morrison syndrome, characterized by "pancreatic cholera" (watery diarrhea, hypokalemia, and achlorhydria). Given the combination of diabetes, thromboembolism, and the pathognomonic necrolytic migratory rash, glucagonoma is the definitive diagnosis. Treatment involves surgical resection of the tumor and somatostatin analogs to control symptoms.

Question 97. A patient presents with a history of a category III dog bite and reports having received post-exposure prophylaxis for a dog bite six months ago. What should be the next step in management?

A. Wound cleaning only

B. Wound cleaning + rabies vaccine on day 0 &3

C. Wound cleaning + rabies vaccine on day 0,3 & 7

D. Wound cleaning + intramuscular (IM) vaccine + rabies immune globulin (RIG)

Correct answer: B

Rabies post-exposure prophylaxis (PEP) management depends on the patient's prior vaccination status. For a person who has previously completed a full course of pre-exposure or post-exposure prophylaxis (as this patient did six months ago), the protocol is streamlined. According to the World Health Organization (WHO) and national guidelines, such individuals do NOT require Rabies Immune Globulin (RIG), even for Category 3 bites. Instead, they require immediate wound cleaning with soap and water for 15 minutes and a booster series of two doses of the modern rabies vaccine, administered intramuscularly or intradermally on day 0 and day 3. Options C and D are incorrect because the additional dose on day 7 and the administration of RIG are only necessary for previously unvaccinated (naive) individuals. Option A is incorrect because wound cleaning alone is insufficient to prevent rabies, which is nearly 100% fatal once symptoms appear. This simplified two-dose "re-exposure" regimen is effective due to the immunological memory established by the previous vaccination.

Question 98. A 35-year-old patient presents with fever and

neck stiffness for 11 days. Cerebrospinal fluid analysis shows predominantly lymphocytic pleocytosis, low glucose (50 mg/dL), and markedly elevated protein levels (3000 mg/dL), with a negative Gram stain. Chest X-ray reveals upper lobe involvement with enlarged hilar lymph nodes. Based on these findings, what is the most likely diagnosis?

A. Ramsay Hunt syndrome and basal ganglion

B. Ramsay Hunt syndrome and geniculate ganglion

C. Melkersson syndrome and trigeminal ganglion

D. Melkersson syndrome and otic ganglion

Correct answer: B

The clinical triad of facial nerve palsy (difficulty smiling/closing eyelids), severe ear pain, and vesicular eruptions in the external ear canal is pathognomonic for Ramsay Hunt syndrome (Herpes Zoster Oticus). This condition results from the reactivation of the varicella-zoster virus specifically within the geniculate ganglion of the facial nerve (Cranial Nerve VII).

Melkersson-Rosenthal syndrome (Options C and D) is a rare neurological disorder characterized by a triad of recurrent facial paralysis, swelling of the face and lips, and a fissured tongue, but it does not involve painful vesicles. The basal ganglion (Option A) is involved in movement disorders like Parkinson's, not peripheral nerve palsies.

Management of Ramsay Hunt syndrome requires urgent initiation of antiviral medications (acyclovir) and oral corticosteroids to reduce nerve inflammation. Early treatment is critical, as the prognosis for facial nerve recovery in Ramsay Hunt is generally poorer than in standard Bell's palsy.

Question 99. Which of the following is not a type of superior mediastinal tumor?

A. Parathyroid

B. Thyroid

C. Lymphoma

D. Right medial rectus

Correct answer: B

Yoke muscles, also known as contralateral synergists, are pairs of muscles—one in each eye—that work together to move both eyes simultaneously in the same direction (conjugate gaze). According to Hering's law of equal innervation, when a command for a version movement is sent, both muscles in the yoke pair receive equal nervous stimulation. For rightward horizontal gaze (dextroversion), the right lateral rectus must contract to abduct the right eye, while the left medial rectus must contract to adduct the left eye. Thus, the left medial rectus is the yoke muscle for the right lateral rectus. The right superior oblique (Option A) is involved in depression and intorsion. The left lateral rectus (Option C) is the yoke muscle for the right medial rectus during leftward gaze. The right medial rectus (Option D) is the antagonist to the right lateral rectus in the same eye. Understanding these pairings is essential for diagnosing paralytic strabismus and identifying which cranial nerves or muscles are dysfunctional during clinical motility testing.

Question 100. In ectopic pregnancy, where is the most frequent site of implantation?

A. A

B. B

C. C

D. D

Correct answer: C

Oxygen delivery systems are classified as low-flow or high-flow. The Venturi mask (Option C) is a high-flow system that utilizes the Bernoulli principle to mix a specific flow of oxygen with room air. This creates a fixed, accurate fraction of inspired oxygen (FiO2) typically ranging from 0.24 to 0.60, which remains constant regardless of the patient's inspiratory flow rate or depth of breathing. Nasal cannulae (Option A) and simple face masks (Option B) are low-flow systems where the actual FiO2 varies significantly based on the patient's respiratory effort and room air entrainment. A non-rebreathing mask (Option D) provides high FiO2 (up to 0.90) but is also a reservoir-dependent system that does not offer the same precise titration as a Venturi mask. Therefore, the Venturi mask is the most reliable system for patients requiring a precise, constant oxygen concentration, such as those with COPD..

Question 101. Bell's palsy is characterized by:

A. Ipsilateral upper and lower halves of the face.

B. Contralateral upper and lower halves of the face.

C. Ipsilateral lower half of the face.

D. Contralateral lower half of the face.

Correct answer: A

Bell's palsy is an idiopathic, lower motor neuron (LMN) lesion of the facial nerve (Cranial Nerve VII). Because the lesion occurs after the nerve has exited the brainstem, it affects all the muscles of facial expression on the "ipsilateral" (same) side. This includes both the upper half of the face (inability to wrinkle the forehead or close the eye tightly) and the lower half (drooping of the corner of the mouth, loss of nasolabial fold). In contrast, an upper motor neuron (UMN) lesion, such as a stroke, typically causes "contralateral" weakness of only the "lower" half of the face, sparing the forehead because the upper facial muscles receive bilateral innervation from the motor cortex. Thus, the clinical hallmark of Bell's palsy is the complete paralysis of the entire same side of the face. Other symptoms can include loss of taste on the anterior two-thirds of the tongue and hyperacusis. Therefore, the "ipsilateral upper and lower" involvement is the key diagnostic feature.

191. A 49-year-old man presents with recurrent episodes of profuse watery diarrhea, dehydration, hypokalemia, and achlorhydria.

Question 102. eye tightly) and the lower half (drooping of the corner of the mouth, loss of nasolabial fold). In contrast, an upper motor neuron (UMN) lesion, such as a stroke, typically causes "contralateral" weakness of only the "lower" half of the face, sparing the forehead because the upper facial muscles receive bilateral innervation from the motor cortex. Thus, the clinical hallmark of Bell's palsy is the complete paralysis of the entire same side of the face. Other symptoms can include loss of taste on the anterior two-thirds of the tongue and hyperacusis. Therefore, the "ipsilateral upper and lower" involvement is the key diagnostic feature.

A 49-year-old man presents with recurrent episodes of profuse watery diarrhea, dehydration, hypokalemia, and achlorhydria. Which type of neuroendocrine tumor is most likely responsible for these symptoms?

A. Insulinoma

B. Somatostatinoma

C. VIPoma

D. Glucagonoma

Correct answer: C

The clinical constellation of symptoms described—Watery Diarrhea, Hypokalemia, and Achlorhydria—is known as the WDHA syndrome or Verner-Morrison syndrome. It is caused by a VIPoma, a rare neuroendocrine tumor (usually pancreatic) that secretes excessive Vasoactive Intestinal Peptide (VIP). VIP stimulates intestinal secretion of water and electrolytes and inhibits gastric acid secretion, leading to "achlorhydria" (lack of stomach acid). The diarrhea is typically voluminous (often >3 liters/day) and persists even with fasting, earning it the name "pancreatic cholera." This leads to severe dehydration and significant potassium loss (hypokalemia).

Insulinoma (Option A) presents with fasting hypoglycemia. Somatostatinoma (Option B) causes a triad of diabetes, gallstones, and steatorrhea. Glucagonoma (Option D) presents with necrolytic migratory erythema and mild

diabetes.
Given
the
specific
biochemical
findings of low potassium and no stomach acid
coupled with profuse watery diarrhea, VIPoma
is the most likely diagnosis. Treatment involves
fluid resuscitation, somatostatin analogs like
octreotide, and surgical resection.
Hamman sign is seen in
(A)
Pneumoperitoneum
(B)
Pneumopericardium
(C)
Pneumomediastinum
(D)
Hydropneumothorax

Question 103. Hamman sign is seen in

A. Pneumoperitoneum

B. Pneumopericardium

C. Pneumomediastinum

D. Hydropneumothorax

Correct answer: C

Hamman's sign, also known as Hamman's crunch, is a clinical finding characterized by a "crunching" or clicking sound heard during auscultation of the heart. This sound is synchronous with the heartbeat and is best heard over the left sternal border with the patient in the left lateral decubitus position. It is caused by the heart beating against air that has escaped into the mediastinal tissues (Pneumomediastinum). Pneumomediastinum can result from alveolar rupture (Macklin effect), esophageal perforation (Boerhaave syndrome), or trauma. Pneumoperitoneum (Option A) involves air in the abdominal cavity. Pneumopericardium (Option B) is air specifically within the pericardial sac and might produce similar sounds but is much rarer. Hydropneumothorax (Option D) involves air and fluid in the pleural space, which would cause decreased breath sounds and succussion splash, but not a precordial crunch. Hamman's sign is often associated with subcutaneous emphysema in the neck or chest. Therefore, it is a hallmark clinical indicator of air in the mediastinum.

Question 104. A 60-year-old man presents with sudden-onset, tearing chest pain radiating to the back, accompanied by breathlessness and nausea. CT imaging of the chest suggests an aortic dissection. What is the most appropriate management strategy for this patient?

A. Labetalol and urgent surgery

B. Urgent surgery

C. Wait and watch

D. Blood transfusion

Correct answer: A

Aortic dissection is a critical emergency where a tear in the inner layer of the aorta allows blood to flow between the layers of the aortic wall. The classic presentation is "tearing" or "ripping" chest pain that radiates to the back. Management depends on the location. For Stanford Type A dissections (involving the ascending aorta), the risk of catastrophic rupture, aortic regurgitation, or coronary involvement is extremely high. The standard of care is immediate heart rate and blood pressure control, typically with intravenous Labetalol (an alpha and beta-blocker), to reduce the "shear stress" on the aortic wall. This is followed by "urgent surgical repair." Urgent surgery alone (Option B) without medical stabilization is dangerous. A "wait and watch" approach (Option C) is only considered for some stable Type B (descending) dissections. Blood transfusion (Option D) is not a primary treatment unless there is overt hemorrhage or rupture. Therefore, the combination of pharmacological control and surgical intervention is the life-saving protocol for suspected Type A aortic dissection.

Question 105. A chronic smoker presents with bilateral pitting pedal edema and abdominal distension. Examination reveals ascites and the presence of an S3 gallop on cardiac auscultation. What underlying abnormalities or defects are most likely to be present in this patient?

A. Aortic regurgitation

B. Tricuspid regurgitation

C. Aortic stenosis

D. Mitral regurgitation

Correct answer: B

The clinical presentation of a chronic smoker with bilateral pitting pedal edema, abdominal distension, and ascites indicates significant "right-sided heart failure." In chronic smokers, this is often "cor pulmonale"—right heart failure secondary to chronic lung disease (like COPD). The

presence of an S3 gallop reflects a volume-overloaded state in the ventricle. In the context of right heart failure and chronic lung disease, the most common valvular defect observed is Tricuspid Regurgitation (TR). As the right ventricle dilates from high pulmonary pressures, the tricuspid valve annulus also stretches, preventing the leaflets from closing properly. This backflow of blood into the right atrium and then the systemic venous system causes the elevated JVP, hepatomegaly (ascites), and peripheral edema seen here. Aortic (Option A, C) and Mitral (Option D) defects involve the "left" side of the heart and would more likely present with pulmonary edema (crackles) before systemic venous congestion. Thus, tricuspid regurgitation is the classic valvular association for this clinical picture.

Question 106. What is the primary underlying factor responsible for mortality in patients with diabetic ketoacidosis?

A. Sepsis

B. Dehydration

C. Hypokalemia

D. Cerebral edema

Correct answer: D

This question repeats the critical clinical point that "cerebral edema" is the leading cause of mortality in patients suffering from Diabetic Ketoacidosis (DKA), particularly among pediatric and young adult populations. DKA is a complex metabolic state of profound dehydration, electrolyte imbalance, and acidosis. While sepsis (Option A) can be a trigger for DKA, and severe dehydration (Option B) or hypokalemia (Option C) are major complications that must be addressed, it is the rapid swelling of the brain that most frequently leads to coma and death. The exact mechanism of cerebral edema in DKA is not fully understood but is thought to be related to the rapid drop in serum glucose and osmolality during treatment, leading to an osmotic shift of water into brain cells. Clinical signs include headache, declining consciousness, and bradycardia. To minimize this risk, clinicians must lower blood glucose gradually and avoid the over-aggressive use of hypotonic fluids or bicarbonate. Thus, preventing and managing cerebral edema is the highest priority in DKA care.

Question 107. A middle-aged man employed in sandblasting presents with hemoptysis and a productive cough, and his chest X-ray findings are suggestive

of tuberculosis. Which associated condition is most likely linked to his occupational exposure?

A. Asbestosis

B. Silicosis

C. Anthracosis

D. Siderosis

Correct answer: B

The clinical scenario of a sandblaster presenting with respiratory symptoms and findings suggestive of tuberculosis (TB) is a classic association for "silicosis." Sandblasting involves the inhalation of fine silica dust , which causes a chronic, fibrotic lung disease. Importantly, silica is toxic to pulmonary macrophages, the primary defense against Mycobacterium tuberculosis. Consequently, patients with silicosis have a significantly increased risk (roughly 30-fold) of developing tuberculosis, a condition sometimes called "silicotuberculosis." Asbestosis (Option A) is associated with mesothelioma and lung cancer but not specifically with increased TB risk. Anthracosis (Option C) is "coal worker's pneumoconiosis" and is generally less fibrogenic than silicosis. Siderosis (Option D) is caused by iron dust and is usually a benign, non-fibrotic pneumoconiosis. The classic X-ray finding in silicosis is small, rounded opacities in the upper lobes and "eggshell calcification" of hilar lymph nodes. Given the specific occupational history and the TB association, silicosis is the definitive diagnosis.

SURGERY

Question 108. A 55-year-old man presents with a lump in the left testis and is diagnosed with left testicular carcinoma following imaging and biopsy. Which lymph node group is most commonly involved first in the spread of this malignancy?

A. Inguinal lymph nodes

B. Para-aortic lymph nodes

C. Iliac lymph nodes

D. Precaval lymph nodes

Correct answer: B

The lymphatic drainage of the testes follows their embryological path of descent. The testes originate in the high posterior abdominal wall near the kidneys and descend into the scrotum during development, carrying their blood supply and lymphatic vessels with them. Therefore, lymphatic drainage from the testes bypasses the superficial lymph nodes and goes directly to the "para-aortic" (lumbar) lymph nodes at the level of the renal vessels (L1-L2). For the left testicle, the primary drainage is specifically to the left para-aortic nodes. The inguinal lymph nodes (Option A) drain the scrotum and the skin of the penis, but not the testicle itself; they

only become involved in testicular cancer if the tumor invades the scrotal skin. The iliac (Option C) and precaval (Option D) nodes are further downstream or lateral to the primary drainage site. Understanding this "leapfrog" drainage pattern is crucial for the staging and surgical management (like Retroperitoneal Lymph Node Dissection) of testicular malignancies.

Question 109. A 44-year-old woman presents with a palpable flank mass measuring 4 cm on CT imaging, and urine examination reveals malignant cells. What is the most appropriate management for this condition?

A. Partial nephrectomy

B. Partial nephrectomy + neoadjuvant chemotherapy

C. Radical nephrectomy

D. Radical nephrectomy + postoperative radiotherapy

Correct answer: A

The clinical presentation of a flank mass and malignant cells in the urine is strongly suggestive of a Renal Cell Carcinoma (RCC). For small renal masses (typically defined as those less than 4 cm, or T1a tumors), "partial nephrectomy" (nephron-sparing surgery) is the preferred standard of care. This procedure removes the tumor while preserving as much healthy kidney tissue as possible, which helps maintain long-term renal function and reduces the risk of chronic kidney disease without compromising oncological outcomes compared to radical nephrectomy. Neoadjuvant chemotherapy (Option B) is not a standard treatment for localized RCC as these tumors are largely chemoresistant. Radical nephrectomy (Option C), the removal of the entire kidney, is reserved for larger, more complex, or centrally located tumors where a partial approach is not feasible. Postoperative radiotherapy (Option D) has a very limited role in RCC management. Therefore, given the small 4 cm size and the patient's relatively young age, partial nephrectomy is the most suitable and recommended intervention.

Examination Paper January 2023 Question

(A) Rickets

(B) Osteomalacia

(C) Osteoarthritis

(D) Rheumatoid arthritis

AAns

(D) Rheumatoid arthritis

The hand in the image shows ulnar deviation (ulnar drift) of the fingers at the metacarpophalangeal (MCP) joints, along with joint deformity and muscle wasting, which are classic features of rheumatoid arthritis (RA). RA is a chronic inflammatory autoimmune disease that primarily affects the MCP and PIP joints, leading to progressive deformities such as ulnar deviation, swan neck, and boutonnière deformities.

Unlike osteoarthritis, which causes hard bony nodules at DIP joints (Heberden’s nodes), this image shows joint misalignment rather than isolated nodules, pointing toward RA. The deformity appears more inflammatory and deforming, rather than just degenerative.

Why Other Options Are Wrong

(A)

Rickets: Seen in children, not elderly

(B)

Osteomalacia: Causes bone softening, no joint deformity

(C)

Osteoarthritis: Primarily affects DIP with nodules, not ulnar deviation

Question 110. Most likely to present with unilateral hydronephrosis?

A. Phimosis

B. Posterior urethral valves

C. Urethral strictures

D. Retrocaval ureter

Correct answer: D

Hydronephrosis, the dilation of the renal pelvis and calyces, can be unilateral or bilateral depending on the site of obstruction. Obstructions occurring "at or below" the level of the bladder neck will typically cause "bilateral" hydronephrosis because they affect the common drainage pathway for both kidneys. Phimosis (Option A), Posterior Urethral Valves (Option B), and Urethral Strictures (Option C) are all distal obstructions that lead to bladder distension and bilateral reflux or backup into both ureters and kidneys. A retrocaval ureter (Option D), also

known as a circumcaval ureter, is a rare congenital anomaly where the right ureter passes behind the inferior vena cava. This leads to extrinsic compression and "unilateral" (right-sided) obstruction and hydronephrosis. Other causes of unilateral hydronephrosis include ureteropelvic junction (UPJ) obstruction or a stone trapped in one ureter. Therefore, among the choices provided, only the retrocaval ureter is a purely unilateral obstructive lesion.

Question 111. A 60-year-old patient presents with painless hematuria and is diagnosed with muscle-invasive carcinoma of the urinary bladder. What is the most appropriate next step in the management of this patient?

A. Intravesical administration of BCG

B. Radiotherapy

C. Neoadjuvant chemotherapy with Mitomycin

C

D. Radical cystectomy

Correct answer: D

Muscle-invasive bladder cancer (MIBC), defined as cancer that has reached the detrusor muscle layer (stage T2 or higher), is most appropriately treated with radical cystectomy. This surgery involves the complete removal of the bladder along with regional lymphadenectomy. Option A (intravesical BCG) is the standard treatment for high-risk non-muscle-invasive bladder cancer (NMIBC) to prevent recurrence, but it is insufficient for disease that has breached the muscle wall. Radiotherapy (Option B) is typically part of a bladder-preserving multi-modal approach but is not the primary gold standard compared to surgery for fit patients. Mitomycin C (Option C) is generally used as an intravesical agent for NMIBC rather than a systemic neoadjuvant agent for muscle-invasive disease. Therefore, radical cystectomy remains the definitive intervention to ensure local control and improve survival. The patient would also require a urinary diversion procedure, such as an ileal conduit or neobladder, to manage urinary output after the resection.

Question 112. In which class of shock is there an initial decrease in urine output?

A. Compensated

B. Moderate

C. Mild

D. Severe

Correct answer: B

Moderate shock, often corresponding to Class III hemorrhage (1500–2000 mL blood loss), is where a noticeable and initial decrease in urine output typically occurs. In this stage, the body's compensatory mechanisms, such as intense peripheral vasoconstriction and the activation of

the renin-angiotensin-aldosterone system, prioritize blood flow to the heart and brain at the expense of the kidneys. This leads to oliguria, with urine output falling to roughly 5–15 mL/hour. In Compensated or Mild shock (Options A and C), renal perfusion is often sufficiently maintained to keep urine output within near-normal limits (usually mL/hour). In Severe shock (Option D), urine output is typically negligible (anuria), representing a late and critical stage of circulatory failure rather than the "initial" decrease. Recognizing this drop in Moderate shock is vital for clinicians to initiate aggressive fluid resuscitation to prevent irreversible renal tubular damage or progression to multi-organ failure.

Question 113. A 50-year-old woman has recently undergone thyroidectomy for papillary thyroid carcinoma and seeks advice on further management. What is the most appropriate post-operative treatment strategy?

A. Radiotherapy

B. Chemotherapy

C. Radioiodine scan (D) Severe

Correct answer: C

Post-operative management of papillary thyroid cancer classically involves a radioiodine (RAI) scan and potential ablation. Since thyroid tissue, including metastatic papillary cells, uniquely traps iodine, radioactive iodine-131 can be used to scan for residual disease and simultaneously destroy microscopic thyroid remnants or distant metastases. This helps in reducing recurrence rates and allows for more accurate follow-up using thyroglobulin as a tumor marker. External beam radiotherapy (Option A) is rarely used for papillary thyroid cancer unless there is gross unresectable disease or for palliative purposes. Systemic chemotherapy (Option B) is generally ineffective for differentiated thyroid cancers and is reserved for rare, late-stage medullary or anaplastic variants. Option D is a grading term and not a treatment modality. Consequently, the radioiodine scan is the standard recommendation for staging and adjuvant therapy after a total thyroidectomy for papillary carcinoma to ensure the best long-term outcomes.

Question 114. Which procedure poses the greatest risk of duodenal ulcer recurrence?

A. Gastrectomy

B. Highly selective vagotomy

C. Truncal vagotomy

D. Gastro-jejunostomy

Correct answer: D

A duodenal ulcer primarily occurs due to excess gastric acid secretion. Surgical procedures aim to reduce acid production or remove the ulcer-prone area.

Gastro-jejunostomy is only a bypass procedure that connects the stomach to the jejunum without reducing acid secretion or addressing the underlying cause. Therefore, the stomach continues to produce acid, and the ulcer can recur at the stoma (stomal ulcer), making recurrence most likely with this procedure.

Why Other Options Are Wrong

(A)

Gastrectomy: Removes acid-producing part → ↓ recurrence

(B)

Highly selective vagotomy: Preserves function but reduces acid → low recurrence

(C)

Truncal vagotomy: Significantly reduces acid secretion → lower recurrence than GJ

Question 115. A 45-year-old man with a 15-year history of smoking one pack per day presents with hemoptysis. Chest X-ray reveals a 3 cm mass in the upper lobe near the lung apex. What is the most appropriate next step in management?

A. Bronchoscopy

B. CT-guided biopsy

C. Sputum cytology

D. Sputum for AFB

Correct answer: B

For a peripheral lung mass, specifically one located in the upper lobe near the apex (Pancoast tumor region or peripheral nodule), a CT-guided percutaneous needle biopsy is the most appropriate next step to obtain a tissue diagnosis. This method provides high diagnostic yield for peripheral lesions that are difficult to reach via internal airways. Bronchoscopy (Option A) is better suited for central masses that are visible within the larger bronchial trees; peripheral masses are often beyond the reach of standard fiberoptic bronchoscopes. Sputum cytology (Option C) has a low sensitivity for diagnosing lung cancer and is rarely the definitive next step for a 3 cm mass. Sputum for Acid-Fast Bacilli (AFB) (Option D) is used to rule out tuberculosis (TB); while TB is a differential for a lung mass, the smoking history and mass characteristics strongly mandate ruling out malignancy first via biopsy. Therefore, CT-guided biopsy provides the necessary pathology to guide subsequent cancer staging and treatment.

Question 116. A man presents with a three-year history of persistent perianal discharge and discomfort, raising suspicion of a fistula-in-ano. Which investigation is considered the most accurate and reliable for confirming this diagnosis?

A. Fistulogram

B. USG

C. CECT

D. MRI

Correct answer: D

MRI of the pelvis is currently the gold standard and most accurate investigation for the evaluation of a fistula-in-ano. It provides exceptional detail of the pelvic floor anatomy, accurately identifies the primary track, detects secondary extensions or branch tracks, and localizes associated abscesses. This detailed mapping is crucial for surgeons to avoid recurrence and prevent injury to the anal sphincters during operative repair. A fistulogram (Option A) is often unreliable as it may fail to fill the entire track and does not visualize the internal sphincter relation. Ultrasound (USG) (Option B), particularly endoanal ultrasound, is useful but operator-dependent and less comprehensive than MRI. CECT (Option C) provides some information but lacks the soft-tissue contrast necessary to distinguish complex tracks from surrounding pelvic muscles. Given the patient's three-year history suggesting a potentially complex fistula, MRI is the most reliable imaging modality to ensure a successful surgical outcome.

207. Identify the instrument given below:

(A) Linear stapler

(B) Skin stapler

(C) Circular stapler

(D) Curved stapler

Question 117. to the anal sphincters during operative repair.
A fistulogram (Option A) is often unreliable
as it may fail to fill the entire track and does
not visualize the internal sphincter relation.
Ultrasound (USG) (Option B), particularly
endoanal ultrasound, is useful but operator-
dependent and less comprehensive than MRI.
CECT (Option C) provides some information
but lacks the soft-tissue contrast necessary to
distinguish complex tracks from surrounding
pelvic muscles. Given the patient's three-year
history suggesting a potentially complex fistula,
MRI is the most reliable imaging modality to
ensure a successful surgical outcome.
Identify the instrument given below:

A. Linear stapler

B. Skin stapler

C. Circular stapler

D. Curved stapler

Correct answer: A

The instrument shown in the image is a linear stapler, often specifically a linear cutter used in various abdominal and thoracic surgeries. These devices are designed to place two or more staggered rows of staples and then cut the tissue between them, allowing for the simultaneous resection and closure of organs like the stomach or intestines. A circular stapler (Option C) has a distinct round head and is used primarily for end-to-end anastomoses, such as after a low anterior resection of the rectum. Skin staplers (Option B) are much smaller, handheld devices used only for external skin closure. Curved staplers (Option D) have a specific contoured head to assist in deep pelvic closures but do not match the straight, elongated profile of the linear stapler shown. Therefore, based on the straight design and the typical appearance used in stapled anastomoses, the linear stapler is the correct identification for this common surgical tool.

A 45-year-old man is brought to the emergency department after a road traffic accident, and a whole-body CT scan is planned as part of trauma assessment. The standard whole-body CT protocol includes all of the following except which one?

(A)

CT Abdomen

(B)

CT Cervical spine

(C)

CT Limbs

(D)

CT Head

Question 118. A 45-year-old man is brought to the emergency department after a road traffic accident, and a whole-body CT scan is planned as part of trauma assessment. The standard whole-body CT protocol includes all of the following except which one?

A. CT Abdomen

B. CT Cervical spine

C. CT Limbs

D. CT Head

Correct answer: C

The whole-body CT protocol, often called a "pan-scan," is a rapid screening tool for major trauma to identify life-threatening internal injuries. Standard protocols include CT of the Head (Option D) and Cervical Spine (Option B) to rule out intracranial hemorrhage and spinal instability, as well as CT of the Chest, Abdomen (Option A), and Pelvis to check for visceral injury or internal bleeding. CT of the limbs (Option C) is NOT part of the standard whole-body trauma protocol. Injuries to the extremities are typically assessed via physical examination and targeted conventional X-rays once the patient is hemodynamically stabilized. Scanning all limbs in the primary pan-scan would significantly increase the radiation dose and scan time without necessarily altering immediate life-saving interventions. Therefore, while essential for managing fractures later, CT limbs are excluded from the initial "whole-body" trauma assessment to focus on the brain, spine, and torso.

Question 119. A 33-year-old patient with a long history of tobacco chewing presents with a persistent whitish lesion in the gingivobuccal sulcus for the past seven months, raising suspicion of malignancy. What is the appropriate line of management for this patient?

A. Local excision and biopsy

B. Avoid smoking; wait and watch

C. Steroidal injection

D. Sclerotherapy

Correct answer: A

The presence of a persistent whitish lesion (leukoplakia) in the gingivobuccal sulcus, especially in a chronic tobacco user, is a classic precancerous presentation that necessitates definitive diagnosis. The correct management is an incisional or excisional biopsy to rule out squamous

cell carcinoma or varying grades of dysplasia. "Wait and watch" (Option B) is dangerous and inappropriate, as a biopsy is the only way to confirm if malignancy is already present. Steroidal injections (Option C) are used for inflammatory conditions like lichen planus but would be ineffective and potentially mask the progression of a cancer. Sclerotherapy (Option D) is used for vascular malformations or varicose veins and has no role in the management of oral mucosal lesions. Therefore, given the high correlation between tobacco chewing and oral cancer, immediate biopsy via local excision is the only safe and professional course of action to ensure early detection and treatment.

Question 120. A 32-year-old woman who recently underwent emergency laparotomy for perforation peritonitis now develops features suggestive of wound dehiscence. Which clinical sign is the most reliable indicator of impending or established wound failure?

A. Copious sero-sanguinous discharge

B. Rebound tenderness

C. Hemorrhage

D. Hypotension

Correct answer: A

The most classic and reliable early clinical sign of impending or actual deep wound dehiscence (failure of the fascial layer) after a laparotomy is the sudden appearance of copious, serosanguinous (pinkish, watery) discharge from the surgical incision. This is often described as "salmon-colored" fluid and represents peritoneal fluid leaking through the failing fascial closure. This sign often precedes the visible protrusion of viscera (evisceration). Rebound tenderness (Option B) indicates peritoneal irritation, which is expected post-laparotomy for peritonitis but does not specifically point to wound failure. While acute hemorrhage (Option C) can occur, it is usually a sign of a vascular complication rather than general wound failure. Hypotension (Option D) is a systemic sign of shock or sepsis but lacks the specificity of the local wound findings. Recognizing the specific "sero-sanguinous" leak allows for urgent intervention, such as binding the wound and planning a surgical re-closure of the fascia.

Question 121. A 35-year-old man presents with pain during defecation and a progressively enlarging mass at the anal verge over the past few months. Clinical evaluation and biopsy confirm squamous

cell carcinoma of the anus. What is the most appropriate management approach for this patient?

A. Chemotherapy

B. Abdominoperineal resection

C. Combined chemoradiation

D. Wide local excision

Correct answer: C

The primary treatment for squamous cell carcinoma (SCC) of the anal canal is combined chemoradiotherapy, known as the Nigro protocol. Unlike many other GI cancers, SCC of the anus is highly sensitive to radiation and chemotherapy (typically using 5-fluorouracil and mitomycin C or cisplatin). This approach is preferred because it achieves high cure rates while preserving the anal sphincter and avoiding a permanent colostomy. Abdominoperineal resection (Option B), which involves removing the rectum and anus and creating a permanent stoma, is now reserved for patients who fail primary chemoradiation or have recurrent disease. Chemotherapy alone (Option A) is not curative for localized disease. Wide local excision (Option D) might be considered for very small, well-differentiated tumors of the anal "margin" (the skin outside), but not for carcinomas of the anal canal itself. Therefore, the sphincter-sparing combined chemoradiation remains the standard of care for anal SCC.

Question 122. A 62-year-old man presents with increased urinary frequency, hesitancy, and a sensation of incomplete bladder emptying. He has no history of urinary tract infection or kidney disease, and evaluation suggests benign prostatic hyperplasia. What is the most appropriate initial management for his urinary symptoms?

A. TURP-Transurethral resection of prostate

B. Tamsulosin

C. Finasteride

D. Observation

Correct answer: B

For a patient presenting with bothersome lower urinary tract symptoms (LUTS) due to BPH without secondary complications, the initial management is usually medical. Tamsulosin, an alpha-1 blocker, is the most appropriate first-line choice because it rapidly relaxes the smooth muscle of the bladder neck and prostate, providing quick symptomatic relief (often within days). Finasteride (Option C), a 5-alpha reductase inhibitor, is also used but typically takes 6–12 months to significantly shrink the prostate and is best suited for larger gland volumes. TURP

(Option A) is the gold standard "surgical" treatment but is generally reserved for patients who fail medical therapy or develop complications like refractory urinary retention, bladder stones, or recurrent hematuria. Observation (Option D) is only suitable for patients with very mild, non-bothersome symptoms. Since this patient reports progressive symptoms, initiating tamsulosin is the most effective and commonly prescribed initial intervention to improve his quality of life.

Question 123. A 25-year-old man presents with a painless, reducible swelling in the left inguinal region that appears on standing and disappears on lying down, with a positive cough impulse. Imaging confirms a left inguinal hernia. What is the most appropriate surgical treatment for this patient?

A. Herniotomy

B. Hernioplasty

C. Wait and watch

D. Emergency laparotomy

Correct answer: B

In an adult male with a reducible inguinal hernia, the standard surgical treatment is hernioplasty. This procedure involves the reduction of the hernia sac followed by a tension-free repair using a prosthetic mesh (like the Lichtenstein repair). Mesh repairs significantly reduce the risk of hernia recurrence compared to older suture-only techniques. Herniotomy (Option A), which is the simple excision of the hernia sac without strengthening the abdominal wall, is the standard treatment for congenital hernias in children but is insufficient for adults. "Wait and watch" (Option C) might be considered for completely asymptomatic patients, but surgical repair is generally recommended for fit young adults to prevent future complications like strangulation. Emergency laparotomy (Option D) is only indicated if the hernia is strangulated and there is evidence of bowel necrosis, which is not the case for this reducible, painless bulge. Therefore, scheduled mesh hernioplasty is the most appropriate definitive management.

214. A 17-year-old girl presents with recurrent episodes of numbness and tingling in her fingers, especially triggered by stress or exposure to cold. She has no significant past medical history and is otherwise healthy. What is the most likely diagnosis?

Examination Paper January 2023 Question

Question 124. 213. (B) Hernioplasty

In an adult male with a reducible inguinal hernia, the standard surgical treatment is hernioplasty. This procedure involves the reduction of the hernia sac followed by a tension-free repair using a prosthetic mesh (like the Lichtenstein repair). Mesh repairs significantly reduce the risk of hernia recurrence compared to older suture-only techniques. Herniotomy (Option A), which is the simple excision of the hernia sac without strengthening the abdominal wall, is the standard treatment for congenital hernias in children but is insufficient for adults. "Wait and watch" (Option C) might be considered for completely asymptomatic patients, but surgical repair is generally recommended for fit young adults to prevent future complications like strangulation. Emergency laparotomy (Option D) is only indicated if the hernia is strangulated and there is evidence of bowel necrosis, which is not the case for this reducible, painless bulge. Therefore, scheduled mesh hernioplasty is the most appropriate definitive management.

A 17-year-old girl presents with recurrent episodes of numbness and tingling in her fingers, especially triggered by stress or exposure to cold. She has no significant past medical history and is otherwise healthy. What is the most likely diagnosis?

A. Raynaud's phenomenon

B. Buerger's disease

C. Atherosclerosis

D. Peripheral arterial disease

Correct answer: A

The clinical presentation and the provided image are pathognomonic for Raynaud’s phenomenon. This condition is characterized by episodic, reversible vasospasm of the digital arteries in response to cold or emotional stress. It classically follows a triphasic color change: white (vasospasm/ischemia), blue (deoxygenation/ cyanosis),

and
red
(reactive
hyperemia/
reperfusion). In a 17-year-old non-smoker with
no underlying disease, this is likely "primary"
Raynaud’s
(Raynaud's
disease).
Buerger's
disease (Option B) causes digital ischemia but
typically presents in heavy male smokers and is
characterized by permanent vessel inflammation
rather than reversible spasms. Atherosclerosis

Question 125. Which of the following is not included in the qSOFA score components?

A. Respiratory rate
B. LDH-Lactate dehydrogenase
C. Altered mental status
D. Systolic blood pressure mmHg

Correct answer: B

The quick Sequential Organ Failure Assessment (qSOFA) score is a bedside tool designed to identify patients outside of the ICU who are at high risk for poor outcomes due to suspected sepsis. It consists of exactly three clinical components:

Respiratory rate breaths per minute (Option A)
Altered mental status (Glasgow Coma Scale) (Option C)
Systolic blood pressure mmHg (Option D)

LDH (Option B) is NOT a component of the qSOFA score. While lactate is an important biomarker used in the full SOFA score and in defining septic shock, the qSOFA was specifically created to rely solely on physical exam findings and vital signs, requiring no laboratory tests at all for its calculation. A score of indicates a higher risk of prolonged ICU stay or in-hospital mortality. Therefore, LDH is the correct "except" choice as it is a laboratory value.

Question 126. Which graft option is used least often during coronary artery bypass graft (CABG) surgery?

A. Long saphenous vein
B. Internal mammary artery
C. Intercostal artery

D. Radial artery

Correct answer: C

In coronary artery bypass grafting (CABG), surgeons use various blood vessels to bypass blocked coronary arteries. The internal mammary artery (Option B), specifically the Left Internal Mammary Artery (LIMA), is the "gold standard" graft due to its excellent long-term patency. The long saphenous vein (Option A) from the leg is the most common "venous" graft used when multiple bypasses are required. The radial artery (Option D) is also frequently used as an arterial graft with good patency rates. The intercostal artery (Option C) is virtually never used as a conduit for CABG. Its anatomical position, relatively small size, and importance in providing collateral circulation to the spinal cord make it a poor and risky choice for a coronary graft. Therefore, among the choices provided, the intercostal artery is the "least frequently utilized"—essentially not used at all—in standard cardiac bypass practice.

Question 127. What is the most likely diagnosis in a 20-year-old male presenting with right flank pain, fever with chills, and pain on passive extension of the right hip, along with leukocytosis and characteristic findings on CT scan?

A. Pyelonephritis

B. Psoas abscess

C. Appendicitis

D. Torsion of right undescended testis

Correct answer: B

The clinical presentation of fever, flank pain, and the classic "psoas sign" (pain on passive extension of the hip) is highly suggestive of a psoas abscess. The psoas muscle is located deep in the retroperitoneum, and its proximity to the hip joint causes inflammation there to manifest as pain when the muscle is stretched. While acute appendicitis (Option C), especially with a retrocecal appendix, can also cause a psoas sign, the primary location of the pain in the "flank" often shifts the differential toward an abscess or renal pathology. Pyelonephritis (Option A) causes flank pain and fever but typically does not produce a positive psoas sign. Torsion of an undescended testis (Option D) can cause lower abdominal or groin pain but would not typically involve the psoas sign and would show a missing testis in the scrotum. Therefore, the inflammatory symptoms localized to the psoas muscle confirm a psoas abscess diagnosis.

PEDIATRICS

Question 128. A 2-year-old child is brought to the emergency department with a recent onset of difficulty in swallowing. An X-ray reveals an obstructing

object, suggestive of foreign body ingestion.
Based
on
the
clinical
presentation
and
radiographic findings, what is the most
appropriate intervention for managing this
condition?

A. Bronchoscopy

B. Esophagoscopy

C. Tracheostomy

D. Heimlich's maneuver

Correct answer: B

A two-year-old child presenting with "difficulty swallowing" (dysphagia) and an X-ray showing an obstruction most likely has an esophageal foreign body. The definitive management for removing an object lodged in the esophagus is esophagoscopy, usually performed using a rigid or flexible scope under general anesthesia. This allows for direct visualization and safe removal of the object. Bronchoscopy (Option A) is indicated for foreign bodies in the airway (trachea or bronchi), which would typically present with coughing, wheezing, or respiratory distress rather than just trouble swallowing. Tracheostomy (Option C) is a surgical airway procedure and is not used for foreign body removal unless there is an absolute upper airway obstruction. Heimlich's maneuver (Option D) is an emergency first-aid step for acute, total airway choking and is not used for objects that have already been diagnosed as lodged in the esophagus via X-ray. Therefore, esophagoscopy is the correct clinical intervention.

AAns

(A) Linear stapler

The instrument shown in the image is a linear stapler, often specifically a linear cutter used in various abdominal and thoracic surgeries. These devices are designed to place two or more staggered rows of staples and then cut the tissue between them, allowing for the simultaneous resection and closure of organs like the stomach or intestines. A circular stapler (Option C) has a distinct round head and is used primarily for end-to-end anastomoses, such as after a low anterior resection of the rectum. Skin staplers (Option B) are much smaller, handheld devices used only for external skin closure. Curved staplers (Option D) have a specific contoured head to assist in deep pelvic closures but do not match the straight, elongated profile of the linear

stapler shown. Therefore, based on the straight design and the typical appearance used in stapled anastomoses, the linear stapler is the correct identification for this common surgical tool.

Question 129. A 5-year-old child is brought to the clinic with a 2–3 month history of reduced hearing, and the otoscopic findings are shown below. What is the most likely diagnosis?

A. Hemorrhagic Myringitis bullosa

B. Serous otitis media

C. Acute otitis media

D. Myringitis granulosa

Correct answer: B

The clinical history of chronic, painless hearing loss over several months and the otoscopic image of a dull, retracted eardrum with visible air bubbles are hallmark features of Serous Otitis Media (SOM), also known as Otitis Media with Effusion (OME). SOM is common in children and results from Eustachian tube dysfunction, leading to fluid accumulation in the middle ear without signs of acute infection. Acute otitis media (Option C) would present with sudden pain, fever, and a red, bulging eardrum. Hemorrhagic Myringitis bullosa (Option A) is a painful viral condition characterized by blood-filled blisters on the external surface of the eardrum. Myringitis granulosa (Option D) involves the presence of granulation tissue on the outer layer of the drum, usually as a result of chronic irritation. Therefore, given the subacute timeline and the classic "glue ear" appearance, Serous Otitis Media is the definitive diagnosis.

Question 130. A 10-year-old child presents with hematuria, and urine microscopy reveals red blood cell casts. Based on these findings, what is the most likely underlying cause?

A. Focal segmental glomerulosclerosis (FSGS)

B. Post-streptococcal glomerulonephritis (PSGN)

C. Membranoproliferative glomerulonephritis (MPGN)

D. Minimal change disease

Correct answer: B

The presence of "RBC casts" is a pathognomonic marker of glomerular disease, as it indicates that red cells are passing through the glomerulus and becoming trapped in the renal tubules. In a 10-year-old child presenting with acute hematuria, Post-streptococcal Glomerulonephritis

(PSGN) is the most common cause of acute nephritic syndrome. It typically follows a skin or throat infection with Group A Streptococcus. Minimal change disease (Option D) is the most common cause of "nephrotic" syndrome in children but classically presents with massive proteinuria and edema without significant hematuria or RBC casts. FSGS (Option A) and MPGN (Option C) are chronic glomerular diseases that can also cause hematuria, but they are less common than PSGN in the pediatric acute setting. PSGN is usually self-limiting and characterized by low C3 complement levels. Therefore, PSGN is the most likely diagnosis for acute glomerular hematuria in this age group.

Question 131. How would you define a post-term neonate?

A. Neonate born after 37 weeks of gestation

B. Neonate born between 37-40 weeks of gestation

C. Neonate born after 40 weeks of gestation

D. Neonate born after 42 weeks of gestation

Correct answer: D

The standard clinical definition of a post-term neonate is any infant born at or beyond 42 weeks (294 days) of completed gestation. This is distinct from a "term" neonate, which is born between 37 weeks 0 days and 41 weeks 6 days of gestation. Option A and B describe "term" babies; 37 weeks marks the transition from preterm to term. Option C (after 40 weeks) is "post-dates" but not yet technically "post-term" according to international neonatal standards. Post-term infants are at a higher risk for complications like meconium aspiration syndrome, placental insufficiency, and fetal macrosomia due to the aging placenta's inability to provide adequate oxygen and nutrients. Therefore, the strict cutoff for the definition of post-term is exactly 42 completed weeks of pregnancy. Clinicians prioritize this definition to manage the unique risks associated with post-maturity syndrome.

Question 132. What is the recommended concentration or dose of oxygen to be used during resuscitation of a full-term newborn with respiratory distress?

A. 21%

B. 50%

C. 70%

D. 100%

Correct answer: A

According to the current Neonatal Resuscitation Program (NRP) guidelines, resuscitation of full-term infants should be initiated with room air, which contains 21% oxygen. Research has shown that room air is as effective as 100% oxygen (Option D) for resuscitation and is significantly safer, as it reduces oxidative stress and potential injury to the brain and lungs.

Intermediate doses like 50% (Option B) or 70% (Option C) are not used for initial resuscitation in term babies. If the infant’s oxygen saturation (SpO2), measured via pulse oximetry, does not meet specific target levels according to the post-birth timeline, the fraction of inspired oxygen (FiO2) can then be gradually titrated upwards using a blender. For preterm infants (weeks), resuscitation may start at slightly higher levels (21%–30%), but for the full-term neonate described in the question, room air (21%) is the definitive standard starting point.

Question 133. Which of the following is not included in the components of Child-Pugh scoring?

A. Albumin

B. Bilirubin

C. Prothrombin Time

D. LFT

Correct answer: D

The Child-Pugh score is used to assess the prognosis of chronic liver disease, primarily cirrhosis. It consists of exactly five clinical and laboratory variables:

1.

Total Bilirubin (Option B)

2.

Serum Albumin (Option A)

3.

Prothrombin Time or INR (Option C)

4.

Ascites (none, mild, or moderate)

5.

Hepatic Encephalopathy (none, grade 1-2, or grade 3-4)

"LFT" (Liver Function Test) is a broad term that encompasses many enzymes like ALT and AST. While bilirubin and albumin are part of a liver function panel, the general term "LFT" is NOT a specific component of the Child-Pugh score. Specifically, the levels of transaminases (ALT/AST) do not influence the Child-Pugh calculation. Therefore, LFT is the "except" choice. The score is used to categorize patients into Class A, B, or C, which correlates with 1-year and 2-year survival rates.

Question 134. What is the recommended dosage of vitamin A supplementation for an 8-month-old infant when given over two consecutive days?

A. 25,000 IU

B. 50,000 IU

C. 100,000 IU

D. 200,000 IU

Correct answer: C

The National Prophylaxis Program against Blindness in India provides specific age-based doses for Vitamin A. Infants between the ages of 6 and 12 months should receive a dose of 100,000 International Units (IU), which is equal to 1 mL of the standardized oil solution. Children older than 1 year receive 200,000 IU every six months (Option D). The lower dose of 50,000 IU (Option B) is sometimes used for neonates in specific low-birth-weight protocols but is not the standard prophylactic dose for an 8-month-old. 25,000 IU (Option A) is incorrect. For treating severe vitamin A deficiency or xerophthalmia, this age-appropriate dose (100,000 IU) is given on day 1, day 2, and again 1–4 weeks later. Therefore, for routine prophylaxis and treatment calculations for an 8-month-old infant, 100,000 IU is the correct and medically standard dosage.

Question 135. False statement regarding CHPS, or congenital hypertrophic pyloric stenosis?

A. Presents with non-bilious vomiting

B. Caused by hypertrophy of longitudinal muscles

C. USG is very sensitive in diagnosing this condition

D. Hypokalemic metabolic alkalosis seen

Correct answer: B

Congenital Hypertrophic Pyloric Stenosis (CHPS) is characterized by the hypertrophy of the circular muscle layer of the pylorus, NOT the longitudinal muscles. This circular muscle thickening leads to the narrowing and elongation of the pyloric canal, obstructing gastric outflow. All other options are true: CHPS classically presents in infants aged 3–6 weeks with "non-bilious," projectile vomiting (Option A). Ultrasound is indeed the diagnostic tool of choice, showing a thickened pyloric muscle (typically or 4 mm) and an elongated canal (Option C). Because the infant vomits gastric hydrochloric acid and potassium, they develop the characteristic biochemical triad of hypochloremic, hypokalemic metabolic alkalosis (Option D). This metabolic derangement must be corrected before surgical intervention (Ramstedt’s pyloromyotomy). Therefore, the statement regarding longitudinal muscles is the anatomically incorrect and "false" choice.

Question 136. A 6-year-old child presents with brown discoloration of the incisors, with a history of white patches on the teeth that developed due to excessive intake of a substance. What is the most likely cause of this discoloration?

A. Vitamin A

B. Chlorine

C. Fluorine

D. Riboflavin

Correct answer: C

The presentation of initial white patches that progress to permanent brown discoloration (mottling) of the tooth enamel is the classic description of dental fluorosis. This occurs due to the excessive chronic ingestion of fluoride (fluorine) during the critical period of enamel formation, typically when the child is under age 6–8. This most often happens in regions where the natural groundwater contains high fluoride levels (ppm). Vitamin A (Option A) and Riboflavin (Option D) are essential nutrients; while deficiencies in these can affect overall health, they do not cause this specific "mottling" of the teeth. Chlorine (Option B) is used for water disinfection and does not cause dental discoloration. Fluorosis is considered a major public health issue in endemic areas and can also progress to skeletal fluorosis if not managed. Thus, fluoride excess is the definitive cause of the described incisor discoloration.

Question 137. In a child with severe acute malnutrition who presents with shock, which intravenous fluid should be preferred for initial management?

A. Normal saline

B. Ringer lactate

C. 10% dextrose

D. Ringer's lactate with 5% dextrose

Correct answer: D

Treating shock in a child with Severe Acute Malnutrition (SAM) is delicate because these children are highly susceptible to fluid overload and heart failure. According to WHO guidelines, the prioritized fluid is a half-strength isotonic solution that also contains sugar to prevent hypoglycemia, specifically Ringer's lactate with 5% dextrose. If this is unavailable, half-strength Darrow's solution with 5% dextrose is also an option. Standard Normal Saline (Option A) or Ringer's lactate (Option B) are too high in sodium content and can exacerbate electrolyte imbalances and cardiac strain in the malnourished child. 10% dextrose (Option C) addresses hypoglycemia but does not provide the volume expansion necessary for shock. Fluid boluses in SAM are given at a slower rate (typically 15 mL/kg over 1 hour) compared to well-nourished children, with frequent monitoring of respiratory and heart rates. Therefore, the dextrose-saline/lactate combination is the safest and correct choice.

Examination Paper January 2023 Question

Question 138. A 7-year-old child from a malaria-endemic area presents with fever, altered sensorium, seizures,

and coma, without any focal neurological deficits on examination. A peripheral blood smear shows Plasmodium falciparum. What is the most likely diagnosis?

A. Tubercular meningitis

B. Viral meningitis

C. Cerebral malaria

D. Fungal meningitis

Correct answer: C

The clinical presentation of fever, seizures, and unarousable coma in the presence of Plasmodium falciparum parasitemia is the classic definition of cerebral malaria. This is the most severe neurological complication of malaria and is a major cause of death in children in endemic regions. The diagnosis is clinical, supported by the absence of other obvious causes of encephalopathy (such as meningitis). Tubercular (Option A), Viral (Option B), and Fungal (Option D) meningitis are important differentials for fever and coma, but they typically require a longer subacute history or specific CSF findings. Furthermore, the confirmed presence of P. falciparum on a blood smear in a symptomatic child strongly points toward malaria as the primary cause. Cerebral malaria is a medical emergency requiring immediate intravenous artesunate to reduce parasite load and supportive care to manage intracranial pressure and seizures.

Question 139. A 2-year-old child is brought to the emergency department with nausea and severe abdominal pain after accidental ingestion of iron tablets. What is the recommended antidote for managing iron toxicity in this child?

A. EDTA

B. Deferoxamine

C. British anti-Lewisite

D. Penicillamine

Correct answer: B

Deferoxamine is the specific chelating agent used as the antidote for acute iron poisoning. It works by binding to free ferric iron to form ferrioxamine, which is then safely excreted in the urine, often giving the urine a characteristic "vin rose" (reddish) color. This treatment is indicated in severe cases where the patient shows signs of shock, systemic toxicity, or has an extremely high serum iron level. EDTA (Option A) is used primarily for lead poisoning. British anti-Lewisite (BAL) (Option C) is a chelator for arsenic, gold, and mercury. Penicillamine (Option D) is used for copper toxicity (Wilson's disease) and some cases of lead poisoning. Acute iron

ingestion in a toddler is life-threatening because iron is directly corrosive to the gastric mucosa, causing the described abdominal pain, and can lead to fulminant hepatic failure. Therefore, prompt administration of deferoxamine is the standard life-saving procedure.

Question 140. According to neonatal resuscitation guidelines, chest compressions are initiated when the heart rate falls below what value?

A. 50

B. 60

C. 80

D. 100

Correct answer: B

According to the universal Neonatal Resuscitation Program (NRP) guidelines, chest compressions must be initiated if the infant’s heart rate remains below 60 beats per minute despite at least 30 seconds of effective positive-pressure ventilation (PPV). This threshold indicates that ventilation alone is insufficient to maintain circulatory function. Options A, C, and D are incorrect based on standard algorithms; 100 bpm is the threshold for stopping PPV if the baby is breathing spontaneously. Chest compressions in neonates are performed using the two-thumb technique at a ratio of 3 compressions to 1 breath (90 compressions and 30 breaths per minute). The clinician should also increase the oxygen concentration to 100% when compressions begin. Therefore, 60 bpm is the critical clinical decision point for escalating resuscitation from airway management to active circulatory support.

Question 141. A 6-year-old child is evaluated for short stature. The child’s height matches parental stature, and bone age is appropriate for chronological age. What is the most likely diagnosis?

A. Familial short stature

B. Constitutional delay

C. Undernutrition

D. Growth hormone deficiency

Correct answer: A

Familial (genetic) short stature is the most likely diagnosis when a child is healthy but short, their growth velocity is normal, and their height is consistent with their "mid-parental height". A defining laboratory feature is that the bone age is equal to the chronological age, indicating that the child is growing at their genetically predetermined rate and will likely reach a short final adult height. Constitutional delay of growth and puberty (Option B) is characterized by a "delayed bone age," meaning the child has more room to grow and will eventually reach a normal height later than peers. Undernutrition (Option C) and Growth Hormone Deficiency

(Option D) typically present with a significant reduction in growth velocity (crossing centiles on a growth chart) and often a delayed bone age. Since this child’s height and bone age are both consistent with their genetics and age, no treatment is necessary other than reassurance.

Question 142. A 5-year-old child has a history of repeated clinic visits for chronic respiratory symptoms over several years. The child experiences recurrent respiratory infections with thick sputum, and a chest X-ray shows bronchial wall thickening. There is also a lifelong history of steatorrhea reported by the parents. Based on these findings, what is the most likely initial diagnosis?

A. Hyaline membrane disease

B. Cystic fibrosis

C. Alpha 1 antitrypsin deficiency

D. Malabsorption syndrome

Correct answer: B

Fibrosis (CF) is an autosomal recessive disorder caused by a mutation in the CFTR gene, leading to thick, viscous secretions in multiple organ systems. The combination of recurrent respiratory infections (due to thick sputum and bronchiectasis) and "steatorrhea" (foul-smelling, fatty stools due to pancreatic insufficiency) is pathognomonic for CF. Hyaline membrane disease (Option A) is a cause of respiratory distress in neonates, not older children. Alpha-1 antitrypsin deficiency (Option C) causes early-onset emphysema and liver disease but does not typically present with steatorrhea. Malabsorption syndrome (Option D) is a general term that includes many conditions (like Celiac disease), but it does not account for the chronic respiratory thickening seen here. The definitive diagnosis of CF is made using a sweat chloride test, which would show elevated chloride levels. Therefore, the multisystem involvement of lungs and pancreas confirms Cystic Fibrosis as the diagnosis.

Question 143. A 5-year-old child presents with facial edema progressing to generalized edema. Urinalysis shows heavy proteinuria, light microscopy appears normal, and electron microscopy demonstrates effacement of podocyte foot processes. What is the most likely diagnosis?

A. Focal segmental glomerulo sclerosis

B. Minimal change disease

C. Membranous glomerulonephritis

D. Post streptococcal glomerulonephritis

Correct answer: B

Minimal Change Disease (MCD) is the most common cause of nephrotic syndrome in children (accounting for about 80% of cases). It classically presents with sudden-onset edema, starting peri-orbitally (facial) and progressing to anasarca. The diagnosis is confirmed by three key pathological findings: massive proteinuria, a completely normal appearance on light microscopy (hence the name "minimal change"), and the pathognomonic effacement (flattening) of podocyte foot processes visible only on electron microscopy. FSGS (Option A) shows focal scarring on light microscopy and is more common in adults or steroid-resistant cases. Membranous glomerulonephritis (Option C) shows basement membrane thickening. PSGN (Option D) is a nephritic syndrome (hematuria/hypertension), not a pure nephrotic syndrome. MCD is highly responsive to steroid therapy, which is the standard of care. Therefore, the electron microscopy findings provide the definitive diagnosis.

Question 144. False statement regarding nephroblastoma?

A. Treatment is chemotherapy followed by
surgery

B. Early lung mets

C. Hematogenous spread

D. Most common intra abdominal malignancy
in children

Correct answer: B

Nephroblastoma (Wilms tumor) is the most common intra-abdominal malignancy in children and usually presents as a localized renal mass. It primarily spreads via the hematogenous route, most commonly to the lungs, and less commonly to the liver and bones. Hence, option (C) is correct.

However, early lung metastasis is NOT typical. In most cases, Wilms tumor is confined to the kidney at diagnosis, and metastasis occurs later in advanced stages (Stage IV). Therefore, stating that early lung metastases are common is false, making option (B) the correct answer.

Option (A) is considered correct in many exam settings following the SIOP protocol, where neoadjuvant chemotherapy is given before surgery to shrink the tumor and reduce surgical complications. Option (D) is also correct as Wilms tumor is the most common intra-abdominal malignancy in children.

Question 145. A normally developing infant can sit briefly while leaning forward on her hands, reach for and grasp a cube, and transfer it from one hand to the other. She babbles, but cannot wave bye-bye and does not yet use a pincer grasp. What is her most likely age?

A. 4 months

B. 7 months

C. 10 months

D. 14 months

Correct answer: B

This question tests the chronological mastery of developmental milestones. At 7 months, a typical infant can sit with support (leaning forward on hands), can "transfer objects from hand to hand," and begins "polysyllabic babbling". The inability to wave "bye-bye" is consistent, as that social milestone typically appears at 9–10 months. Furthermore, the lack of a "pincer grasp" (thumb and finger) is consistent, as that matures around 9 months; a 7-month-old uses a "radial-palmar" grasp to hold a cube. A 4-month-old (Option A) cannot yet sit or transfer objects. A 10-month-old (Option C) would have a pincer grasp and could wave bye-bye. A 14-month-old (Option D) would be walking and speaking single words. Therefore, the specific combination of sitting with support and hand-to-hand transfer precisely localizes the child's development to the 7-month mark.

ORTHOPEDICS

Question 146. A 60-year-old woman presents with pain and swelling of the left wrist after a fall on an outstretched hand, and examination reveals a dinner-fork deformity. What type of displacement is most likely seen in this injury?

A. Proximal and ventral displacement of radius

B. Supination and dorsal displacement of radius

C. Proximal and dorsal displacement of ulna

D. Proximal and ventral displacement of ulna

Correct answer: B

The clinical presentation of an elderly woman with a "dinner fork deformity" after falling on an outstretched hand (FOOSH) is diagnostic of a Colles’ fracture. This is a fracture of the distal radius within 2.5 cm of the wrist joint. The "dinner fork" appearance is caused by the specific displacement of the distal radial fragment. The six classic displacements in a Colles’ fracture are: dorsal displacement (which creates the fork shape), dorsal tilt, lateral displacement, lateral tilt, proximal migration (impaction), and supination. Option B correctly identifies two of these

key displacements (dorsal and supination). All other options are incorrect because they mention the "ulna" (which is usually not the primary displaced bone) or "ventral" displacement. Ventral (volar) displacement occurs in a Smith's fracture, also known as a "reverse Colles’," which results from a fall on a flexed wrist. Therefore, Colles' fracture is defined by its dorsal radial displacement.

Question 147. A 20-year-old patient presents with pain and swelling involving the proximal phalanx of the middle finger. Considering the patient’s age and the location of the lesion, what is the most likely diagnosis?

A. Osteosarcoma

B. Ewing's sarcoma

C. Osteoclastoma

D. Enchondroma

Correct answer: D

An enchondroma is a benign cartilaginous tumor that develops in the medullary cavity of bones. It is the most common tumor of the small bones of the hand (phalanges and metacarpals). On X-ray, it appears as a well-defined, radiolucent area often containing "stippled" or "popcorn-like" calcifications. While often asymptomatic, they can cause swelling or a pathological fracture. Osteosarcoma (Option A) and Ewing’s sarcoma (Option B) are highly aggressive, malignant tumors that rarely primary involve the small phalanges and would show significant bone destruction and periosteal reaction. Osteoclastoma (Option C), or Giant Cell Tumor, is typically found in the epiphysis of large long bones and would appear as an expansile "soap-bubble" lesion. Given the specific location in a finger phalanx and the well-defined lucency, enchondroma is the most statistically and radiographically probable diagnosis.

Question 148. An 80-year-old woman sustains a fall in the bathroom and presents with severe pain, inability to walk, and a shortened, externally rotated left lower limb, suggestive of a hip fracture. An X-ray confirms the injury, as shown below. What is the most appropriate management approach for this patient?

A. Internal fixation with cancellous screws

B. Meyer's operation

C. Hemiarthroplasty

D. McMurray's osteotomy

Correct answer: C

For an 80-year-old patient with a displaced femoral neck fracture, the standard of care is hemiarthroplasty (replacing the femoral head with a prosthesis). In the elderly, femoral neck fractures have a very high risk of non-union and avascular necrosis (AVN) due to the precarious blood supply to the femoral head. Replacing the head allows for immediate weight-bearing and avoids the complications of a second surgery if internal fixation fails. Internal fixation (Option A) is preferred in "young" patients (usually years) to preserve their native joint. Meyer’s operation (Option B) is a muscle-pedicle bone graft used to treat non-union in younger patients. McMurray’s osteotomy (Option D) is an obsolete procedure for hip osteoarthritis or non-union. Therefore, in a low-demand elderly patient, the goal is rapid mobilization, which is best achieved via hemiarthroplasty.

Question 149. A patient with diabetic nephropathy develops secondary hyperparathyroidism. Hyperparathyroidism is associated with all of the following conditions, EXCEPT which one?

A. Osteoporosis

B. Osteomalacia

C. Rickets

D. Chronic renal failure

Correct answer: A

Secondary hyperparathyroidism occurs as a compensatory response to chronic low serum calcium levels. In Chronic Renal Failure (Option D), the kidney's inability to excrete phosphate and activate Vitamin D leads to hypocalcemia, triggering the parathyroid glands to release more PTH. Similarly, Vitamin D deficiency in Rickets (Option C, children) and Osteomalacia (Option B, adults) results in poor calcium absorption, causing a secondary rise in PTH to pull calcium from the bones. Osteoporosis (Option A), however, is a disease of decreased bone density where serum calcium, phosphate, and PTH levels are typically completely normal. While primary hyperparathyroidism can lead to bone loss, osteoporosis itself is not a cause of elevated parathyroid hormone. Therefore, osteoporosis is the only condition among the choices where parathyroid dysfunction is not a standard physiological feature.

OBS & GYNE

Question 150. From which cells does testosterone originate,

and what specific type of cell is responsible for its production?

A. Cholesterol and Sertoli cells

B. Dihydrotestosterone and Leydig cells

C. Cholesterol and Leydig cells

D. FSH and Leydig cells

Correct answer: C

Testosterone is a steroid hormone synthesized in the testes. The specific cells responsible for its production are the Leydig cells (interstitial cells), which are located in the connective tissue between the seminiferous tubules. Like all steroid hormones, the fundamental biochemical "origin" or precursor for testosterone is cholesterol. Sertoli cells (Option A) are located inside the seminiferous tubules and are responsible for supporting sperm development (spermatogenesis) but do not produce testosterone. Dihydrotestosterone (DHT) (Option B) is a more potent metabolite derived from testosterone, not its origin. FSH (Option D) is a pituitary hormone that stimulates Sertoli cells, whereas Luteinizing Hormone (LH) is the hormone that actually triggers Leydig cells to produce testosterone. Therefore, the correct pairing of the precursor and the functional cell is cholesterol and Leydig cells.

Question 151. What is the underlying factor responsible for the occurrence of LH surge?

A. FSH

B. Estradiol

C. Progesterone

D. LH

Correct answer: B

The LH (Luteinizing Hormone) surge is the critical event that triggers ovulation. It is caused by a unique "positive feedback" mechanism. During the late follicular phase of the menstrual cycle, the dominant follicle produces increasingly high levels of estradiol. When estradiol levels remain above a certain threshold (typically pg/mL) for approximately 48 hours, the normal negative feedback on the pituitary switches to positive feedback. This triggers a massive, rapid release of LH from the anterior pituitary gland. FSH (Option A) also rises slightly during this time, but it is not the primary driver of the surge. Progesterone (Option C) levels are low during the follicular phase and only rise after ovulation occurs. LH (Option D) is the result of the surge, not its underlying cause. Therefore, the peak in estradiol is the definitive physiological trigger for the LH surge.

Question 152. A 45-year-old woman presents with abnormal vaginal bleeding and is diagnosed with stage IB carcinoma of the cervix. What type of

hysterectomy is most commonly recommended
for managing this condition?

A. Type 1 hysterectomy

B. Type 3 hysterectomy

C. Type 2 hysterectomy

D. Type 4 hysterectomy

Correct answer: B

For stage IB carcinoma of the cervix, a Type 3 radical hysterectomy (Meigs' or Wertheim’s procedure) is the standard surgical management. This procedure involves the comprehensive removal of the uterus, cervix, upper vagina, and the entire parametria (parametrium and paracolpium) to ensure negative margins. In contrast, Type 1 hysterectomy (Option A) is a simple extrafascial hysterectomy indicated only for very early stage IA1 disease without lymphovascular space invasion. Type 2 hysterectomy (Option C), or modified radical hysterectomy, involves removing only the medial half of the parametria and is usually reserved for stage IA2 disease. Type 4 radical hysterectomy (Option D) is an extended procedure involving the removal of periureteral tissue and superior vesical arteries, typically utilized for more advanced or recurrent cases. Therefore, for a stage IB patient where the tumor is confined to the cervix but clinically visible, Type 3 radical hysterectomy provides the necessary oncological clearance. .

Question 153. What is the appropriate next step in management
for a primigravida at 26 weeks of gestation who
presents with a blood pressure of 150/90 mm
Hg?

A. Uric acid

B. Liver function test

C. Complete blood count

D. Urine dipstick

Correct answer: D

The presentation of a blood pressure of 150/90 mmHg at 26 weeks of gestation in a primigravida suggests a potential diagnosis of pre-eclampsia. Pre-eclampsia is defined by new-onset hypertension after 20 weeks of pregnancy accompanied by proteinuria or organ dysfunction. The immediate and most essential next step to differentiate simple gestational hypertension from pre-eclampsia is a urine dipstick to screen for proteinuria. Uric acid levels (Option A), liver function tests (Option B), and a complete blood count (Option C) are important follow-up investigations to assess the severity of pre-eclampsia or the development of HELLP syndrome, but they are not the primary screening step. If the urine dipstick is positive (1+ or more), further quantification via a 24-hour urine protein or protein-creatinine ratio is warranted.

Therefore, checking for proteinuria via dipstick is the critical initial management step in a pregnant woman with elevated blood pressure. .

Question 154. What is the most likely diagnosis in a patient with a history of complex endometrial hyperplasia, an endometrial thickness of 14 mm, an adnexal mass, and atypical cells on evaluation?

A. Struma ovarii

B. Metastasis endometrial cancer to ovary

C. Polycystic ovarian disease

D. Immature ovarian teratoma

Correct answer: B

The patient's history of complex endometrial hyperplasia with atypical cells and an endometrial thickness of 14mm significantly increases the risk of underlying endometrial carcinoma. The presence of a concurrent adnexal mass in this clinical context strongly suggests the spread of the malignancy to the ovary. Metastasis from endometrial cancer is a well-recognized cause of secondary ovarian tumors. Struma ovarii (Option A) is a rare specialized germ cell tumor containing thyroid tissue, which does not correlate with endometrial hyperplasia. Polycystic ovarian disease (Option C) presents with chronic anovulation and polycystic morphology on USG, not typically an adnexal mass alongside complex atypical hyperplasia. Immature ovarian teratoma (Option D) is a germ cell malignancy seen in younger patients and lacks the direct association with thickened endometrium. Thus, given the uterine pathology, metastatic endometrial cancer to the ovary is the most probable clinical diagnosis. .

Question 155. Which of the following statements is not true regarding audit in obstetrics?

A. Improve treatment

B. Change in hospital administration and practices

C. Fetal death data is analyzed

D. Should be done before analyzing outcomes

Correct answer: D

In clinical practice, a medical audit is a systematic and critical analysis of the quality of medical care, including procedures used for diagnosis and treatment. The fundamental purpose of an audit in obstetrics is to improve treatment (Option A) and drive necessary changes in hospital administration and practices (Option B) to enhance patient safety. Analyzing fetal death data (Option C) or maternal mortality through "Maternal and Perinatal Death Reviews" is a cornerstone of obstetric auditing. Statement D is incorrect because an audit is essentially a retrospective or ongoing review of performance against established standards based on

previously recorded outcomes. You cannot perform a meaningful audit until outcomes have actually occurred and been documented for comparison. Therefore, auditing follows the analysis of outcomes to identify gaps in care. The process is cyclical, aiming for continuous improvement rather than being a precursor to outcome data collection. .

Question 156. A 35-year-old man has undergone a vasectomy for contraception. For how long should the couple continue using additional contraceptive methods after the procedure?

A. 4-6 weeks

B. 9-11 weeks

C. 12-16 weeks

D. 16-20 weeks

Correct answer: C

Vasectomy is a highly effective method of permanent male sterilization, but it is not immediately effective. After the procedure, residual sperm remain in the vas deferens distal to the ligation site. Clinical guidelines recommend that couples continue using a reliable alternative method of contraception for approximately 12 to 16 weeks. This duration, or roughly 20 ejaculations, is typically required to clear the remaining sperm from the reproductive tract. Option A (4-6 weeks) and Option B (9-11 weeks) are too short and carry a higher risk of unintended pregnancy. Option D (16-20 weeks) is excessive for most patients. The standard of care is to confirm success with a semen analysis showing azoospermia (zero sperm) before discontinuing other contraceptive methods. Therefore, the 12-16 week window is the universally accepted timeframe for ensuring post-vasectomy sterility and patient safety. .

Question 157. What is considered a satisfactory dilation rate in a primigravida?

A. 0.5 cm/hr

B. 0.75 cm/hr

C. 1.2 cm/hr

D. 1.5 cm/hr

Correct answer: A

In a primigravida, the minimum satisfactory rate of cervical dilatation during the active phase of labor is considered to be ≥ 0.5 cm per hour. This is the accepted lower limit used clinically to judge whether labor is progressing adequately.

Although the average (mean) rate of dilatation in primigravida is around 1 cm/hour, any rate above 0.5 cm/hour is still considered satisfactory. If the rate falls below this, it suggests prolonged or abnormal labor, requiring further evaluation.

Why Other Options Are Incorrect

(B)

0.75 cm/hr: Possible but not the defined minimum standard

(C)

1.2 cm/hr: More typical of multigravida

(D)

1.5 cm/hr: Clearly seen in multigravida (faster labor)

Question 158. A 28-year-old woman presents with left breast pain and swelling, accompanied by erythema, warmth, tenderness, and fever. Based on these findings, what is the most common causative organism responsible for acute mastitis?

A. Breast engorgement

B. Hormonal influence

C. Absence of lactation

D. Crack in the nipple

Correct answer: D

Acute mastitis is most commonly a lactational infection seen in breastfeeding women. The clinical signs of erythema, localized warmth, tenderness, and fever are hallmarks of this inflammatory condition. The primary entry point for pathogens, most frequently Staphylococcus aureus, is a crack or fissure in the nipple (Option D). These skin abrasions, often caused by poor infant latching, allow bacteria from the infant's oropharynx or maternal skin to invade the mammary tissue. Breast engorgement (Option A) can lead to stasis which predisposes a patient to infection, but it is a physiological state rather than the direct portal of entry. Hormonal influence (Option B) is related to cyclic breast pain, not acute infectious mastitis. Absence of lactation (Option C) makes infectious mastitis much less likely, as non-lactational mastitis usually involves different pathogens or underlying pathology like duct ectasia. Therefore, a crack in the nipple is the classic primary cause. .

Question 159. The duration for which copper T 380 A remains effective is referred to as its shelf life.

A. 3 years

B. 5 years

C. 7 years

D. 10 years

Correct answer: D

The Copper T 380 A (CuT 380A) is one of the most effective and widely used long-acting reversible contraceptives (LARC). The question asks for its effective duration, often clinically termed its lifespan rather than just "shelf life" (which technically refers to storage time). The

Copper T 380 A is FDA-approved for 10 years of continuous protection against pregnancy. Option A (3 years) corresponds to older CuT 200 models. Option B (5 years) is the typical duration for the levonorgestrel-releasing intrauterine system (LNG-IUS) like Mirena or the CuT 375. Option C (7 years) is not a standard duration for most commonly available IUDs. The CuT 380 A contains a larger amount of copper (380) than previous models, allowing for its significantly extended duration of action. Therefore, it is a highly cost-effective option for long-term birth control, requiring replacement only once every decade. .

Question 160. A 45-year-old woman with a family history of breast and ovarian cancer seeks counseling about her risk and inquires about BRCA1/ BRCA2 genetic testing. In which of the following situations is BRCA1/BRCA2 testing not indicated?

A. Breast cancer diagnosed in a postmenopausal female >50 years of age

B. Male breast cancer

C. Bilateral breast cancer

D. Breast and ovarian cancer

Correct answer: A

Genetic testing for BRCA1 and BRCA2 mutations is prioritized for individuals with clinical features suggesting a high probability of a hereditary cancer syndrome. Testing is strongly recommended for male breast cancer (Option B), as a significant percentage of these cases are linked to BRCA2 mutations. Bilateral breast cancer (Option C) and the occurrence of both breast and ovarian cancer in the same individual (Option D) are classic hallmarks of the Hereditary Breast and Ovarian Cancer (HBOC) syndrome and warrant testing. Breast cancer diagnosed in a postmenopausal woman over the age of 50 without a significant family history (Option A) is much more likely to be sporadic rather than hereditary. Guidelines typically recommend testing if breast cancer is diagnosed at age , or if older, only when specific family history criteria are met. Therefore, routine testing for an isolated case of postmenopausal breast cancer over 50 is not standard practice. .

Question 161. A 51-year-old woman reports a palpable lump in her right breast discovered during a routine examination. The mass measures more than 5 cm, and ipsilateral axillary lymph nodes are palpable. If the lesion is confirmed to be malignant, what is the most likely stage of the disease?

A. CT3N1MO

B. yT4N1M0

C. CT4N1MO

D. yT3N1M0

Correct answer: A

Breast cancer staging follows the TNM (Tumor, Node, Metastasis) system. In this clinical scenario, a tumor mass measuring over 5 cm is classified as T3. The presence of "palpable lymph nodes" in the "ipsilateral axilla" that are clinically suspicious signifies N1 status. The prefix "c" denotes "clinical" staging based on examination and imaging before surgery. Therefore, the likely clinical stage is cT3N1M0. Option C (cT4) is incorrect because T4 requires invasion into the chest wall or skin (e.g., ulceration, peau d'orange) regardless of size. Options B and D use the prefix "y," which denotes staging after neoadjuvant therapy (post-treatment staging), which has not occurred in this patient yet. Assuming no evidence of distant metastasis (M0), the findings of size >5cm and positive axillary nodes lead directly to the cT3N1M0 classification, placing the patient in Stage IIIA. .

Question 162. A 68-year-old man presents with elevated PSA levels and abnormal findings on digital rectal examination, raising suspicion for prostate cancer. Which lymph node group is most commonly involved in the metastatic spread of prostate cancer?

A. Deep inguinal

B. Pelvic

C. Superficial inguinal

D. Internal iliac

Correct answer: D

Prostate cancer metastasis typically follows a predictable lymphatic drainage pattern. The prostate is a pelvic organ, and its primary lymphatic drainage is to the regional pelvic lymph nodes. The internal iliac (Option D) and obturator lymph nodes are the most common and earliest sites of nodal metastasis for prostate cancer. These are often followed by involvement of the external iliac and common iliac chains (collectively referred to as Pelvic nodes, Option B, though "Internal iliac" is the more specific primary site). Superficial inguinal nodes (Option C) and deep inguinal nodes (Option A) primarily drain the skin of the lower limbs, scrotum, and penis; they are not the primary drainage site for the prostate gland. Clinically, identification of internal iliac or obturator node involvement through imaging or biopsy is critical for staging and deciding between curative local therapy and systemic management for prostate cancer. .

Question 163. What condition is an absolute contraindication for breastfeeding?

A. HIV positive mother

B. Galactosemia in infant

C. Hepatitis C in mother

D. Tuberculosis in mother

Correct answer: B

While breastfeeding is almost always the ideal nutritional source, there are a few rare absolute contraindications. Classic Galactosemia in the infant (Option B) is an absolute contraindication because the baby lacks the enzyme to metabolize galactose, a component of the lactose found in breast milk. Continued breastfeeding in these infants leads to liver failure, cataracts, and mental retardation. HIV-positive status in the mother (Option A) is a contraindication in developed nations, but in developing countries, the WHO recommends breastfeeding with antiretroviral therapy if safe alternatives are unavailable. Hepatitis C (Option C) is not a contraindication provided nipples are not cracked or bleeding. For Tuberculosis (Option D), breastfeeding is only temporarily suspended until the mother is non-infectious; it is not an absolute, lifelong contraindication for that child. Therefore, galactosemia is the only infant-related metabolic condition listed that requires the absolute cessation of all breast milk. .

Question 164. During the puerperium, what is the accurate order of vaginal discharge?

A. Lochia serosa > Lochia rubra > Lochia alba

B. Lochia rubra > Lochia alba > Lochia serosa

C. Lochia alba > Lochia rubra > Lochia serosa

D. Lochia rubra > Lochia serosa > Lochia alba

Correct answer: D

Lochia is the vaginal discharge occurring after childbirth, consisting of blood, mucus, and placental tissue. It progresses through three distinct stages based on its color and composition. Lochia Rubra is the first stage (Days 1–4), appearing bright red due to high blood and decidual content. Lochia Serosa follows (Days 5–9), appearing pinkish or brownish as the discharge becomes thinner and contains more serous fluid, leukocytes, and cervical mucus. The final stage is Lochia Alba (Day 10 to about 4–6 weeks), which is yellowish-white or pale and consists primarily of leukocytes, epithelial cells, and fat. Options A, B, and C provide incorrect sequences that do not follow this physiological progression. Understanding the normal order and duration of lochia is essential for healthcare providers to distinguish healthy postpartum recovery from complications like secondary postpartum hemorrhage or endometritis (infection). .

Question 165. Ventouse is contraindicated in which of the following subsequent circumstances?

A. Prolonged second stage

B. Maternal exhaustion

C. Fetal distress

D. Premature baby

Correct answer: D

A Ventouse (vacuum extractor) is an instrument used to assist in vaginal delivery. It is indicated for a prolonged second stage of labor (Option A), maternal exhaustion (Option B), or acute fetal distress (Option C) when the head is deeply engaged. However, its use is strictly contraindicated in a premature baby (Option D), typically defined as less than 34 weeks of gestation. The premature fetal skull is softer and the scalp more fragile, making the infant highly susceptible to intracranial hemorrhage, subgaleal hematoma, and scalp lacerations from the suction cup. Other contraindications include malpresentations like face or breech, or when fetal blood sampling has recently been performed (increasing bleeding risk). In the case of prematurity, if instrumental assistance is required, forceps are generally preferred as they protect the fetal head rather than applying suction to it. Therefore, prematurity is a critical contraindication for vacuum-assisted delivery.

Question 166. Which of the options below does not serve as an indication for performing a cesarean section?

A. Absolute cephalopelvic disproportion

B. Previous history of macrosomía

C. Central placenta previa

D. Advanced carcinoma cervix

Correct answer: B

A Cesarean section is indicated when a vaginal delivery would pose a significant risk to the mother or infant. Absolute cephalopelvic disproportion (Option A) means the fetal head cannot physically pass through the maternal pelvis, necessitating surgery. Central placenta previa (Option C) is a life-threatening condition where the placenta completely covers the internal os, making vaginal birth impossible due to hemorrhage risk. Advanced carcinoma of the cervix (Option D) is an indication because the tumor tissue is friable and obstructive, making vaginal delivery dangerous. A previous history of macrosomia (delivering a large baby, Option B) is NOT a direct indication for a C-section in a current pregnancy. Each pregnancy is assessed independently; unless the current fetus is suspected of being macrosomic in a way that suggests disproportion, a trial of labor is usually encouraged. Therefore, a past history of macrosomia alone does not mandate surgical delivery.

Question 167. Immediately after childbirth, assessment of

uterine position is important for postpartum care. What is the normal position of the uterus immediately following delivery?

A. Below pubic symphysis

B. Above pubic symphysis

C. Below the umbilicus

D. Above umbilicus

Correct answer: C

After the third stage of labor (delivery of the placenta), the uterus undergoes immediate contraction to prevent postpartum hemorrhage. This physiological process, known as involution, causes the fundus to become firm and globoid. Immediately after delivery, the fundus of the uterus is typically felt at a level roughly midway between the pubic symphysis and the umbilicus, which is below the umbilicus (Option C). Within a few hours, the uterus may rise slightly to the level of the umbilicus due to the relaxation of pelvic floor muscles and bladder filling. Option A (below pubic symphysis) is incorrect as the uterus only returns to its true pelvic, non-palpable position around 2 weeks postpartum. Option D (above umbilicus) is often an abnormal finding, potentially suggesting a full bladder or uterine atony with retained blood. Monitoring this "below the umbilicus" position is standard for ensuring uterine contraction. .

Question 168. The procedure performed with the help of instrument given below is?

A. Hysterosalpingography

B. Dilatation and curettage

C. Cervical sampling

D. Endometrial sampling

Correct answer: D

The instrument shown is a specialized cannula or suction curette used for uterine aspiration, such as a Pipelle or Manual Vacuum Aspiration (MVA) tool. This device is primarily used for endometrial sampling (Option D), allowing clinicians to obtain a tissue biopsy from the uterine lining in an office setting. This is essential for investigating postmenopausal bleeding or suspected hyperplasia. Hysterosalpingography (Option A) is a radiologic procedure using contrast media to visualize the fallopian tubes. Dilatation and curettage (D&C, Option B) is a more invasive surgical procedure involving mechanical dilation and metal curettes. Cervical sampling (Option C), like a Pap smear or colposcopic biopsy, targets the cervix using different tools like brushes or punch forceps. While MVA can be used for therapeutic evacuation, its diagnostic role is endometrial sampling. The minimally invasive nature of the pictured tool makes it the gold standard for initial endometrial evaluation.

Question 169. A sexually active young woman presents with lower abdominal pain, high-grade fever, vomiting, and foul-smelling vaginal discharge. Her temperature is 103°F, pulse rate 109/min, and abdominal tenderness is noted. On pelvic examination, cervical motion tenderness is present. What is the most likely diagnosis?:

A. Pelvic inflammatory disease

B. Endometriosis

C. Adenomyosis

D. Appendicitis

Correct answer: A

The clinical presentation of a sexually active young female with lower abdominal pain, high-grade fever (103°F), tachycardia (109/min), vomiting, and foul-smelling vaginal discharge strongly suggests an acute ascending genital tract infection. The most significant diagnostic finding in this case is cervical motion tenderness, also known as the Chandelier sign, which is a hallmark clinical feature of Pelvic Inflammatory Disease (PID).

PID results from the ascending spread of microorganisms from the lower genital tract to the uterus, fallopian tubes, and adjacent pelvic structures. It is commonly polymicrobial, with Chlamydia trachomatis and Neisseria gonorrhoeae being frequent causative agents. The presence of systemic signs such as fever and tachycardia indicates active infection and inflammation.

Endometriosis (Option B) and adenomyosis (Option C) typically present with chronic pelvic pain and dysmenorrhea, not acute fever or purulent discharge. Appendicitis (Option D) may cause fever and abdominal tenderness but does not produce cervical motion tenderness or vaginal discharge.

Prompt diagnosis and early antibiotic therapy are crucial in PID to prevent long-term complications such as infertility, chronic pelvic pain, and ectopic pregnancy.

Question 170. Identify the instrument utilized by obstetricians given below:

A. Kielland forceps

B. Tucker Mclane forceps

C. Pipers forceps

D. Wrigley's forceps

Correct answer: D

The instrument shown is a short obstetric forceps with a simple design and short shanks, characteristic of Wrigley’s forceps. These forceps are specifically designed for outlet forceps

delivery, where the fetal head is already low in the pelvis. Their short length reduces the risk of uterine injury, making them ideal for use when the head is on the perineum or during cesarean section to assist in delivery of the head.

Wrigley’s forceps have minimal pelvic curve and no complex locking mechanism, distinguishing them from other forceps types.

Why Other Options Are Wrong

(A)

Kielland forceps: Long with sliding lock, used for rotational deliveries

(B)

Tucker McLane forceps: Longer with pronounced pelvic curve

(C)

Piper’s forceps: Specifically designed for after-coming head in breech, with long shanks

Question 171. Most serious contraindication for oxytocin?

A. Malpresentation of fetus

B. Heart disease in mother

C. Premature labour

D. Hypothyroidism

Correct answer: A

Oxytocin is a potent uterotonic agent used for the induction and augmentation of labor. Its most serious and absolute contraindication is any condition where a vaginal delivery is physically impossible or dangerous, such as malpresentation of the fetus (Option A). If oxytocin is administered when the fetus is in a transverse lie or breech (without specific criteria), it can lead to hyperstimulation and catastrophic uterine rupture as the uterus tries to force the baby through an impassable canal. While maternal heart disease (Option B) and premature labor (Option C) are important considerations that require caution, they are often relative contraindications depending on the specific clinical goal. Hypothyroidism (Option D) is not a contraindication for oxytocin use. Therefore, the risk of mechanical obstruction and subsequent uterine rupture makes malpresentation the most critical contraindication. Careful clinical assessment of fetal lie and presentation is mandatory before initiating an oxytocin drip.

Question 172. During first-trimester ultrasonography, which measurement is the most accurate parameter for determining gestational age?

A. Biparietal Diameter

B. Head circumference

C. Crown rump length

D. Abdominal circumference

Correct answer: C

Accurate dating of pregnancy is fundamental to obstetric care. During the first trimester (specifically between 7 and 13 weeks), the Crown Rump Length (CRL) is universally recognized as the most reliable and accurate parameter for determining gestational age. The margin of error for CRL is remarkably low, typically within 3–5 days. Biparietal diameter (BPD, Option A) and head circumference (HC, Option B) become primary dating parameters during the second trimester (after 14 weeks), but they are less accurate than first-trimester CRL due to increased biological variability in fetal growth. Abdominal circumference (AC, Option D) is primarily used in the third trimester to estimate fetal weight and screen for growth restriction, rather than for initial dating. Once the CRL exceeds 84mm, dating is shifted to BPD. Therefore, CRL remains the gold standard for early pregnancy dating and establishing the "due date" for all subsequent monitoring.

DERMATOLOGY

Question 173. A 45-year-old man presents with a palmoplantar rash involving the palms and soles, epitrochlear lymphadenopathy, and a history of multiple recent sexual partners. Based on these findings, what is the most likely diagnosis?

A. Psoriasis

B. Secondary syphilis

C. Meningococcemia

D. Stevens-Johnson syndrome

Correct answer: B

The combination of a palmoplantar rash (affecting palms and soles) and localized epitrochlear lymphadenopathy in a sexually active individual is a classic clinical presentation of secondary syphilis. Secondary syphilis occurs weeks to months after the resolution of a primary chancre and represents systemic spread of Treponema pallidum. Psoriasis (Option A) can cause thick plaques on palms but would not be associated with acute generalized symptoms or sexually transmitted risk factors. Meningococcemia (Option C) presents with a petechial/purpuric rash and acute sepsis, making it a much more hyperacute presentation. Stevens-Johnson syndrome (Option D) is a severe mucocutaneous reaction often triggered by drugs, characterized by painful skin sloughing rather than a discrete palmoplantar rash. Given the specific location of the rash and the "epitrochlear" node enlargement (a highly suggestive sign), secondary syphilis must be confirmed with serological testing (RPR/VDRL). .

Question 174. A 50-year-old woman with a history of ovarian cancer presents with difficulty climbing stairs, rising from a seated position, and combing her hair. On examination, characteristic clinical

findings are noted. What is the most likely diagnosis?

A. Renal cell carcinoma

B. Renal oncocytoma

C. Renal angiomyolipoma

D. Renal cyst

Correct answer: C

The presence of fat density (characterized by Hounsfield units typically between -20 and -100) within a renal mass on a CT scan is virtually pathognomonic for a Renal Angiomyolipoma (AML). AML is a benign triphasic tumor composed of dysplastic blood vessels (angio-), smooth muscle (-myo-), and adipose tissue (-lipoma). While Renal Cell Carcinoma (Option A) is the most common renal malignancy and can cause flank pain and hematuria, it very rarely contains visible macrofat. Renal oncocytoma (Option B) typically shows a central stellate scar and lacks fat density. A renal cyst (Option D) appears as a simple, fluid-filled, well-circumscribed lesion with water density, not fat or vascularity. AMLs are often associated with Tuberous Sclerosis. Given the specific radiological finding of fat density, which appears as black pockets on the CT image, Renal Angiomyolipoma is the most accurate diagnosis for this patient. .

Question 175. Which of the following findings in an 18-year-old female is characteristic of the primary stage of this disease?

A. Papule

B. Pustule

C. Abscess

D. Comedone

Correct answer: D

The image and patient age suggest Acne Vulgaris, a common inflammatory condition of the pilosebaceous unit. The "primary" or hallmark lesion of acne is the comedone (Option D). Comedones are formed when the hair follicle becomes clogged with sebum and keratin; they can be "open" (blackheads) or "closed" (whiteheads). As inflammation progresses, comedones can evolve into inflammatory lesions. Papules (Option A) are small, solid red bumps, and pustules (Option B) are small bumps containing pus, representing the next inflammatory stages. An abscess (Option C) is a deep, painful collection of pus, usually seen in severe cystic acne. Because comedones represent the initial non-inflammatory obstruction that initiates the acne cycle, they are considered the fundamental primary lesions of the disease. Recognizing them is essential for selecting appropriate early treatments like topical retinoids, which specifically target comedone formation. .

Question 176. A 26-year-old man presents with erythematous

plaques covered by silvery scales on the extensor surfaces of both arms, along with punctate nail pitting. What is the most likely diagnosis?

A. Psoriasis

B. Lichen planus

C. Eczema

D. Pityriasis rosea

Correct answer: A

The clinical presentation of erythematous plaques with pathognomonic silvery scales localized to the extensor surfaces (elbows/knees) is highly diagnostic of Psoriasis Vulgaris. Psoriasis is a chronic T-cell mediated autoimmune skin disease characterized by hyperproliferation of keratinocytes. A classic clinical clue provided is punctate nail pitting, which is a highly specific nail finding associated with psoriasis. Lichen planus (Option B) typically presents on flexor surfaces with "purple, pruritic, polygonal papules" and Wickham striae. Eczema (Option C) usually involves the flexural folds (anticubital fossa) and presents with poorly defined, itchy, weeping lesions. Pityriasis rosea (Option D) begins with a "herald patch" followed by a "Christmas tree" distribution of smaller scaly lesions on the trunk. Therefore, the specific combination of extensor plaques, silvery scales, and nail pitting confirms Psoriasis as the correct diagnosis. .

Question 177. A 45-year-old truck driver with a history of multiple sexual partners presents to the dermatology department with the findings shown below. What is the most likely diagnosis?

A. Secondary syphilis

B. Lichen planus

C. Scabies

D. Psoriasis

Correct answer: A

The provided image shows a characteristic maculopapular rash on the palms, which is a classic clinical finding for secondary syphilis. The patient's social history (truck driver with multiple sex partners) places him at a significantly higher risk for sexually transmitted infections. Secondary syphilis is the "great imitator" but its presence on palms and soles is a highly specific clue. Lichen planus (Option B) typically presents as itchy, purple papules on the wrists rather than generalized palmar macules. Scabies (Option C) would present with intense itching and burrows, usually visible in the finger webs rather than discrete reddish macules. Psoriasis (Option D) on the palms would show thick, scaly plaques and fissures. Given the risk factors and the pathognomonic palm-involved rash, the diagnosis of secondary syphilis must be suspected

and confirmed using non-treponemal (RPR) and treponemal (TPHA) tests.

ANAESTHESIA

Question 178. What is the preferred method for inducing anesthesia through inhalation in children?

A. Sevoflurane

B. Desflurane

C. Halothane

D. Isoflurane

Correct answer: A

In pediatric anesthesia, inhalation induction is often preferred over intravenous induction to avoid the distress of needle sticks in an awake child. Sevoflurane (Option A) is the gold standard for this purpose. It has a non-pungent odor and does not irritate the airway, which minimizes complications like breath-holding, coughing, and laryngospasm. Furthermore, its low blood-gas solubility allows for rapid induction and quick emergence. Desflurane (Option B) and Isoflurane (Option D) are highly pungent and irritating to the respiratory tract, making them unsuitable for induction in an awake child. Halothane (Option C) was the historical choice but has been largely replaced due to risks of halothane hepatitis and cardiac arrhythmias (sensitization to catecholamines). Therefore, sevoflurane's combination of airway safety and rapid pharmacokinetics makes it the most appropriate and preferred inhalational induction agent in the pediatric population. .

Question 179. For an ICU patient who already has an endotracheal tube in place and now requires a tracheostomy, which type of tracheostomy tube would be most appropriate to select?

A. Uncuffed tracheostomy tube

B. Cuffed tracheostomy tube

C. Metallic tracheostomy tube

D. Endotracheal tube

Correct answer: B

In an Intensive Care Unit (ICU) setting, patients requiring a tracheostomy often need continued mechanical ventilation or have a high risk of aspiration. The cuffed tracheostomy tube (Option B) is the standard selection for these patients. The inflated cuff provides a seal against the tracheal wall, ensuring that the volume delivered by the ventilator reaches the lungs and protecting the airway from oropharyngeal secretions (aspiration). Uncuffed tubes (Option A) are typically used in pediatric patients or for long-term management in stable patients who can breathe spontaneously and have good airway protection. Metallic tubes (Option C) are used for chronic airway maintenance in stable outpatients; they lack cuffs and are not compatible with

modern ICU ventilators. Re-inserting an endotracheal tube (Option D) is not a solution when a tracheostomy is indicated for long-term airway management. Therefore, the cuffed tracheostomy tube is the most appropriate ICU choice. .

Question 180. Tube shown below causes resistance which is primarily because of

A. Curvature

B. Circumference

C. Length

D. Diameter

Correct answer: D

The image shows an endotracheal tube (ETT), which is used to maintain airway patency during anesthesia or critical care. According to Poiseuille's Law, the resistance to gas flow through a tube is inversely proportional to the fourth power of the radius (diameter). This means that even a small reduction in the internal diameter (Option D) of the ETT results in a massive increase in work of breathing and airway resistance. While the length of the tube (Option C) also contributes to resistance linearly, its impact is much less significant compared to the diameter. Curvature (Option A) and circumference (Option B) are not the primary physical determinants of resistance in clinical gas flow models. Therefore, choosing the largest appropriate diameter ETT is crucial in clinical practice to minimize flow resistance. This physical principle explains why even a layer of secretions narrowing the internal diameter of the tube can significantly increase a patient's respiratory distress. .

Question 181. Dale's vasomotor reversal can be best described as

A. Repeated administration of ephedrine decreases its effect on blood pressure

B. A patient pretreated with phentolamine develops severe hypotension on the administration of adrenaline

C. High dose of acetylcholine after

D. An increase in pulse pressure is produced

by the intravenous administration of
isoprenaline

Correct answer: B

Dale’s vasomotor reversal is a classic pharmacological phenomenon involving the dual action of adrenaline on and receptors. Adrenaline normally causes a rise in blood pressure due to its dominant -1 mediated vasoconstriction. However, if a patient is pretreated with an -blocker like phentolamine, the effects are blocked. Subsequent administration of adrenaline then acts only on the unblocked -2 receptors in skeletal muscle blood vessels, causing profound vasodilation and a paradoxical severe drop in blood pressure (hypotension). Option A describes tachyphylaxis. Option D refers to the typical chronotropic/inotropic effects of isoprenaline. Option C is an incomplete description of "Dale’s reversal" for acetylcholine (which involves atropine pretreatment) but is not the standard "vasomotor reversal" linked to adrenaline. Therefore, the reversal of adrenaline’s pressor effect to a depressor effect by -blockade is the definitive description of this phenomenon.

RADIOLOGY

Question 182. A 50-year-old man with a history of construction work presents with progressive shortness of breath and a chronic cough. High-resolution CT (HRCT) of the chest shows nodular opacities with a ground-glass appearance. Which condition is most likely associated with these radiological findings?

A. Asbestosis
B. Silicosis
C. Anthracosis
D. Bagassosis

Correct answer: B

The clinical history of a construction worker presenting with progressive dyspnea and cough suggests an occupational lung disease. On HRCT, the finding of multiple small, discrete nodular opacities—which may show a ground-glass appearance in early stages—is highly characteristic of Silicosis. These nodules typically predominate in the upper lobes and may eventually coalesce into large masses (Progressive Massive Fibrosis). Asbestosis (Option A) primarily involves the lower lobes and is characterized by pleural plaques and a pattern of interstitial

fibrosis rather than discrete nodules. Anthracosis (Option C) refers to coal worker's pneumoconiosis, which has similar nodular patterns but a different occupational exposure. Bagassosis (Option D) is a hypersensitivity pneumonitis caused by moldy sugarcane dust and typically shows ill-defined centrilobular nodules rather than the distinct nodular fibrotic pattern of silicosis. Therefore, given the construction history and the HRCT nodularity, silicosis is the most likely diagnosis. .

Question 183. A 30-year-old patient presents to the emergency department with a sudden, severe headache unlike any previous episodes, accompanied by elevated blood pressure and nuchal rigidity on examination. Based on this presentation, what is the most likely diagnosis?

A. Cluster headache

B. Subarachnoid hemorrhage

C. Encephalitis

D. Meningitis

Correct answer: B

The patient's description of a "worst headache of their life" (thunderclap headache) combined with nuchal rigidity (neck stiffness) is the classic clinical presentation of a Subarachnoid Hemorrhage (SAH). The accompanying NCCT brain image provides definitive evidence, showing hyperdense (bright white) areas in the basal cisterns, Sylvian fissures, and sulci, representing acute blood in the subarachnoid space. Cluster headache (Option A) causes excruciating unilateral orbital pain but would not cause nuchal rigidity or CT findings. Encephalitis (Option C) and Meningitis (Option D) can cause headache and nuchal rigidity (signs of meningism), but they would typically be accompanied by fever and would not show acute intracranial blood on a CT scan. SAH is most commonly caused by a ruptured berry aneurysm and is a neurosurgical emergency. Therefore, based on the pathognomonic "thunderclap" history and the bright blood visible on CT, SAH is the diagnosis. .

Question 184. In a patient with prostate cancer, a bone scan shows a superscan pattern characterized by diffusely increased skeletal uptake with reduced or absent splenic activity. What is the underlying reason for this superscan appearance?

A. Increased uptake due to diffuse metastasis

B. Increased uptake by carcinoma prostate

C. Increased uptake by the bone

D. Decreased uptake by adrenal glands and

kidney

Correct answer: A

In nuclear medicine, a "Super Scan" on a bone scintigraphy (using Technetium-99m MDP) occurs when there is extremely high, uniform skeletal uptake of the radiotracer. This results in a very high bone-to-soft-tissue ratio, which characteristically makes the kidneys and bladder faint or invisible (Option D is a result, not the primary "reason"). In a patient with prostate cancer, the primary reason for this appearance is diffuse osteoblastic metastasis (Option A). The metastatic cancer cells overstimulate bone turnover across nearly the entire skeleton, "grabbing" the tracer before it can be excreted by the kidneys. Option B is technically incorrect because the tracer is taken up by the reactive bone around the cancer, not the cancer cells themselves. Option C is a general description lacking the underlying pathological context. Therefore, the "super scan" in prostate cancer is a hallmark of widespread, advanced skeletal metastatic involvement. .

Question 185. A 54-year-old man presents with intermittent flank pain, a sense of fullness, and hematuria. CT imaging of the abdomen and pelvis reveals a left renal lesion containing fat-density areas

Examination Paper January 2023 Question

B. Dermatomyositis

C. Systemic sclerosis

D. Cushing syndrome

Correct answer: B

The patient's symptoms of "difficulty climbing stairs" and "combing hair" indicate proximal muscle weakness. When this weakness is associated with an underlying malignancy (like ovarian cancer), it is a classic paraneoplastic presentation of dermatomyositis. This idiopathic inflammatory myopathy often presents with skin findings such as a heliotrope rash or Gottron papules. Systemic lupus erythematosus (Option A) and systemic sclerosis (Option C) are autoimmune conditions that can involve muscles, but they are not as specifically linked to this pattern of paraneoplastic proximal weakness as dermatomyositis. Cushing syndrome (Option D) can cause proximal muscle wasting due to steroid excess, but the direct clinical link to ovarian cancer makes an inflammatory myositis much more probable. Dermatomyositis requires evaluation of muscle enzymes (CK) and electromyography for diagnosis. In an older patient, its diagnosis necessitates a thorough screening for internal malignancies, as seen in this patient's history. .

Question 186. Which imaging modality is considered the most effective for the detection and diagnosis of

neuroendocrine tumors (NETs)?

A. USG

B. CT

C. MRI

D. PET

Correct answer: D

Neuroendocrine tumors (NETs) are specialized tumors that express high levels of somatostatin receptors (SSTRs). While structural imaging like CT (Option B) and MRI (Option C) are essential for anatomical localization and surgical planning, they often lack the specificity to distinguish NETs from other lesions. The most effective and sensitive functional imaging technique for diagnosing and staging NETs is PET/CT using specialized tracers, most notably Ga-68 DOTATATE. This tracer binds with high affinity to somatostatin receptors, allowing for the detection of even small primary tumors and occult metastases that may be missed on conventional scans. USG (Option A) has very limited utility and is generally used only for screening liver metastases. PET/CT has largely replaced the older Indium-111 Octreoscan as the gold standard for NET imaging due to its superior resolution and higher diagnostic accuracy. Therefore, functional PET imaging is the most effective diagnostic tool. .

Question 187. A 30-year-old woman presents with persistent bone pain, abdominal cramps, and episodes of abnormal behavior noted by her family. To confirm the suspected diagnosis and guide appropriate management, which diagnostic test should be performed first?

A. MRI

B. Ultrasonogram

C. Sestamibi scan

D. CT scan

Correct answer: C

The patient's triad of "bone pain" (skeletal involvement), "abdominal cramps" (renal stones or peptic ulcers), and "unusual behavior" (psychiatric moans) is the classic description of Hyperparathyroidism ("Bones, Stones, Abdominal Groans, and Psychic Moans"). This condition is caused by an overactive parathyroid gland, usually a solitary parathyroid adenoma. Once biochemical hyperparathyroidism is confirmed (high PTH and high Calcium), the most effective diagnostic imaging test prioritized for localizing the overactive gland is the Tc-99m Sestamibi scan. This nuclear medicine study is highly sensitive for identifying ectopic or orthotopic parathyroid adenomas, as they characteristically retain the tracer longer than thyroid tissue. While USG (Option B) is a useful adjunct, Sestamibi provides better functional localization. MRI

(Option A) and CT (Option D) are generally reserved for complex, recurrent, or poorly localized cases. Thus, the Sestamibi scan is the standard priority imaging for pre-operative planning. .

Question 188. In cancer treatment, a radiation regimen delivers 1.8–2 Gy per fraction, once daily, five days a week, for 6–8 weeks. What is this radiotherapy technique called?

A. Regular Fractionated radiotherapy

B. Hyper fractionated radiotherapy

C. Accelerated fractionation radiotherapy

D. Brachytherapy

Correct answer: A

Radiation therapy is typically delivered in small, daily portions called "fractions" to allow normal cells to repair while tumor cells succumb to accumulated damage. The protocol described—1.8 to 2.0 Gy per day, given once daily, five days a week (Monday to Friday), over a period of 6 to 8 weeks—is the definition of Standard (Regular) Fractionated Radiotherapy. Hyper-fractionation (Option B) involves giving smaller individual doses (e.g., 1.2 Gy) more than once a day (e.g., twice daily) to reach a higher total dose. Accelerated fractionation (Option C) involves reducing the overall treatment time by giving more frequent fractions without significantly changing the individual dose size. Brachytherapy (Option D) refers to placing radioactive sources directly into or near the tumor, rather than delivering external beams. Therefore, the conventional schedule described in the question is the benchmark "regular" fractionation protocol used in most clinical oncology settings. .

Question 189. Identify the structure B?

A. Right atrium

B. Aortic arch

C. Pulmonary trunk

D. Left atrium

Correct answer: C

On a PA chest X-ray, the left cardiac border is formed from top to bottom by:

1.

Aortic arch (aortic knuckle)

2.

Pulmonary trunk (pulmonary artery segment)

3.

Left atrial appendage

4.

Left ventricle

In the image, label B points to the second bulge on the left heart border, just below the aortic arch. This corresponds to the pulmonary trunk.

The pulmonary trunk appears as a prominent convexity and is an important landmark in radiology. Enlargement here may indicate conditions like pulmonary hypertension.

Why Other Options Are Wrong

(A)

Right atrium: Forms the right heart border, not left

(B)

Aortic arch: Lies above the labeled point (this is A in the image)

(D)

Left atrium: Does not usually form a prominent border on X-ray

Question 190. A 30-year-old woman is brought to the emergency department unconscious after a road traffic accident, with nausea and vomiting. Based on the non-contrast CT (NCCT) brain findings, what is the most likely diagnosis?

A. Extradural hemorrhage

B. Subdural hemorrhage

C. Intraparenchymal hemorrhage

D. Subarachnoid hemorrhage

Correct answer: A

The patient's history of trauma (RTA) followed by a loss of consciousness and vomiting is a classic neurosurgical presentation. The NCCT brain image provides the definitive diagnosis, showing a hyperdense, biconvex (lens-shaped) collection of blood between the skull and the dura mater. This is pathognomonic for an Extradural Hemorrhage (EDH), which is typically caused by a rupture of the middle meningeal artery associated with a skull fracture. A Subdural Hemorrhage (Option B) would instead appear as a crescent-shaped (concavo-convex) collection that spreads across suture lines. Intraparenchymal hemorrhage (Option C) would show blood within the brain tissue itself. Subarachnoid hemorrhage (Option D) presents with blood filling the sulci and cisterns (see Q.288). EDH is a life-threatening emergency because the biconvex shape indicates blood under high pressure, leading to rapid herniation if not surgically evacuated. Therefore, based on the characteristic CT morphology, EDH is the diagnosis. .