FMGE December 2021 Question Paper

189 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. 36. (A) Neutrophils

The inflammatory phase of wound healing is initiated immediately following injury. Neutrophils are the first leukocytes to be recruited to the site of a wound via chemotaxis, typically arriving within the first 6 to 24 hours. Their primary roles are to phagocytize bacteria and debris and to release proteases that clear the area for future tissue repair. Monocytes (Option B) and their tissue-mature form, macrophages (Option C), arrive later, usually predominating by 48 to 72 hours; they are considered the "orchestrators" of the later stages of healing. Lymphocytes (Option D) participate in the chronic inflammatory phase or in specific immune responses but are not the early responders. Because neutrophils are the quintessential "acute" inflammatory cells designed for rapid response to tissue damage and potential infection, they are definitively the first cells to appear.

Which immunoglobulin mediates the clinical features of facial swelling, itching, and hypotension observed after a bee sting in a patient presenting to the emergency department?

A. IgA-Immunoglobulin A

B. IgE-Immunoglobulin E

C. IgM-Immunoglobulin M

D. IgG-Immunoglobulin G

Correct answer: B

The symptoms of facial swelling (angioedema),

itching
(urticaria),
and
hypotension
following a bee sting represent a severe Type I hypersensitivity reaction, also known as anaphylaxis. This immediate allergic response is exclusively mediated by Immunoglobulin E (IgE). Upon re-exposure to the bee venom allergen, the allergen cross-links IgE antibodies already bound to the surface of mast cells and basophils. This triggers the rapid release of inflammatory mediators, most notably histamine, which causes systemic vasodilation and increased capillary permeability. IgA (Option A) is involved in mucosal immunity. IgM (Option C) is the primary responder in acute infections. IgG (Option D) provides long-term immunity and is involved in Type II and III hypersensitivities. Therefore, because IgE is the only immunoglobulin class that binds specifically to high-affinity receptors on mast

Question 2. In a newborn admitted to the NICU with respiratory distress and passage of meconium from the umbilicus, which anatomical structure is responsible for these findings?

A. Mesonephric duct
B. Allantois
C. Urachus
D. Vitelline Fistula

Correct answer: D

The clinical presentation of meconium or fecal discharge from the umbilicus in a newborn is pathognomonic for a vitelline fistula. This condition results from a complete failure of the vitelline (omphalomesenteric) duct to obliterate during embryological development. Normally, this duct connects the midgut to the yolk sac and closes by the eighth week of gestation. Persistence of the entire duct creates a direct communication between the ileum and the umbilicus, allowing intestinal contents (meconium) to leak out.

The mesonephric duct (Option A) is involved in the development of the male reproductive system. The allantois (Option B) and its remnant, the urachus (Option C), connect the bladder to the umbilicus; their persistence leads to a urachal fistula, characterized by the discharge of urine, not meconium. Therefore, the specific nature of the discharge (fecal/meconium) definitively identifies the vitelline fistula as the responsible anatomical abnormality in this infant.

Question 3. What is the anatomical term for the vertical plane that divides the body into anterior and posterior parts?

A. Coronal plane

B. Transverse plane

C. Axial plane

D. Median plane

Correct answer: A

The human body is divided by standard anatomical planes to describe the orientation and location of structures. The coronal plane (Option A), also known as the frontal plane, is a vertical plane that passes through the body from side to side, effectively separating it into anterior (front) and posterior (back) sections. This plane is perpendicular to both the median and transverse planes.

The transverse or axial plane (Options B and C) is a horizontal plane that divides the body into superior (upper) and inferior (lower) portions. The median or midsagittal plane (Option D) is a vertical plane that passes directly through the midline, dividing the body into equal right and left halves. Understanding these planes is fundamental for clinical examinations, surgical planning, and interpreting radiological imaging like CT and MRI. Therefore, based on the definition of dividing the body into front and back sections, the coronal plane is the correct term.

Question 4. Which type of epithelium lines the inner surface of the fallopian tube?

A. Simple columnar epithelium

B. Pseudostratified ciliated columnar epithelium

C. Ciliated columnar epithelium

D. Cuboidal epithelium with microvilli

Correct answer: C

The fallopian tubes (uterine tubes) are lined with a specialized mucosa designed to facilitate the

transport of gametes and the early embryo. This lining consists of simple ciliated columnar epithelium. These ciliated cells work in coordination with secretory (peg) cells; the cilia beat rhythmically toward the uterus to help move the secondary oocyte and subsequently the zygote.

Simple columnar epithelium without cilia (Option A) is typical of the gastrointestinal tract. Pseudostratified ciliated columnar epithelium (Option B) is the "respiratory epithelium" found in the trachea and large bronchi. Cuboidal epithelium with microvilli (Option D) is characteristic of the proximal convoluted tubules in the kidney. The presence of cilia is the defining feature of the fallopian tube epithelium required for reproductive function. Therefore, because these cells are single-layered, tall, and possess active cilia, ciliated columnar epithelium is the accurate histological classification.

Question 5. What is the function of the biceps brachii muscle during flexion of the forearm?

A. Synergistic

B. Fixator

C. Antagonist

D. Primary mover

Correct answer: D

When a muscle provides the majority of the force required to perform a specific movement, it is classified as the primary mover, or agonist. In the act of elbow flexion (lifting the forearm), the biceps brachii serves as the primary mover. It contracts concentrically to pull the radius toward the humerus, effectively bending the elbow joint.

A synergistic muscle (Option A), such as the brachialis, assists the primary mover in its action. A fixator muscle (Option B) stabilizes the origin of the primary mover, such as the rotator cuff muscles stabilizing the shoulder during arm movement. An antagonist muscle (Option C), in this case the triceps brachii, must relax and yield to the movement of the primary mover. Because the biceps brachii is the dominant muscle responsible for the deliberate lifting of the forearm, its role is definitively defined as the primary mover.

Question 6. Which anatomical structure is primarily responsible for preventing lateral displacement of the patella during knee flexion?

A. Vastus medialis

B. Patellar ligament

C. Gracilis

D. Rectus femoris

Correct answer: A

The patella has a natural tendency to dislocate laterally due to the "Q-angle" formed by the pull

of the quadriceps muscles. The vastus medialis, particularly its distal horizontal fibers known as the vastus medialis obliquus (VMO), is the primary dynamic stabilizer that prevents this lateral displacement. It exerts a medial pull that keeps the patella centered within the trochlear groove of the femur during knee flexion and extension.

The patellar ligament (Option B) connects the patella to the tibial tuberosity but does not provide specific medial-lateral stabilization. The gracilis (Option C) is an adductor muscle of the thigh and does not act directly on the patella. The rectus femoris (Option D) is a central quadriceps muscle that actually contributes to the lateral-pulling force on the patella. Therefore, strengthening the vastus medialis is a standard therapeutic goal for patients with patellofemoral pain syndrome or recurrent dislocations.

PHYSIOLOGY

Question 7. Which of the following conditions leads to a leftward shift of the oxygen–hemoglobin dissociation curve?

A. Hypoxia

B. Hypercarbia

C. Alkalosis

D. Increase in 2,3-DPG

Correct answer: C

The oxygen-hemoglobin dissociation curve describes the relationship between oxygen partial pressure and hemoglobin saturation. A leftward shift indicates an increased affinity of hemoglobin for oxygen, meaning oxygen is bound more tightly and released less easily to tissues. Alkalosis (Option C), which is an increase in blood pH, is a classic cause of this leftward shift.

Hypoxia (Option A) does not directly shift the curve but triggers physiological responses. Hypercarbia (increased) (Option B), an increase in temperature, and an increase in 2,3-diphosphoglycerate (2,3-DPG) (Option D) all cause a rightward shift in the curve, decreasing oxygen affinity to facilitate delivery to tissues during high metabolic demand. This rightward movement is known as the Bohr effect. Because alkalosis increases the attraction between hemoglobin and oxygen, it is the only factor listed that definitively causes a leftward shift in the curve.

BIOCHEMISTRY

Question 8. The stage in vitamin D metabolism that requires exposure to sunlight is:

A. 1,25 dihydroxy cholecalciferol

to
7-dehydrocholesterol
B. 7-dehydrocholesterol to cholecalciferol
C. Cholecalciferol to 25-hydroxycholecalciferol
D. 25-hydroxycholecalciferol
to
1,25
dihydroxycholecalciferol

Correct answer: B

Vitamin D synthesis begins in the skin and requires ultraviolet (UVB) radiation from sunlight. The specific photochemical reaction occurs when 7-dehydrocholesterol, found in the epidermal layers, is converted into cholecalciferol (Vitamin D3) upon exposure to sunlight. This is the only non-enzymatic step in the metabolic pathway.

Subsequent steps involve enzymatic hydroxylation in the liver and kidneys. Cholecalciferol is converted to 25-hydroxycholecalciferol (Calcidiol) in the liver by 25-hydroxylase (Option C). The final activation step occurs in the kidney, where 25-hydroxycholecalciferol is converted to 1,25-dihydroxycholecalciferol (Calcitriol) by 1-alpha-hydroxylase (Option D). Calcitriol is the active hormone responsible for calcium homeostasis. Option A is an impossible reverse reaction. Therefore, the initial dermal production of D3 is the definitive stage dependent on sunlight exposure.

AAns

(B) Essential thrombocytosis

The patient presents with an isolated, significant elevation in platelet count with normal hemoglobin and WBC levels, which points toward Essential Thrombocytosis (ET) . ET is a myeloproliferative neoplasm characterized by the autonomous overproduction of platelets. The presence of the JAK2 mutation (found in approximately 50% of ET cases) and an increase in megakaryocytes in the bone marrow are core diagnostic criteria.

Polycythemia vera (Option A) would typically show elevated hemoglobin and red cell mass. Primary myelofibrosis (Option C) involves marrow scarring and a "leukoerythroblastic" blood picture. Chronic myelogenous leukemia (Option D) is characterized by the Philadelphia chromosome (BCR-ABL fusion) and a full spectrum of myeloid precursors, not just isolated thrombocytosis. Recurrent headaches in this patient are likely due to microvascular disturbances from the high platelet count. Therefore, given the specific lineage involvement and genetic markers, Essential Thrombocytosis is the definitive diagnosis.

PHARMACOLOGY

Question 9. Menkes disease (kinky hair syndrome) results from a defect in the metabolism of which substance?

A. Zinc

B. Copper

C. Iron

D. Magnesium

Correct answer: B

Menkes disease is an X-linked recessive disorder caused by a mutation in the ATP7A gene, which encodes a copper-transporting protein. This mutation results in impaired copper absorption from the intestines and its defective distribution to various tissues. Consequently, patients suffer from severe copper deficiency, which impacts the function of essential copper-dependent enzymes like lysyl oxidase and tyrosinase.

Clinical hallmarks include sparse, steely, or "kinky" hair, failure to thrive, and progressive neurological deterioration. Disturbance in zinc metabolism (Option A) leads to acrodermatitis enteropathica. Iron metabolism defects (Option C) cause conditions like hemochromatosis or sideroblastic anemia. Magnesium deficiency (Option D) is typically an electrolyte imbalance rather than a primary genetic metabolic syndrome. Because the underlying pathology of Menkes syndrome is specifically the inability of cells to transport copper effectively, copper is the responsible metabolic element.

Question 10. Classical galactosemia is caused by a deficiency of the enzyme:

A. Aldose reductase

B. Galactokinase

C. Galactose-1-phosphate uridyl transferase

D. UDP galactose-4-epimerase

Correct answer: C

Classical galactosemia is an autosomal recessive metabolic disorder characterized by the inability to metabolize galactose, a sugar found in milk. The "classical" form of the disease is specifically caused by a deficiency of the enzyme galactose-1-phosphate uridyl transferase (GALT). This deficiency leads to the toxic accumulation of galactose-1-phosphate in various organs, including the liver and brain.

Aldose reductase (Option A) converts excess galactose into galactitol, which contributes to cataract formation in untreated patients. Galactokinase deficiency (Option B) causes a milder form of the disease primarily characterized by early cataracts. UDP galactose-4-epimerase deficiency (Option D) is an extremely rare variant. Classical GALT deficiency presents in infancy with jaundice, hepatomegaly, failure to thrive, and sepsis if milk is not removed from the diet.

Therefore, GALT is the definitive enzyme lacking in the classical presentation of this syndrome.

Question 11. Which of the following options is not a physiological function of glucagon?

A. Glycolysis

B. Gluconeogenesis

C. Glycogenolysis

D. Ketogenesis

Correct answer: A

Glucagon is a catabolic hormone secreted by the pancreatic alpha cells in response to low blood glucose levels. Its primary goal is to increase blood sugar by acting on the liver. Glucagon stimulates gluconeogenesis (synthesis of new glucose) (Option B) and glycogenolysis (breakdown of stored glycogen) (Option C). It also promotes ketogenesis (production of ketone bodies) (Option D) as an alternative energy source.

Critically, glucagon inhibits glycolysis (Option A) in the liver to prevent the immediate consumption of the glucose it is trying to produce. By inhibiting key glycolytic enzymes like phosphofructokinase-1, glucagon ensures that glucose is exported to the systemic circulation rather than broken down into pyruvate. Therefore, while the other processes mentioned are stimulated by glucagon to maintain energy balance during fasting, glycolysis is the only pathway listed that it actively suppresses.

Question 12. A 34-year-old man presents with abdominal pain, poor appetite, and chronic diarrhea over several weeks, with a history of a maize-based diet. Clinical examination reveals glossitis, a pigmented rash on sun-exposed areas, and a lesion around the neck. What is the most likely diagnosis in this patient?

A. Pellagra

B. Scurvy

C. Megaloblastic anemia

D. Beriberi

Correct answer: A

The patient's clinical presentation—characterized by diarrhea, glossitis, and a pigmented rash in sun-exposed areas (photosensitivity)—is classic for pellagra. The lesion on his neck is likely Casal's necklace, a pathognomonic finding for this condition. Pellagra is caused by a deficiency of niacin (Vitamin B3) or its precursor amino acid, tryptophan. The history of a diet predominantly consisting of maize is a significant risk factor because maize is low in bioavailable niacin and tryptophan.

Scurvy (Option B) results from Vitamin C deficiency and presents with bleeding gums and petechiae. Megaloblastic anemia (Option C) is caused by B12 or folate deficiency and presents with fatigue. Beriberi (Option D) is a thiamine (B1) deficiency affecting the cardiovascular or nervous systems. Given the "3 Ds" of pellagra (Dermatitis, Diarrhea, and eventually Dementia), this niacin deficiency is the only diagnosis that fits the described symptoms.

Question 13. During a routine health examination, a 45-year-old man inquires about where cholesterol is mainly synthesized in the body. What is the primary site of cholesterol synthesis?

A. Acetyl-CoA

B. Pyruvate

C. Malonyl-CoA

D. Oxaloacetate

Correct answer: A

Cholesterol is a vital lipid synthesized in most tissues of the human body, with the liver being the primary site. The entire 27-carbon structure of cholesterol is derived solely from Acetyl-CoA. The process begins with the condensation of Acetyl-CoA molecules to form HMG-CoA, which is subsequently reduced to mevalonate by the rate-limiting enzyme HMG-CoA reductase.

Pyruvate (Option B) and Oxaloacetate (Option D) are intermediates in the TCA cycle and gluconeogenesis, respectively, but are not the direct building blocks for sterol rings. Malonyl-CoA (Option C) is a critical intermediate in fatty acid synthesis rather than cholesterol synthesis. Because every carbon atom in cholesterol can be traced back to the acetate units of Acetyl-CoA, it remains the definitive primary source for the entire pathway. Understanding this source is clinically relevant as statin medications target the early steps of this Acetyl-CoA-dependent synthesis.

Question 14. In autosomal recessive severe combined immunodeficiency (SCID), which enzyme deficiency is responsible for the condition?

A. Ornithine transcarbamylase

B. Phosphomannose isomerase

C. Adenosine deaminase

D. Hypoxanthine-guanine phosphoribosyl

transferase

Correct answer: C

Severe Combined Immunodeficiency (SCID) is a group of rare genetic disorders characterized by the total lack of T-cell function and impaired B-cell function. Approximately 15% of SCID cases follow an autosomal recessive inheritance pattern caused by a deficiency of the enzyme adenosine deaminase (ADA). ADA is essential for the breakdown of purines; its absence leads to the accumulation of toxic deoxyadenosine metabolites which are specifically lethal to developing lymphocytes.

Ornithine transcarbamylase (Option A) is an enzyme in the urea cycle. Phosphomannose isomerase deficiency (Option B) leads to congenital disorders of glycosylation. HGPRT deficiency (Option D) results in Lesch-Nyhan syndrome, characterized by gout and self-mutilation. ADA-SCID presents in early infancy with recurrent, severe opportunistic infections and failure to thrive. Because ADA is the hallmark enzyme deficiency associated with the autosomal recessive form of combined immunodeficiency, Option C is the correct answer.

Question 15. Which molecule is universally known to serve as a methyl-group donor in various biochemical reactions?

A. Glucose-6-phosphate

B. Acetyl CoA

C. S-Adenosyl Methionine

D. S-Adenosyl Serine

Correct answer: C

S-Adenosyl Methionine (SAM) is the universal activated methyl donor in biological systems. It is formed from the amino acid methionine and ATP. SAM provides the methyl group for hundreds of critical biochemical reactions, including the methylation of DNA, the synthesis of creatine, and the conversion of norepinephrine to epinephrine. After donating its methyl group, it is converted to S-adenosyl homocysteine.

Glucose-6-phosphate (Option A) is a central intermediate in glycolysis and the pentose phosphate pathway. Acetyl CoA (Option B) is the primary donor of acetyl groups and the fuel for the TCA cycle. S-Adenosyl Serine (Option D) is not a standard biochemical methyl donor. SAM’s unique high-energy sulfonium bond makes the methyl group highly reactive, which is why it is the definitive "universal" donor for methylation across all kingdoms of life.

Question 16. What is the primary location of the Thermogenin protein?

A. Golgi complex

B. Endoplasmic reticulum

C. Mitochondria

D. Nucleus

Correct answer: C

Thermogenin, also known as Uncoupling Protein 1 (UCP1), is a specialized protein found in the inner mitochondrial membrane of brown adipose tissue. Its primary function is non-shivering thermogenesis, a process vital for maintaining body temperature in neonates and hibernating animals. Thermogenin works by allowing protons to leak across the inner mitochondrial membrane, bypassing ATP synthase. This collapses the proton gradient, and instead of producing ATP, the energy is released directly as heat.

The Golgi complex (Option A), Endoplasmic reticulum (Option B), and Nucleus (Option D) do not contain thermogenin or participate in this specific uncoupling of the electron transport chain. Because thermogenin's physiological role is strictly tied to the uncoupling of oxidative phosphorylation, which occurs only in the mitochondria, its localization is definitively mitochondrial.

Question 17. Which vitamin deficiency is suggested in a young boy presenting with a fissured tongue, cracked lips, lesions at the angles of the mouth, and reduced red blood cell glutathione reductase activity on investigation?

A. Vitamin B12

B. Vitamin B3

C. Biotin

D. Riboflavin

Correct answer: D

The clinical triad of glossitis (fissured tongue), cheilosis (fissured lips), and angular stomatitis (lesions at the corners of the mouth) is highly suggestive of Riboflavin (Vitamin B2) deficiency. The biochemical hallmark of this deficiency is decreased erythrocyte glutathione reductase activity, as flavin adenine dinucleotide (FAD), a derivative of B2, is an essential cofactor for this enzyme. Vitamin B12 deficiency (Option A) leads to megaloblastic anemia and neurological issues. Vitamin B3 deficiency (Option B) causes pellagra, characterized by the "3 Ds" (dermatitis, diarrhea, dementia). Biotin deficiency (Option C) typically presents with dermatitis and hair loss. Because the biochemical test mentioned is the specific gold standard for assessing riboflavin status, Riboflavin is the definitive diagnosis. Early identification is crucial, as these mucocutaneous symptoms are reversible with oral supplementation.

Question 18. A 10-year-old boy develops

recurrent hypoglycemic episodes following moderate physical activity. Investigations show increased levels of ketone bodies, lactic acid, and triglycerides, along with hepatomegaly and renomegaly on examination. Which hepatic enzyme deficiency best explains these clinical and laboratory findings?

A. Glucose-6-phosphatase

B. Glucose-1-phosphate

C. Glucose-1, 6-diphosphate

D. Glycosaminoglycans

Correct answer: A

The combination of fasting-induced hypoglycemia, hepatomegaly (enlarged liver), and renomegaly (enlarged kidneys) is pathognomonic for Von Gierke's disease (Glycogen Storage Disease Type I) . This condition is caused by a deficiency in glucose-6-phosphatase, the enzyme responsible for converting glucose-6-phosphate into free glucose during glycogenolysis and gluconeogenesis. Without this enzyme, the liver cannot release glucose into the blood, leading to severe hypoglycemia and the shunting of metabolites into pathways that produce lactic acid, triglycerides, and ketone bodies. Option B and C are metabolic intermediates, not enzymes whose deficiency causes this syndrome. Option D refers to complex carbohydrates involved in different storage disorders (mucopolysaccharidoses). Therefore, the inability to perform the final step of glucose release due to glucose-6-phosphatase deficiency is the definitive enzymatic cause of this patient's multi-system metabolic derangement.

Question 19. Which of the following vitamins is incorrectly matched with its corresponding enzyme?

A. Vitamin B1 (Thiamine): RBC Trans-ketolase

B. Vitamin B2 (Riboflavin): RBC glutathione reductase

Examination Paper December 2021 Question

C. Urethral atresia

D. Urethral stricture

Correct answer: A

The Whitaker test is a specialized invasive urodynamic procedure used to differentiate between a mechanically obstructed and a dilated, non-obstructed urinary system (Option A). It is most appropriately applied in patients with persistent hydronephrosis or hydroureter where

non-invasive tests, such as a diuretic renogram, are inconclusive. The test involves placing a percutaneous needle into the renal pelvis and measuring the pressure required to drive fluid through the ureter at a constant rate. If the pressure gradient between the renal pelvis and the bladder is high, mechanical obstruction is confirmed. Posterior urethral valves (Option B), urethral atresia (Option C), and urethral strictures (Option D) are obstructions of the lower urinary tract that are typically diagnosed through voiding cystourethrography (VCUG) or cystoscopy rather than upper tract pressure studies . Therefore, the Whitaker test is specifically reserved for assessing complex cases of upper-tract dilation.

Question 20. 34. (B) Calcitonin

The provided histological image shows thyroid follicles lined by follicular cells, with a distinct cluster of parafollicular cells (also known as C-cells) labeled as 'X'. These C-cells are responsible for the synthesis and secretion of calcitonin, a peptide hormone that plays a role in calcium homeostasis by inhibiting osteoclast activity and lowering blood calcium levels. Thyroxine (T4) (Option A) is produced by the follicular cells that surround the colloid. Parathormone (Option C) is produced by the parathyroid glands, which are distinct organs usually located posterior to the thyroid. Serotonin (Option D) is primarily produced by enterochromaffin cells in the gut or neurons in the brain. Because the cell labeled 'X' is clearly situated between the follicles (parafollicularly), its hormone product is definitively calcitonin. Medullary thyroid carcinoma arises from these specific C-cells.

What is the most likely diagnosis in a 48-year-old man presenting with scrotal swelling, elevated LDH levels, normal AFP levels on tumor marker evaluation, and a characteristic histopathological finding following orchidectomy?

A. Yolk sac tumor

B. Teratoma

C. Seminoma

D. Embryonal carcinoma

Correct answer: C

The histological image and clinical data provided are characteristic of a seminoma, the most common type of germ cell tumor in adults. The pathognomonic histological features seen are large, uniform, polygonal cells with clear cytoplasm (due to glycogen) and "fried-egg" nuclei, organized in nests separated by thin fibrous septa containing lymphocytic infiltrates. Clinically, seminomas often cause elevated Lactate Dehydrogenase (LDH) but are typically negative for Alpha-fetoprotein (AFP); a high AFP would instead suggest a yolk sac tumor (Option A) or a mixed germ cell tumor. Teratomas (Option B) would show tissues from multiple germ layers (hair, teeth, etc.). Embryonal carcinoma (Option D) features pleomorphic cells in glandular or papillary

Question 21. patterns with more aggressive necrosis. Given the uniform cell population, clear cytoplasm, and the characteristic lymphocytic septa, seminoma is the definitive diagnosis for this middle-aged patient.

During wound healing, which cells are the first to migrate to the site of injury in response to chemotaxis?

A. Neutrophils

B. Monocytes

C. Macrophages

D. Lymphocytes

Correct answer: A

The inflammatory phase of wound healing is initiated immediately following injury. Neutrophils are the first leukocytes to be recruited to the site of a wound via chemotaxis, typically arriving within the first 6 to 24 hours. Their primary roles are to phagocytize bacteria and debris and to release proteases that clear the area for future tissue repair.

Monocytes (Option B) and their tissue-mature form, macrophages (Option C), arrive later, usually predominating by 48 to 72 hours; they are considered the "orchestrators" of the later stages of healing. Lymphocytes (Option D) participate in the chronic inflammatory phase or in specific immune responses but are not the early responders. Because neutrophils are the quintessential "acute" inflammatory cells designed for rapid response to tissue damage and potential infection, they are definitively the first cells to appear.

Which immunoglobulin mediates the clinical features of facial swelling, itching, and hypotension observed after a bee sting in a patient presenting to the emergency department?

(A)

IgA-Immunoglobulin A

(B)

IgE-Immunoglobulin E

(C)

IgM-Immunoglobulin M

(D)

IgG-Immunoglobulin G

Question 22. cells to drive acute allergic crises, it is the definitive answer.

In a case where an Rh-negative mother delivers an Rh-positive infant and the newborn has a positive Coombs test, what is the underlying mechanism responsible for this hypersensitivity reaction?:

A. Antigen-dependent cellular cytotoxicity

B. Antibody-dependent cellular cytotoxicity

C. Antigen-antibody immune complex deposition

D. CD4-T cell-mediated cytokine release

Correct answer: B

The clinical scenario describes Erythroblastosis Fetalis (Hemolytic Disease of the Newborn), which is a classic Type II hypersensitivity reaction. In this condition, maternal IgG antibodies against the Rh antigen cross the

placenta and bind to the baby's Rh-positive red blood cells. These antibody-coated cells are then recognized and destroyed by the fetal splenic macrophages through the process of Antibody-Dependent Cellular Cytotoxicity (ADCC).

Option A is a non-standard term. Option C refers to Type III hypersensitivity (immune complex diseases like SLE). Option D refers to Type IV delayed-type hypersensitivity (like the TB skin test). The positive Coombs test confirms that antibodies are already bound to the fetal RBC surface. Therefore, the direct destruction of cells mediated by specific antibodies identifies ADCC as the definitive immunological mechanism in Rh incompatibility.

During the inflammatory response, which molecule is responsible for promoting the adhesion of leukocytes to the vascular endothelium?

(A)
P-selectin

(B)
Platelet-activating factor

(C)
VCAM-1

(D)
Complement

Question 23. 38. (B) Antibody-dependent cellular cytotoxicity

The clinical scenario describes Erythroblastosis Fetalis (Hemolytic Disease of the Newborn), which is a classic Type II hypersensitivity reaction. In this condition, maternal IgG antibodies against the Rh antigen cross the placenta and bind to the baby's Rh-positive red blood cells. These antibody-coated cells are then recognized and destroyed by the fetal splenic

macrophages through the process of Antibody-Dependent Cellular Cytotoxicity (ADCC).
Option A is a non-standard term. Option C refers to Type III hypersensitivity (immune complex diseases like SLE). Option D refers to Type IV delayed-type hypersensitivity (like the TB skin test). The positive Coombs test confirms that antibodies are already bound to the fetal RBC surface. Therefore, the direct destruction of cells mediated by specific antibodies identifies ADCC as the definitive immunological mechanism in Rh incompatibility.

During the inflammatory response, which molecule is responsible for promoting the adhesion of leukocytes to the vascular endothelium?

A. P-selectin

B. Platelet-activating factor

C. VCAM-1

D. Complement

Correct answer: A

During inflammation, leukocyte recruitment to the site of injury occurs in steps: rolling → adhesion → transmigration. The initial interaction (rolling) of leukocytes along the vascular endothelium is mediated by selectins, especially P-selectin.

P-selectin is expressed on activated endothelial cells and platelets. It binds to carbohydrate ligands (like sialyl Lewis X) on leukocytes, causing them to slow down and roll along the vessel wall. This rolling is crucial because it allows leukocytes to come into close contact with the endothelium, preparing them for firm adhesion.

Why other options are incorrect:

(B) Platelet-activating factor (PAF) : Involved

in leukocyte activation and chemotaxis, not primary adhesion

(C) VCAM-1 : Mediates firm adhesion (via integrins), not the initial adhesion/rolling

(D) Complement : Plays a role in opsonization and chemotaxis, not adhesion

A 30-year-old male presents with a history of fatigue over the past year. Upon examination, a significantly enlarged spleen is noted. The following blood test results are obtained: TLC count: 1,50,000/microL. Peripheral blood smear: Myeloblasts, myelocytes, and metamyelocytes. Myeloid to erythroid ratio: 18:1. What is the most likely diagnosis for this patient?

(A)

ALL

(B)

AML

(C)

CML

(D)

CLL

Question 24. The patient’s presentation of chronic fatigue and massive splenomegaly, combined with an extreme leukocytosis (TLC 150,000), is highly characteristic of Chronic Myeloid Leukemia (CML). The diagnostic hallmark on the peripheral smear is the presence of the full spectrum of myeloid cells in various stages of maturation, including myeloblasts, myelocytes, and metamyelocytes, alongside a markedly increased myeloid to erythroid (M:E) ratio (18:1, normal is ~3:1). ALL (Option A) and AML (Option B) are acute leukemias that would typically present with a high percentage of blasts (>20%) and a more rapid, severe clinical course. CLL (Option D) would show a predominance of mature lymphocytes rather than myeloid precursors. CML is classically associated with the Philadelphia chromosome (t(9;22)). Given the maturity spectrum of the

cells and the massive splenic enlargement, CML is the definitive diagnosis.

An 18-year-old male presents with a two-month history of fever and gum bleeding. Examination shows pallor with no significant systemic findings. Laboratory investigations reveal severe anemia (Hb 3 g/dL), leukopenia (TLC 1,500/µL), thrombocytopenia (15,000/µL), macrocytosis on peripheral smear, and a low reticulocyte count of 0.5%. Bone marrow examination shows fatty infiltration with absence of megakaryocytes and no immature cells. What is the most likely diagnosis in this patient?

A. Idiopathic acquired aplastic anemia

B. Paroxysmal nocturnal hemoglobinuria

C. Myelodysplastic syndrome

D. Tuberculosis

Correct answer: A

The patient presents with symptoms of pancytopenia (Hb 3, TLC 1500, Platelets 15000) and clinical signs of failure in all cell lines: gum bleeding (thrombocytopenia), fever (neutropenia), and pallor (anemia). The key diagnostic findings are a low reticulocyte count (0.5), indicating a non-productive marrow, and a bone marrow biopsy showing hypocellularity with replacement by fat (fatty streaks) and an absence of megakaryocytes. The absence of immature cells (blasts) or dysplasia rules out Acute Leukemia or Myelodysplastic Syndrome (Option C). PNH (Option B) would typically show signs of hemolysis, such as high reticulocytes and dark urine. Tuberculosis (Option D) can cause pancytopenia but usually presents with granulomas in the marrow or other systemic signs. Therefore, the pathognomonic finding of a fatty, hypocellular marrow in a young patient with pancytopenia definitively confirms idiopathic acquired aplastic anemia.

A 25-year-old man presents with recurrent urinary tract infections and progressively worsening difficulty in urination. Ultrasonography indicates a urinary tract obstruction, and further evaluation is planned to precisely determine the site and severity of obstruction before surgery.

In which of the following conditions is the Whitaker test most appropriately indicated?

(A)

Hydronephrosis

(B)

Posterior urethral valve

(C)

Urethral atresia

(D)

Urethral stricture

Question 25. 41. (A) Idiopathic acquired aplastic anemia
The patient presents with symptoms of pancytopenia (Hb 3, TLC 1500, Platelets 15000) and clinical signs of failure in all cell lines: gum bleeding (thrombocytopenia), fever (neutropenia), and pallor (anemia). The key diagnostic findings are a low reticulocyte count (0.5), indicating a non-productive marrow, and a bone marrow biopsy showing hypocellularity with replacement by fat (fatty streaks) and an absence of megakaryocytes. The absence of immature cells (blasts) or dysplasia rules out Acute Leukemia or Myelodysplastic Syndrome (Option C). PNH (Option B) would typically show signs of hemolysis, such as high reticulocytes and dark urine. Tuberculosis (Option D) can cause pancytopenia but usually presents with granulomas in the marrow or other systemic signs. Therefore, the pathognomonic finding of a fatty, hypocellular marrow in a young patient with pancytopenia definitively confirms idiopathic acquired aplastic anemia.

A 25-year-old man presents with recurrent urinary tract infections and progressively worsening difficulty in urination. Ultrasonography indicates a urinary tract obstruction, and further evaluation is planned to precisely determine the site and severity of obstruction before surgery. In which of the following conditions is the Whitaker test most appropriately indicated?

A. Hydronephrosis

B. Posterior urethral valve

C. Urethral atresia

D. Urethral stricture

Correct answer: A

The Whitaker test is a specialized invasive urodynamic procedure used to differentiate between a mechanically obstructed and a dilated, non-obstructed urinary system (Option

Question 26. A 7-year-old boy presents with non-blanching rashes over the legs and buttocks, joint pain, abdominal pain with vomiting, and blood in the stools. Investigations reveal a normal platelet count, while urinalysis shows marked hematuria (+++) with mild proteinuria (+). Based on these findings, what is the most likely diagnosis?

A. Systemic lupus erythematosus (SLE)

B. Henoch-Schönlein purpura (HSP)

C. Immune thrombocytopenic purpura (ITP)

D. Polyarteritis nodosa (PAN)

Correct answer: B

The combination of a palpable (non-blanching) purpuric rash on the buttocks and lower limbs, arthralgia (joint pain), and gastrointestinal symptoms (abdominal pain, bloody stool) in a young child is pathognomonic for Henoch-Schönlein Purpura (HSP). HSP is an IgA-mediated small-vessel vasculitis. A critical diagnostic clue provided is the normal platelet count, which distinguishes the purpura of HSP from thrombocytopenic conditions like ITP (Option C). The presence of hematuria and proteinuria confirms the associated renal involvement, known as HSP nephritis. SLE (Option A) and PAN (Option D) can cause vasculitis but are much rarer in children and typically present with a different constellation of multi-organ findings and laboratory markers (like ANA or ANCA). Therefore, the classic clinical tetrad of rash, joints, gut, and kidney in a pediatric patient definitively identifies HSP.

Question 27. Which urinary substances are measured as a screening test for pheochromocytoma?

A. Urinary metanephrines and VMA

B. Albumin

C. 5-HIAA

D. Glucose

Correct answer: A

Pheochromocytoma is a catecholamine-secreting tumor of the adrenal medulla chromaffin cells. Because these tumors release excessive epinephrine and norepinephrine, their metabolic breakdown products are excreted in high quantities. Measurement of 24-hour urinary metanephrines and Vanillylmandelic Acid (VMA) is the standard, highly sensitive screening tool used to diagnose this condition. Metanephrines are considered superior due to their longer half-life. Albumin (Option B) is a marker for kidney disease or pre-eclampsia. 5-HIAA (Option C) is the urinary metabolite of serotonin and is specifically used to screen for carcinoid syndrome. Glucose (Option D) in the urine is a screen for diabetes mellitus. Therefore, because metanephrines and VMA directly reflect the abnormal sympathetic activity of the tumor, they are the definitive markers for pheochromocytoma. A positive screening result is typically followed by CT or MRI imaging for localization.

Question 28. What is the mechanism of action of alteplase, a tissue plasminogen activator (tPA)?

A. Inhibits vit K dependent factors

B. Inhibits factor X

C. Promotes fibrinolysis

D. Activation of thrombin

Correct answer: C

Alteplase is a recombinant form of the endogenous tissue plasminogen activator (tPA). Its primary mechanism of action is to promote fibrinolysis (clot dissolution). It works by binding to fibrin within a thrombus and converting trapped plasminogen into its active form, plasmin. Plasmin then enzymatically breaks down the fibrin meshwork, resulting in the dissolution of the clot. Vitamin K inhibition (Option A) is the mechanism of anticoagulants like warfarin. Factor X inhibition (Option B) is the mechanism of drugs like rivaroxaban or fondaparinux. Activation of thrombin (Option D) would promote clotting, which is the opposite effect of tPA. Alteplase is used as a "clot-buster" in time-sensitive emergencies such as acute ischemic stroke, ST-elevation myocardial infarction, and massive pulmonary embolism. Therefore, its role as a powerful fibrinolytic agent is its definitive pharmacological classification.

Question 29. In what situation is popcorn calcification observed?

A. Hodgkin's lymphoma

B. Pulmonary hamartoma

C. Metastasis

D. Fungal ball

Correct answer: B

In radiology, "popcorn calcification" is a characteristic radiographic finding characterized by

coarse, irregular calcifications that resemble the appearance of a popcorn kernel. This finding is classically pathognomonic for a pulmonary hamartoma, which is a benign tumor composed of disorganized normal lung tissue elements, especially cartilage. Hodgkin's lymphoma (Option A) usually presents with hilar lymphadenopathy rather than this specific internal calcification pattern. Pulmonary metastases (Option C) typically appear as multiple smooth, round "cannonball" nodules without coarse calcification. A fungal ball or aspergilloma (Option D) typically presents as a mobile mass within a pre-existing lung cavity with a crescent of air (Monod sign). Therefore, the identification of a solitary pulmonary nodule with the distinct "popcorn" internal structure allows the clinician to confidently diagnose a benign hamartoma, often avoiding more invasive biopsies.

Question 30. What is the appropriate next step in the management of a 22-year-old primigravida at 10 weeks of gestation who presents with nausea, vomiting, abdominal pain, inability to tolerate fluids, and recent-onset right upper quadrant pain, and is diagnosed with acute appendicitis?

A. Do appendicectomy

B. Wait till 2nd trimester

C. Conservative management

D. Reassurance

Correct answer: A

Acute appendicitis is a surgical emergency that requires definitive intervention regardless of the patient's pregnancy status. In a pregnant woman, the risk of appendiceal rupture is higher, and rupture significantly increases the risk of fetal loss and maternal sepsis. Therefore, the immediate subsequent course of action is to perform an appendicectomy (Option A). Waiting until the 2nd trimester (Option B) is dangerous, as the infection will progress rapidly. Conservative management (Option C) with antibiotics alone has a high failure rate and is not the standard of care for acute appendicitis in pregnancy. Reassurance (Option D) is inappropriate for a surgical emergency. Laparoscopic or open appendicectomy in the first trimester is generally considered safe for the fetus. The patient's presentation of RUQ pain is common in later pregnancy due to uterine displacement of the appendix, but even at 10 weeks, surgical removal is mandatory.

Question 31. Which cells, apart from natural killer (NK) cells, are capable of recognizing and destroying target cells bearing antibody-coated surface antigens through their effector functions?

A. Natural killer (NK) cells only

B. Macrophages only

C. Neutrophils and eosinophils

D. Neutrophils only

Correct answer: C

The process described is Antibody-Dependent Cellular Cytotoxicity (ADCC), an effector mechanism where immune cells actively lyse target cells that have been "tagged" by specific antibodies (usually IgG). While Natural Killer (NK) cells (Option A) are the most well-known mediators of ADCC, several other myeloid cells also possess the necessary Fc receptors to perform this task. Specifically, neutrophils, eosinophils, and macrophages (Option B and D) are all equipped to recognize antibody-bound targets and release cytotoxic granules to destroy them. Eosinophils are particularly famous for utilizing ADCC to kill large parasites like helminths. Because both neutrophils and eosinophils are listed together in Option C as additional cells capable of this function, it is the most complete and accurate choice. This mechanism bridges the innate and adaptive immune systems, allowing non-specific effector cells to target specific pathogens marked by antibodies.

Question 32. A 50-year-old man presents with anemia, fever, and recurrent epistaxis, along with hepatosplenomegaly on examination. Laboratory investigations reveal severe anemia (Hb 6 g/dL), marked leukocytosis (TLC 40,000/cu.mm) with 10% blasts, and profound thrombocytopenia (12,000/cu.mm). Cytogenetic analysis of the blasts shows a t(8;21) translocation. What is the most likely diagnosis in this patient?

A. Acute lymphoblastic leukemia

B. Acute myeloblastic leukemia

C. Preleukemia

D. Aleukemic leukemia

Correct answer: B

The patient presents with signs of bone marrow failure (anemia, recurrent nosebleeds from thrombocytopenia) and an acute proliferative process (fever, high WBC, organomegaly). The definitive diagnostic hallmark provided is the presence of the t(8;21) chromosomal translocation in the blasts. According to the WHO classification, the presence of specific genetic abnormalities like t(8;21) allows for a diagnosis of Acute Myeloblastic Leukemia (AML) regardless of the blast percentage (although this patient has a significant 10% in the blood). This specific translocation corresponds to the FAB M2 subtype and is generally associated with a favorable prognosis. ALL (Option A) would show lymphoblasts and different translocations.

Preleukemia (Option C) refers to MDS, which lacks high blast counts or specific AML-defining translocations. Aleukemic leukemia (Option D) occurs when blasts are present in the marrow but the blood count is low, unlike the count seen here.

Question 33. Which intracellular organelle is mainly responsible for breaking down and eliminating bacteria and viruses within the cell?

A. Peroxisomes

B. Lysosomes

C. Golgi complex

D. Ribosomes

Correct answer: B

Lysosomes are the "digestive system" of the cell. They are specialized membrane-bound organelles containing a diverse array of over 40 acidic hydrolases (enzymes) capable of breaking down almost all types of biological polymers. Their primary role in host defense is the degradation and elimination of bacteria and viruses that have been internalized through phagocytosis or endocytosis. Peroxisomes (Option A) are involved in lipid metabolism and the neutralization of reactive oxygen species like hydrogen peroxide. The Golgi complex (Option C) is responsible for the modification and packaging of proteins. Ribosomes (Option D) are the sites of protein synthesis. Because lysosomes provide the acidic environment and potent enzymes necessary to dismantle and destroy foreign pathogens, they are the organelle definitively responsible for cellular waste elimination and microbial killing.

Question 34. Which of the following statements correctly explains how ABO and Rh blood group incompatibility can result in erythroblastosis fetalis?

A. Cytotoxic

B. Cell mediated Hypersensitivity

C. Antigen-antibody reaction

D. Immune complex

Correct answer: A

Erythroblastosis fetalis (hemolytic disease of the newborn) is the classic clinical example of a Type II hypersensitivity reaction, also known as a cytotoxic reaction . In this mechanism, specific antibodies (IgG) produced by the mother against fetal Rh or ABO antigens cross the

placenta and bind to the surface of fetal red blood cells. This binding leads to the direct destruction of these cells through complement activation or opsonization and subsequent phagocytosis by splenic macrophages.

Option B refers to Type IV delayed-type hypersensitivity. Option C is a general term for all immune responses but lacks the specific pathological classification. Option D refers to Type III hypersensitivity involving circulating complexes. Because the pathology involves the direct, antibody-mediated destruction of target cells (erythrocytes), "cytotoxic" is the definitive descriptive term for this hypersensitivity mechanism. Recognizing this helps in understanding the rationale for using Rho(D) immune globulin as a preventative measure.

52. A 30-year-old woman with recurrent headaches is found to have a markedly elevated platelet count, with normal hemoglobin and total leukocyte counts. Bone marrow examination shows increased megakaryocytes, and molecular testing reveals a JAK2 mutation. What is the most likely diagnosis in this patient?

(A) Polycythemia vera

(B) Essential thrombocytosis

(C) Primary myelofibrosis

(D) Chronic myelogenous leukemia

Examination Paper December 2021

ANATOMY

Question 35. 51. (A) Cytotoxic

Erythroblastosis fetalis (hemolytic disease of the newborn) is the classic clinical example of a Type II hypersensitivity reaction, also known as a cytotoxic reaction . In this mechanism, specific antibodies (IgG) produced by the mother against fetal Rh or ABO antigens cross the placenta and bind to the surface of fetal red blood cells. This binding leads to the direct destruction of these cells through complement activation or opsonization and subsequent phagocytosis by splenic macrophages.

Option B refers to Type IV delayed-type hypersensitivity. Option C is a general term

for all immune responses but lacks the specific pathological classification. Option D refers to Type III hypersensitivity involving circulating complexes. Because the pathology involves the direct, antibody-mediated destruction of target cells (erythrocytes), "cytotoxic" is the definitive descriptive term for this hypersensitivity mechanism.
Recognizing this helps in understanding the rationale for using Rho(D) immune globulin as a preventative measure.

A 30-year-old woman with recurrent headaches is found to have a markedly elevated platelet count, with normal hemoglobin and total leukocyte counts. Bone marrow examination shows increased megakaryocytes, and molecular testing reveals a JAK2 mutation. What is the most likely diagnosis in this patient?

A. Polycythemia vera
B. Essential thrombocytosis
C. Primary myelofibrosis
D. Chronic myelogenous leukemia

Correct answer: B

The patient presents with an isolated, significant elevation in platelet count with normal hemoglobin and WBC levels, which points toward Essential Thrombocytosis (ET) . ET is a myeloproliferative neoplasm characterized by the autonomous overproduction of platelets.
The presence of the JAK2 mutation (found in approximately 50% of ET cases) and an increase in megakaryocytes in the bone marrow are core diagnostic criteria.
Polycythemia vera (Option A) would typically show elevated hemoglobin and red cell mass. Primary myelofibrosis (Option C) involves marrow scarring and a "leukoerythroblastic" blood picture. Chronic myelogenous leukemia

(Option D) is characterized by the Philadelphia chromosome (BCR-ABL fusion) and a full spectrum of myeloid precursors, not just isolated thrombocytosis. Recurrent headaches in this patient are likely due to microvascular

Question 36. A 54-year-old man presents to the emergency department with fever, headache, and a focal seizure. EEG reveals temporal lobe spike activity, and cerebrospinal fluid analysis shows 50 cells with lymphocytic predominance. Based on these findings, which drug is the most appropriate initial treatment?

A. Valacyclovir

B. Acyclovir

C. Ganciclovir

D. Foscarnet

Correct answer: B

The clinical presentation of fever, headache, and focal seizures combined with temporal lobe involvement on EEG is highly suggestive of Herpes Simplex Encephalitis (HSE) . The CSF profile showing lymphocytic pleocytosis further supports a viral etiology. Intravenous Acyclovir is the gold-standard, life-saving initial treatment for HSE. It acts as a nucleoside analog that selectively inhibits viral DNA polymerase.

Valacyclovir (Option A) is an oral prodrug used for less severe infections like shingles or genital herpes, but it is not appropriate for the acute management of encephalitis. Ganciclovir (Option C) and Foscarnet (Option D) are primarily used for Cytomegalovirus (CMV) infections, particularly in immunocompromised patients. Because HSE is a medical emergency with high mortality if untreated, immediate empiric administration of IV Acyclovir is the definitive standard of care while awaiting PCR confirmation.

Question 37. A 45-year-old obese woman with diabetes, previously treated with oral hypoglycemic agents, presents to the emergency department with features of hypoglycemia. Based on her medication history, which drug is most likely responsible for this episode?

A. Metformin

B. Pioglitazone

C. Sitagliptin

D. Glimepiride

Correct answer: D

Among the common oral anti-diabetic medications, sulfonylureas are the class most frequently associated with clinical hypoglycemia. Glimepiride is a second-generation sulfonylurea that works by stimulating pancreatic beta cells to secrete insulin regardless of current blood glucose levels. This "glucose-independent" mechanism can lead to severe and prolonged hypoglycemic episodes, especially if a meal is missed.

Metformin (Option A) is a biguanide that does not stimulate insulin secretion and thus carries a negligible risk of hypoglycemia when used alone. Pioglitazone (Option B), a TZD, and Sitagliptin (Option C), a DPP-4 inhibitor, are both considered "weight-neutral" or "weight-friendly" drugs with low hypoglycemia risk because their actions are either insulin-sensitizing or glucose-dependent. Therefore, because of its direct insulinotropic effect, Glimepiride is the most likely pharmacological cause of this patient’s emergency presentation.

55. A patient presents with diarrhea, sweating, excessive lacrimation, increased salivation, bradycardia (pulse rate 55/min), and markedly reduced plasma cholinesterase levels (50 U/mL), suggestive of cholinergic toxicity. Which of the following treatments is most appropriate for managing this condition?

(A) Neostigmine

(B) Atropine

(C) Epinephrine

(D) Benztropine

tropine

The patient is exhibiting a "cholinergic crisis," likely due to organophosphate or carbamate poisoning. The constellation of symptoms—often remembered by the acronym DUMBELS (Diarrhea, Urination, Miosis, Bradycardia, Emesis, Lacrimation, Salivation)—results from the overstimulation of muscarinic receptors. Atropine is the definitive pharmacological antidote. It acts as a competitive muscarinic antagonist, effectively blocking the excessive acetylcholine and reversing life-threatening symptoms like bradycardia and bronchoconstriction.

Neostigmine (Option A) is an acetylcholinesterase inhibitor that would actually worsen the crisis. Epinephrine (Option C) can treat bradycardia but does not address the underlying cholinergic excess. Benztropine (Option D) is a centrally acting anticholinergic used for Parkinson's but lacks the peripheral potency required for systemic poisoning management. Therefore, titration of intravenous Atropine until "atropinization" (indicated by clear lungs and dry secretions) is the standard emergency protocol.

Question 38. likely pharmacological cause of this patient's emergency presentation.

A patient presents with diarrhea, sweating, excessive lacrimation, increased salivation, bradycardia (pulse rate 55/min), and markedly reduced plasma cholinesterase levels (50 U/mL), suggestive of cholinergic toxicity. Which of the following treatments is most appropriate for managing this condition?

A. Neostigmine

B. Atropine

C. Epinephrine

D. Benztropine

Correct answer: B

The patient is exhibiting a "cholinergic crisis," likely due to organophosphate or carbamate poisoning. The constellation of symptoms—often remembered by the acronym DUMBELS (Diarrhea, Urination, Miosis, Bradycardia, Emesis, Lacrimation, Salivation)—results from the overstimulation of muscarinic receptors. Atropine is the definitive pharmacological antidote. It acts as a competitive muscarinic antagonist, effectively blocking the excessive acetylcholine and reversing life-threatening symptoms like bradycardia and bronchoconstriction. Neostigmine (Option A) is an acetylcholinesterase inhibitor that would actually worsen the crisis. Epinephrine (Option C) can treat bradycardia but does not address

the underlying cholinergic excess. Benztropine (Option D) is a centrally acting anticholinergic used for Parkinson's but lacks the peripheral potency required for systemic poisoning management. Therefore, titration of intravenous Atropine until "atropinization" (indicated by clear lungs and dry secretions) is the standard emergency protocol.

A pregnant woman is diagnosed with pregnancy-induced hypertension and requires pharmacological treatment. Which of the following drugs is considered safe for managing this condition during pregnancy?

(A)
Lisinopril

(B)
Propranolol

(C)
Alpha methyldopa

(D)
Losartan

Question 39. A pregnant woman is diagnosed with pregnancy-induced hypertension and requires pharmacological treatment. Which of the following drugs is considered safe for managing this condition during pregnancy?

A. Lisinopril

B. Propranolol

C. Alpha methyldopa (D) Losartan

Correct answer: C

Managing hypertension in pregnancy requires drugs that are effective for the mother while being non-teratogenic for the fetus. Alpha-methyldopa (Option C) is the gold-standard, first-line antihypertensive in this setting. It is a centrally acting alpha-2 agonist with a long-established safety profile and no known adverse effects on fetal development.

Lisinopril (Option A), an ACE inhibitor, and Losartan (Option D), an ARB, are strictly contraindicated throughout pregnancy as they are highly teratogenic, causing fetal renal dysgenesis, oligohydramnios, and skull ossification defects. Propranolol (Option B) is generally avoided as it may be associated with intrauterine growth restriction and neonatal hypoglycemia. Labatalol and Nifedipine are other common alternatives, but among the choices provided, Alpha-methyldopa is the classic and definitive safe choice for pregnancy-induced hypertension management.

Question 40. Which medication should be preferred for a 45-year-old chronic alcoholic with a history of liver cirrhosis, admitted with fever and abdominal pain, and found to have ascitic fluid neutrophil count of 360 cells/µL?

A. Cefotaxime

B. Metronidazole

C. Amoxicillin

D. Vancomycin

Correct answer: A

The patient presents with Spontaneous Bacterial Peritonitis (SBP), a common and serious complication of cirrhosis. SBP is diagnosed when the ascitic fluid absolute neutrophil count (ANC) is . In this patient, the count is 360, confirming the diagnosis. Cefotaxime, a third-generation cephalosporin, is the first-line antibiotic of choice for SBP. It provides excellent coverage against common gram-negative aerobic organisms like E. coli and Klebsiella, which are the most frequent causes.

Metronidazole (Option B) targets anaerobes, which are rarely involved in SBP. Amoxicillin (Option C) has poor penetration and high resistance rates in this setting. Vancomycin (Option D) is reserved for suspected MRSA or failed initial therapy. Because Cefotaxime is highly effective, has low toxicity, and is proven to improve survival in cirrhotic patients with peritonitis, it is the definitive treatment.

Question 41. Doxycycline is a commonly used antibiotic. How does it function in the body?

A. Cell wall synthesis inhibitor

B. Protein synthesis inhibitor

C. DNA gyrase inhibitor

D. Leucyl-tRNA synthetase inhibitor

Correct answer: B

Doxycycline belongs to the tetracycline class of antibiotics. Its primary mechanism of action is acting as a protein synthesis inhibitor. It functions by binding reversibly to the 30S ribosomal subunit of the bacteria. This binding prevents the attachment of aminoacyl-tRNA to the mRNA-ribosome complex, effectively halting the addition of new amino acids to the growing polypeptide chain.

Option A describes beta-lactams and vancomycin. Option C describes fluoroquinolones. Option D describes mupirocin. Doxycycline's ability to inhibit protein synthesis is bacteriostatic and effective against a wide range of gram-positive, gram-negative, and atypical organisms (like Rickettsia and Chlamydia). Because it specifically targets the prokaryotic 30S ribosome, it is a definitive example of a translation inhibitor.

Question 42. Which additional drug can be added for a patient with chronic obstructive pulmonary disease (COPD) who is already using inhaled salmeterol but reports no clinical improvement on follow-up?

A. Theophylline

B. Azithromycin

C. Oral glucocorticoids

D. Ipratropium

Correct answer: D

In the management of stable COPD, therapy is escalated by combining different classes of bronchodilators. The patient is already taking Salmeterol, a Long-Acting Beta-Agonist (LABA). The most appropriate and standard "next step" is to add an anticholinergic agent, such as Ipratropium (a short-acting muscarinic antagonist) or Tiotropium (a LAMA). These drugs provide synergistic bronchodilation by blocking parasympathetic-mediated airway constriction.

Theophylline (Option A) is a second or third-line oral bronchodilator with a narrow therapeutic window. Azithromycin (Option B) is used for its anti-inflammatory properties in frequent exacerbators but is not a primary bronchodilator. Oral glucocorticoids (Option C) are reserved for acute exacerbations rather than daily maintenance therapy due to significant systemic side effects. Therefore, adding an inhaled muscarinic antagonist like Ipratropium to the existing LABA is the definitive clinical strategy to improve pulmonary function.

Question 43. A 30-year-old man develops chest tightness, shortness of breath, and altered consciousness while undertaking a pilgrimage to a high-altitude mountain peak. Which medication can

be given to relieve his symptoms?

A. Mannitol

B. Digoxin

C. Diltiazem

D. Acetazolamide

Correct answer: D

The patient is suffering from Acute Mountain Sickness (AMS) or potentially High-Altitude Cerebral Edema (HACE), given the "changes in consciousness" at high altitude. Acetazolamide is the primary medication used for both the prevention and treatment of altitude-related illnesses. It is a carbonic anhydrase inhibitor that induces metabolic acidosis by increasing bicarbonate excretion in the urine. This acidosis stimulates the respiratory center to increase ventilation, thereby improving oxygenation at high altitudes.

Mannitol (Option A) is used for raised intracranial pressure from tumors or trauma, not specifically for AMS. Digoxin (Option B) and Diltiazem (Option C) are cardiac medications with no role in treating high-altitude physiology. While descent is the absolute treatment, Acetazolamide is the definitive pharmacological intervention to facilitate acclimatization and relieve symptoms. Dexamethasone is another adjunct for cerebral edema, but Acetazolamide is the most frequently tested first-line relief agent.

Question 44. Which of the following drugs is contraindicated in a pregnant woman diagnosed with extensively drug-resistant tuberculosis (XDR-TB)?

A. Amoxicillin

B. Clofazimine

C. Kanamycin

D. Linezolid

Correct answer: C

Managing drug-resistant tuberculosis (TB) in pregnancy is challenging due to the fetal toxicity of several second-line agents. Kanamycin (Option C), an aminoglycoside, is strictly contraindicated during pregnancy. Like other aminoglycosides (e.g., Streptomycin), it is known to cross the placenta and cause permanent ototoxicity (eighth cranial nerve damage) and potential nephrotoxicity in the developing fetus.

Amoxicillin (Option A) is generally safe in pregnancy. Clofazimine (Option B) and Linezolid (Option D) are second-line agents that are often utilized in extensively drug-resistant (XDR) TB cases; while they carry their own risks, they are considered "safer" alternatives or are used when the benefit outweighs the risk compared to the known teratogenicity of aminoglycosides. Therefore, because of its documented ability to cause fetal deafness, Kanamycin is the definitive "not safe" choice among the options provided.

Question 45. In patients requiring warfarin therapy, what is the recommended target INR range for those with mechanical heart valves?

A. 1.0-1.5

B. 2.0-3.0

C. 2.5-3.5

D. 3.5-4.5

Correct answer: C

Patients with mechanical prosthetic heart valves are at a high risk for thromboembolism and require lifelong anticoagulation with Warfarin. To ensure the valve does not clot while minimizing the risk of major bleeding, the international normalized ratio (INR) must be maintained within a specific therapeutic window. For most mechanical valves (especially mitral valves or older-generation aortic valves), the recommended target INR range is 2.5 to 3.5.

A lower range of 2.0-3.0 (Option B) is the standard target for conditions like atrial fibrillation or deep vein thrombosis. Ranges below 2.0 (Option A) provide inadequate protection against valve thrombosis. Ranges above 3.5 (Option D) significantly increase the risk of intracranial and gastrointestinal hemorrhage. Therefore, the 2.5-3.5 range represents the optimal balance of safety and efficacy for patients with mechanical heart valves.

Question 46. Longest lag period in bacterial growth is associated with:

A. Rifampicin

B. INH (Isoniazid)

C. Streptomycin

D. Ethambutol

Correct answer: D

The term “lag period” in this context refers to the delay before observable antibacterial effect occurs after drug exposure. Among anti-tubercular drugs, Ethambutol is a bacteriostatic agent that inhibits arabinogalactan synthesis in the mycobacterial cell wall. Unlike bactericidal drugs, it does not rapidly kill bacteria, but rather slows their growth.

Because of this mechanism, the onset of its visible effect is delayed, producing the longest lag period among the listed drugs. Ethambutol primarily prevents multiplication rather than causing immediate bacterial death, so cultures may take longer to show a decline in bacterial load.

Why other options are incorrect:

(A)

Rifampicin: Rapidly bactericidal; acts on RNA synthesis → quicker effect

(B)

INH: Strong early bactericidal activity → minimal lag

(C)

Streptomycin: Bactericidal against actively dividing bacilli → faster action

Question 47. A patient with tuberculosis does not respond to treatment with isoniazid, rifampicin, ofloxacin, and kanamycin. What type of drug resistance is indicated in this case?

A. Multidrug-resistant

B. Extensively drug-resistant

C. Rifampicin-resistant

D. Extremely drug-resistant

Correct answer: B

The definition of drug-resistant tuberculosis is based on specific patterns of resistance. Extensively Drug-Resistant TB (XDR-TB) is defined as resistance to Isoniazid and Rifampicin (which defines MDR-TB), plus resistance to any fluoroquinolone (such as Ofloxacin) and at least one of the three injectable second-line drugs (such as Kanamycin, Amikacin, or Capreomycin).

Since this patient is unresponsive to all four classes mentioned (INH, Rifampicin, a fluoroquinolone, and an injectable), they definitively meet the criteria for XDR-TB. Multidrug-resistant TB (Option A) only requires resistance to INH and Rifampicin. Rifampicin-resistant TB (Option C) is a narrower category. "Extremely" drug-resistant (Option D) is not a standard WHO classification term. XDR-TB represents a severe public health threat because it leaves very few effective treatment options remaining.

FORENSIC MEDICINE

Question 48. In an industrial worker with suspected intraocular foreign body after an injury involving a hammer and iron chisel, which imaging modality is best for accurately localizing the foreign body, particularly if it is metallic?

A. MRI

B. CT

C. X-ray

D. B mode scan

Correct answer: B

When a metallic foreign body is suspected in the eye (e.g., from an iron chisel), a Computed Tomography (CT) scan is the best and most appropriate imaging modality for localization. CT provides excellent spatial resolution and is highly sensitive for detecting radiopaque materials like iron or steel.

MRI (Option A) is strictly contraindicated if a metallic foreign body is suspected; the powerful

magnetic field can cause the metal to move or heat up, leading to catastrophic intraocular damage or blindness. A plain X-ray (Option C) can detect the presence of metal but is poor for precise anatomical localization. B-mode ultrasound (Option D) can be useful but is often difficult to perform in an acutely traumatized globe and is less definitive than CT. Therefore, for an industrial "hammer and chisel" injury, CT is the safest and most accurate tool for surgical planning.

Question 49. What is the specific term used to describe this autopsy finding commonly observed in cases of drowning?

A. Cadaveric spasm

B. Cutis anserina

C. Rigor mortis

D. Washerwoman's hands

Correct answer: A

The image shows a dead body’s hand tightly clutching weeds/grass, which is a classic finding in drowning cases. This phenomenon is known as cadaveric spasm (instantaneous rigor).

Cadaveric spasm is a rare form of muscular stiffening that occurs immediately at the moment of death, without the usual relaxation phase seen before rigor mortis. It typically affects voluntary muscles, especially the hands, and preserves the last activity performed by the person before death.

In drowning, the victim often struggles and grasps surrounding objects like weeds, mud, or grass, which remain firmly held due to cadaveric spasm. This is considered strong forensic evidence of antemortem drowning.

Why other options are incorrect:

(B)

Cutis anserina: Goosebumps due to cold exposure, not gripping

(C)

Rigor mortis: Develops gradually after death, not instantaneous

(D)

Washerwoman’s hands: Skin wrinkling due to prolonged immersion

Question 50. Determine the smell resulting from the alteration depicted in the accompanying picture.

A. Odorless

B. Pungent

C. Putrid

D. Offensive

Correct answer: A

The image shows a mummified body, characterized by dry, shrunken, leathery skin and preservation of body contours. Mummification occurs in hot, dry environments where rapid dehydration prevents bacterial growth and putrefaction.

In this process, the body loses moisture quickly, leading to inhibition of decomposition by bacteria. Since putrefaction is minimal or absent, the typical foul-smelling gases and compounds (like hydrogen sulfide and ammonia) are not produced.

As a result, mummified bodies are usually odorless or have minimal smell, unlike decomposing bodies.

Why other options are incorrect:

(B)

Pungent: Seen in chemical exposure or early decomposition, not mummification

(C)

Putrid: Characteristic of putrefaction, not mummified remains

(D)

Offensive: General term, but not specific; mummified bodies lack foul odor

Question 51. What post-mortem finding is most likely to be observed in a patient who sustained a stab wound to the left side of the chest?

and Gram stain findings from the lesion, which organism is most likely responsible for this condition?

A. Parvovirus

B. HHV6

C. Corynebacterium diphtheriae

D. Beta hemolytic streptococci

Correct answer: C

The clinical presentation of a thick, whitish-gray pseudomembrane on the tonsils that bleeds upon scraping is pathognomonic for Diphtheria. The provided Gram stain confirms the diagnosis, showing Gram-positive, club-shaped rods typically arranged in "Chinese letter" patterns (or shapes).

Parvovirus (Option A) and HHV6 (Option B) are viruses that cause viral rashes, not tonsillar membranes. Beta-hemolytic streptococci (Option D) cause acute tonsillitis, which features exudates that can be wiped away easily without bleeding, and the bacteria appear as cocci in chains. Corynebacterium diphtheriae produces a powerful exotoxin that causes both the local membrane and potentially lethal systemic effects on the heart and nerves. Therefore, the combination of the adherent bleeding membrane and the classic microscopic rod morphology

confirms Diphtheria as the causative agent.

Question 52. What is the clinical term used to describe a 24-year-old man who exhibits an excessive and uncontrollable desire for sexual intercourse?

A. Satyriasis

B. Frotteurism

C. Nymphomania

D. Masochism

Correct answer: A

The medical and psychiatric term for an excessive or uncontrollable sexual drive in a male is satyriasis (Option A). This condition is characterized by a persistent and abnormally high frequency of sexual urges or activity. Nymphomania (Option C) is the corresponding term historically used to describe the same condition in females.

Frotteurism (Option B) is a paraphilic disorder where an individual derives sexual pleasure from rubbing against non-consenting people in crowded places. Masochism (Option D) refers to deriving pleasure from experiencing pain or humiliation. Because the question specifically identifies a 24-year-old man with an excessive craving for intercourse, satyriasis is the only gender-appropriate and clinically accurate term. In modern diagnostics, these conditions are often categorized under hypersexual disorder or compulsive sexual behavior disorder.

Question 53. A patient presents with complications after undergoing an illegal attempt to terminate her pregnancy. Which of the following methods used for inducing abortion is considered abnormal and unlawful?

A. Dilatation and curettage

B. Mifepristone

C. Abortion stick

D. Vacuum aspiration

Correct answer: C

Under the Medical Termination of Pregnancy (MTP) Act in India, abortion must be performed by a registered medical practitioner using approved medical or surgical methods. Standard, legal methods include pharmacological agents like Mifepristone (Option B) and surgical procedures such as vacuum aspiration (Option D) or dilatation and curettage (Option A).

An abortion stick (Option C) is a traditional, highly dangerous, and unlawful method used by unauthorized persons ("quacks"). It involves inserting a wooden or bamboo stick coated with an irritant paste (like marking nut or arsenic) into the cervix to induce uterine contractions or local necrosis. This method is "abnormal" as it carries an extreme risk of sepsis, uterine perforation,

and death. Therefore, because it is an improvised, non-medical device specifically associated with criminal abortion, the abortion stick is the correct answer.

Question 54. According to the Medical Termination of Pregnancy (MTP) Act of 1971, up to what maximum gestational age is medical termination of pregnancy legally permitted?

A. 28 weeks

B. 22 weeks

C. 24 weeks

D. 16 weeks

Correct answer: C

The Medical Termination of Pregnancy (MTP) Act was significantly amended in 2021 (updating the 1971 act). Under the current legal framework in India, the maximum gestational age for MTP has been increased to 24 weeks for certain categories of women. These categories include survivors of sexual assault, rape victims, minors, and women with disabilities or mental illness.

For standard cases up to 20 weeks, the opinion of one doctor is required; for the 20-24 week window, the approval of two registered medical practitioners is mandatory. Termination beyond 24 weeks is generally only permitted in cases of substantial fetal abnormalities as determined by a State-level Medical Board. Options A, B, and D do not represent the primary legal thresholds defined by the modern act. Therefore, 24 weeks is the current definitive maximum age for the broad application of the law.

Question 55. Re-infection with which of the following pathogens can cause severe or catastrophic symptoms despite the presence of existing antibodies?

A. Dengue

B. Yellow fever

C. Japanese encephalitis

D. Zika

Correct answer: A

Dengue virus infection exhibits a unique immunological phenomenon known as Antibody-Dependent Enhancement (ADE). There are four distinct serotypes of the Dengue virus. When an individual is re-infected with a different serotype than the initial infection, the pre-existing antibodies from the first infection do not neutralize the new virus. Instead, they bind to it and facilitate its entry into macrophages via Fc receptors.

This leads to a significantly higher viral load and a massive release of cytokines, resulting in "catastrophic" symptoms such as Dengue Hemorrhagic Fever (DHF) or Dengue Shock Syndrome

(DSS). Yellow fever (Option B), Japanese encephalitis (Option C), and Zika (Option D) typically provide solid, neutralizing immunity after a single infection or vaccination. Therefore, because pre-existing antibodies paradoxically increase the severity of subsequent Dengue infections, it is the correct answer.

Question 56. A young adolescent male is brought to the emergency department after suspected drug abuse at a party. He presents with excessive sweating, headache, anxiety, and marked restlessness. Examination shows tachycardia, hypertension, and dilated, fixed pupils. Based on these clinical features, which substance is most likely responsible for his condition?

A. Alcohol

B. Cocaine

C. Opioid

D. Cannabis

Correct answer: B

The patient is exhibiting a "sympathomimetic toxidrome," which is pathognomonic for Cocaine intoxication. Cocaine prevents the reuptake of catecholamines, leading to an overstimulation of the sympathetic nervous system. Key clinical markers provided include tachycardia, hypertension, and dilated (mydriatic) pupils. Symptoms of restlessness, sweating, and agitation further support this stimulant-induced state.

Alcohol (Option A) is a CNS depressant and would typically cause sedation and slurred speech. Opioids (Option C) cause the opposite effect: "pinpoint" (miotic) pupils, bradycardia, and respiratory depression. Cannabis (Option D) usually causes conjunctival injection (red eyes), increased appetite, and a dream-like state, but not fixed dilated pupils and severe hypertension. Therefore, the combination of sympathetic arousal and dilated pupils definitively identifies Cocaine as the responsible substance.

Question 57. What is the most likely diagnosis in a patient who stopped consuming alcohol three days ago and subsequently developed irritability, disorientation, paranoid delusions, agitation, visual hallucinations, and altered consciousness?

A. Delirium tremens

B. Wernicke's encephalopathy

C. Korsakoff psychosis

D. Alcohol-induced psychosis

Correct answer: A

Delirium Tremens (DT) is the most severe form of alcohol withdrawal, typically occurring 48 to 96 hours (roughly 3 days) after the last drink. The clinical hallmarks perfectly match this scenario: clouding of consciousness (disorientation), autonomic hyperactivity (agitation, irritability), and prominent visual hallucinations (often described as "pink elephants" or insects). Paranoid delusions are also common.

Wernicke's encephalopathy (Option B) is characterized by the triad of ataxia, ophthalmoplegia, and confusion due to thiamine deficiency. Korsakoff psychosis (Option C) involves chronic amnesia and confabulation. Alcohol-induced psychosis (Option D) usually involves hallucinations in a clear sensorium, unlike the disorientation seen here. Because the symptoms are hyperacute, occur exactly on day 3 of cessation, and involve impaired consciousness with hallucinations, Delirium Tremens is the definitive diagnosis. It is a medical emergency requiring benzodiazepines.

Question 58. What is the most likely diagnosis in a 7-year-old boy with intellectual disability who presents with widespread warty crusts on the trunk, hands, and feet, along with severe fissuring and scaling of the soles?

A. Scabies incognito

B. Animal scabies

C. Nodular scabies

D. Norwegian scabies

Correct answer: D

Norwegian Scabies, also known as Crusted Scabies, is an extreme infestation seen in patients with weakened immune systems or significant intellectual/neurological disabilities who cannot scratch. In these cases, the mites multiply into the millions, resulting in the formation of thick, warty crusts on the hands, feet, and trunk, rather than the typical few burrows. Severe scaling and fissuring on the soles are characteristic.

Scabies incognito (Option A) occurs when steroid use masks typical inflammation. Animal scabies (Option B) is a self-limiting condition from pets. Nodular scabies (Option C) presents as persistent itchy bumps in children. Because the clinical description emphasizes "extensive warty crusts" and an underlying disability, crusted/Norwegian scabies is the definitive diagnosis. It is highly contagious and requires aggressive treatment with oral Ivermectin and topical permethrin.

Question 59. 77. (D) Teichmann test

The image displays the results of the Teichmann test (also known as the Hemin Crystal Test), a

confirmatory test for the presence of blood. The test is performed by heating a blood stain with glacial acetic acid and a halide (salt); a positive result is the formation of characteristic dark brown, rhombic, needle-like crystals of hemin chloride.

The Barberio test (Option A) is used to identify semen (spermine). The Florence test (Option B) is also for semen (choline). The Takayama test (Option C) is another confirmatory test for blood that forms pink, feathery hemochromogen crystals, which look distinct from the brown needles shown. Because the image specifically captures the dark, rhomboid hemin crystals, it definitively identifies the Teichmann test. This forensic tool is used to prove that a suspected stain is indeed biological blood.

An 8-year-old boy presents with dark-colored urine, reduced urine output, hypertension, and facial edema. His history includes a sore throat approximately two weeks earlier. Urinalysis shows albuminuria, and renal biopsy reveals enlarged, pale glomeruli with epithelial humps. What is the most likely diagnosis?

A. Post-staphylococcal glomerulonephritis

B. Post-streptococcal glomerulonephritis

C. Nephrotic syndrome

D. IgA nephropathy

Correct answer: B

The clinical presentation of "cola-colored" (dark) urine, edema, and hypertension in an 8-year-old following a throat infection (pharyngitis) is pathognomonic for Post-Streptococcal

Question 60. A 24-year-old woman presents with pruritic, hypopigmented macules and confluent patches on the chest. Skin scraping and KOH preparation show numerous yeast-like cells with short branching filaments, described as having a “spaghetti and meatballs” appearance. Which microorganism is most likely responsible for these symptoms?

A. Malassezia

B. Trichophyton

C. Chlamydospores

D. Candida

Correct answer: A

The clinical description of hypopigmented macules on the chest (Pityriasis versicolor) and the pathognomonic "spaghetti and meatballs" appearance on a KOH mount are diagnostic for Malassezia furfur. The "spaghetti" refers to the short, thick hyphae, and the "meatballs" refer to the clusters of round yeast cells.

Trichophyton (Option B) causes dermatophytosis (ringworm) and would show long, branching septate hyphae. Candida (Option D) typically shows pseudohyphae and budding yeast on microscopy. Chlamydospores (Option C) are thick-walled resting spores seen in certain fungi but are not a causative agent. Malassezia is a lipophilic yeast that is part of the normal skin flora but overgrows in hot, humid conditions. Therefore, the unique visual pattern described and pictured definitively identifies Malassezia as the causative organism.

Question 61. What is the causative agent in a 55-year-old man presenting with fever, progressive fatigue, hypotension, tachycardia, and the peripheral blood smear findings shown?

A. Plasmodium vivax

B. Plasmodium falciparum

C. Plasmodium ovale

D. Plasmodium malariae

Correct answer: B

The peripheral blood smear provides two definitive diagnostic clues for Plasmodium falciparum malaria. First, the presence of multiple delicate ring-form trophozoites within single red blood

cells is characteristic. Second, the pathognomonic finding is the banana-shaped (crescentic) gametocyte, which is unique to P. falciparum.

Plasmodium vivax (Option A) would show enlarged RBCs with Schuffner's dots and more amoeboid trophozoites. Plasmodium malariae (Option D) classically shows "band-form" trophozoites. Plasmodium ovale (Option C) shows oval-shaped RBCs with fimbriated edges. Clinically, P. falciparum is the most dangerous species, capable of causing cerebral malaria, hypotension, and rapid systemic failure as seen in this febrile patient. Therefore, because the crescent-shaped gametocyte is a definitive morphological marker for this species, Plasmodium falciparum is the correct etiological factor.

Question 62. What is the most likely diagnosis in a 4-year-old boy presenting with a red rash on the cheeks that spreads to the trunk and limbs, accompanied by low-grade fever, headache, and mild upper respiratory symptoms, caused by a single-stranded DNA virus?

A. Scarlet fever

B. Erythema infectiosum

C. Exanthema subitum

D. Rubeola

Correct answer: B

The clinical presentation of a "slapped-cheek" red rash followed by a generalized spread is the classic description of Erythema Infectiosum (also known as Fifth Disease). This condition is caused by Parvovirus B19. The question provides a definitive virological clue: the causative organism is a single-stranded DNA virus, which is the unique genomic classification of Parvoviruses.

Scarlet fever (Option A) is caused by bacteria and presents with a "sandpaper" rash and strawberry tongue. Exanthema subitum (Option C), or Roseola, is caused by HHV-6 (double-stranded DNA) and features a high fever followed by a rash after the fever drops. Rubeola (Option D), or Measles, is an RNA virus presenting with Koplik spots and a more severe prodrome. Therefore, the specific genomic type and pathognomonic cheek rash confirm Erythema Infectiosum.

Question 63. A 45-year-old man presents with a three-day history of persistent fever, malaise, and splinter hemorrhages. Echocardiography shows valvular vegetations suggestive of endocarditis. Blood cultures reveal alpha-hemolytic cocci in chains that are resistant to optochin and bile. Which

bacterium is most likely causing his condition?

A. Mycoplasma

B. Streptococcus sanguis

C. Enterococcus

D. Streptococcus agalactiae

Correct answer: B

The patient presents with subacute Infective Endocarditis, characterized by valvular vegetations and peripheral markers like splinter hemorrhages . The microbiology results are definitive: alpha-hemolytic cocci in chains that are resistant to optochin and bile identify the organism as a member of the Viridans group Streptococci, of which Streptococcus sanguis is a primary member.

Streptococcus pneumoniae is also alpha-hemolytic but is sensitive to optochin and bile. Mycoplasma (Option A) lacks a cell wall and would not show these Gram-stain/culture features. Enterococcus (Option C) is usually gamma or alpha-hemolytic but is bile-esculin positive (meaning it grows in bile). Streptococcus agalactiae (Option D) is beta-hemolytic. Viridans group organisms like S. sanguis are part of the normal oral flora and are the most common cause of subacute endocarditis after dental procedures. Therefore, Option B is the correct pathogen.

Question 64. A patient presents with fever, mild headache, dysphagia, cervical lymphadenopathy, and a thick, whitish tonsillar membrane that bleeds on scraping. Considering these clinical features

A. Refractive error

B. Vitamin A deficiency

C. Retinopathy of prematurity

D. Injuries

Correct answer: B

The leading cause of preventable childhood blindness worldwide, especially in developing countries like India, is vitamin A deficiency (VAD). It is a major public health problem affecting young children due to malnutrition.

Vitamin A is essential for maintaining the integrity of the conjunctival and corneal epithelium and for normal vision (especially night vision). Deficiency leads to a spectrum of ocular changes collectively called xerophthalmia, which includes:

1.

1.

Night blindness

2.

2.
Conjunctival xerosis
3.
3.
Bitot’s spots
4.
4.
Corneal xerosis
5.
5.
Keratomalacia (can lead to irreversible blindness)
If detected early, VAD is completely preventable and treatable through vitamin A supplementation and proper nutrition.
Why other options are incorrect:
(A)
Refractive error: Common cause of visual impairment, but not blindness
(C)
Retinopathy of prematurity: Important cause, but not the leading one globally
(D)
Injuries: Preventable but less common cause

Question 65. Which conditions or factors are commonly linked to the development of rhino-cerebral mucormycosis, a serious fungal infection?

A. Diabetic ketoacidosis
B. Pregnancy
C. Antibiotics
D. Inhaled steroids

Correct answer: A

Rhino-cerebral mucormycosis is a devastating, opportunistic fungal infection caused by members of the order Mucorales. The most common and potent clinical association for its development is Diabetic Ketoacidosis (DKA). The fungus thrives in an environment of high glucose and acidic pH. Furthermore, the elevated levels of free iron in the blood during DKA act as a growth factor for the organism.
Pregnancy (Option B) is not a primary risk factor. While broad-spectrum antibiotics (Option C) and systemic steroids can predispose individuals to various fungal infections, DKA is the classic, pathognomonic predisposing state for the specific necrotic, invasive "rhino-cerebral" presentation of mucormycosis. These fungi are angioinvasive, leading to rapid tissue infarction

and death if glycemic control and surgical debridement are not initiated immediately. Therefore, DKA is the definitive metabolic state associated with this disease.

Question 66. Which of the following viruses can cause more severe disease and potentially serious complications upon reinfection?

A. Dengue

B. Rabies

C. Measles

D. Mumps

Correct answer: A

This question reinforces the critical clinical concept of Antibody-Dependent Enhancement (ADE) associated with the Dengue virus. As previously discussed (see Q.92), reinfection with a heterologous (different) serotype of Dengue often leads to a much more severe clinical course than the primary infection. This is due to non-neutralizing antibodies facilitating viral entry into host immune cells, potentially causing lethal hemorrhagic fever or shock.

Rabies (Option B) is almost 100% fatal upon the first infection, so reinfection is not a clinical reality. Measles (Option C) and Mumps (Option D) are characterized by life-long, robust neutralizing immunity after a single natural infection or a complete vaccination series. Therefore, Dengue remains the definitive example of a virus where subsequent infections are statistically and physiologically more dangerous than the initial exposure.

PSM

Question 67. During a medical ethics discussion, students learn about the unethical practice in which doctors and radiologists exchange payments for patient referrals for CT scans. What is this practice called?

A. Dichotomy

B. Medical maloccurrence

C. Criminal negligence

D. Commission

Correct answer: A

In medical ethics and forensics, the practice of a doctor receiving a kickback or "fee-splitting" payment from a consultant or facility for a patient referral is termed Dichotomy (Option A). This is considered a highly unethical practice as it compromises the physician's objectivity and may lead to unnecessary testing for financial gain.

Medical maloccurrence (Option B) refers to an unexpected, adverse clinical outcome that occurs despite proper care. Criminal negligence (Option C) involves a gross disregard for

human life or safety during medical treatment. Commission (Option D) is a general financial term but "Dichotomy" is the specific ethical term used in medical jurisprudence to describe this illegal splitting of fees. This practice is prohibited under the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations. Therefore, dichotomy is the definitive term for this referral-based kickback scheme.

Question 68. In a rural farming community, residents have developed allergic respiratory issues and contact dermatitis after exposure to a particular plant, and both humans and cattle show signs of mutagenicity upon contact. Which plant species, considered a noxious weed across America, Asia, Africa, and Australia, fits this description?

A. Parthenium hysterophorus

B. Datura stramonium

C. Digitalis purpurea

D. Calotropis gigantea

Correct answer: A

The description provided identifies the highly invasive weed Parthenium hysterophorus (commonly known as "Congress grass" or "Carrot grass"). This plant is an aggressive noxious weed that has spread globally across America, Asia, Africa, and Australia. It contains potent allergens, such as parthenin, which cause severe contact dermatitis and allergic respiratory issues (asthma, hay fever) in humans.

Additionally, it is toxic to livestock and has documented mutagenic and carcinogenic properties . Datura (Option B), Digitalis (Option C), and Calotropis (Option D) are well-known medicinal and poisonous plants, but they are not categorized as the specific "noxious invasive weed" responsible for widespread agricultural loss and systemic ecological dominance described in the scenario. Therefore, because of its unique status as a global environmental and public health hazard, Parthenium is the correct plant species.

Question 69. What is the maximum number of occupants allowed in a two-room house to prevent overcrowding?

A. 2 people

B. 3 people

C. 4 people

D. 5 people

Correct answer: C

The public health standards for housing define overcrowding based on the number of rooms

and the floor area relative to the number of occupants. According to standard Indian health guidelines (based on the Model Building Bye-laws), the accepted occupancy limit to prevent overcrowding in a two-room house is 3 people (Option B).

Option A (2 people) is the limit for a one-room house. Option C (4 people) would typically require 2.5 to 3 rooms depending on the specific age of the occupants (children count as half). Option D (5 people) is excessive for two standard rooms. Overcrowding is a significant risk factor for the transmission of infectious diseases, particularly respiratory infections like TB and meningitis. Therefore, for the purpose of housing and health standards, 3 people is the definitive maximum capacity for a two-room dwelling.

Question 70. In the nuclear family life cycle, which stage begins when the family has its first child?

A. Extension

B. Complete extension

C. Contraction

D. Completed contraction

Correct answer: A

The developmental cycle of a nuclear family consists of several predictable stages. The stage of Extension (Option A) begins with the birth of the first child . This phase is characterized by the expansion of the family size and the increasing responsibilities of child-rearing.

Complete extension (Option B) refers to the point when the family has reached its maximum size (all children are born). The phase of Contraction (Option C) begins when the first child leaves home (often for work or marriage), and the family starts to shrink. Completed contraction (Option D) occurs when all children have left, and the original couple is alone again (the "empty nest" stage). Therefore, because the family is just beginning to grow with its first new member, they are entering the phase of Extension.

Question 71. What is the most effective method for educating an urban slum community about the use of oral rehydration solution (ORS)?

A. Lecture

B. Roleplay

C. Flashcards

D. Demonstration

Correct answer: D

Health education in community settings, particularly in low-literacy areas like urban slums, requires methods that are practical and easy to follow. A Demonstration (Option D) is the most effective approach for teaching the preparation and use of ORS. This "learning by seeing" method allows community members to observe the exact measurements and mixing process,

which ensures accuracy and builds confidence in their ability to perform the task at home.
A Lecture (Option A) is often too passive and less effective for procedural skills. Roleplay (Option B) is good for teaching social behaviors but not technical prep. Flashcards (Option C) are useful visual aids but do not provide the step-by-step practical instruction of a live demonstration. Therefore, because ORS prep is a specific, life-saving skill that must be done correctly to be effective, demonstration is the definitive educational standard.

Question 72. What is the term for the number of maternal deaths occurring per 100,000 live births?

A. Maternal mortality rate
B. Under 5 Mortality Rate
C. Infant mortality rate
D. Perinatal mortality rate

Correct answer: A

The term used to define the number of maternal deaths per 100,000 live births is technically the Maternal Mortality Ratio (MMR). By definition:
Maternal Mortality Ratio (MMR):
Number of maternal deaths during pregnancy, childbirth, or within 42 days of termination of pregnancy per 100,000 live births However, there is a nomenclature issue in the options provided. Since “Maternal Mortality Ratio” is not listed, the intended and closest correct option is “Maternal mortality rate” (Option A). In many medical entrance and board examinations, the terms rate and ratio are often (though incorrectly) used interchangeably.
Why other options are incorrect:
1.
Under-5 Mortality Rate (B): Deaths of children under 5 years per 1,000 live births
2.
Infant Mortality Rate (C): Deaths under 1 year of age per 1,000 live births
3.
Perinatal Mortality Rate (D): Late fetal deaths + early neonatal deaths per 1,000 total births

Question 73. What is the name of the pregnancy test kit introduced by the Indian government?

A. NISHCHAY
B. NIKSHAY
C. NIKUSTH
D. AXSHYA

Correct answer: A

The Indian government introduced the NISHCHAY kit to provide accessible and reliable pregnancy testing at the community level, primarily through ASHA workers. This initiative aims

to ensure early detection of pregnancy, facilitating timely antenatal care and informed reproductive choices. It is a simple urine-based test kit. Understanding the distractors is crucial for public health literacy: NIKSHAY (Option B) is the unified ICT portal for Tuberculosis (TB) patient management and tracking in India. NIKUSTH (Option C) is a similar digital platform specifically designed for the surveillance and management of Leprosy cases. AXSHYA (Option D) refers to a civil society project aimed at improving the reach and quality of TB services. Therefore, while these programs are all vital components of India's health infrastructure, NISHCHAY is the only one dedicated to pregnancy diagnosis. This kit plays a significant role in reducing maternal mortality by bringing diagnostic services directly to the doorsteps of rural and underserved populations.

Question 74. What is the most effective indicator for assessing the overall disease burden?

A. Quality-adjusted life years (QALY)

B. Health adjusted life expectancy (HALE)

C. Disability adjusted life years (DALY)

D. Disability-free life expectancy (DFLE)

Correct answer: C

The Disability Adjusted Life Year (DALY) is a composite time-based measure that combines years of life lost due to premature mortality (YLL) and years lived with a disability (YLD). It is widely considered the most effective indicator for assessing the global burden of disease because it quantifies the "gap" between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability. Quality-adjusted life years (QALY, Option A) are primarily used in cost-utility analysis to measure the quality and quantity of life gained from an intervention. Health adjusted life expectancy (HALE, Option B) estimates the number of years a person can expect to live in "full health". Disability-free life expectancy (DFLE, Option D) measures the remaining years of life spent without any functional limitations. DALY stands out because it captures both fatal and non-fatal health outcomes in a single metric, allowing for a comprehensive comparison across different diseases and populations.

Question 75. Researchers plan to study the relationship between maternal smoking during pregnancy, reported at antenatal visits, and newborn birth weight recorded immediately after delivery. Which study design is most suitable for analyzing this association?

A. Prospective cohort

B. Retrospective cohort

C. Case control

D. Cross sectional

Correct answer: A

A prospective cohort study is the most appropriate design because the researchers start with a defined exposure (maternal smoking status reported during antenatal visits) and follow the participants forward in time to observe the outcome (birth weight recorded at delivery). This design allows for the direct calculation of incidence and establishes a clear temporal relationship between exposure and outcome. A retrospective cohort (Option B) would involve looking back at historical records for both exposure and outcome, which is not the case here as the data is collected sequentially. A case-control study (Option C) would start with the outcome (e.g., low birth weight infants) and look backward to find exposures, which is less efficient for a common exposure like smoking. A cross-sectional study (Option D) measures exposure and outcome at a single point in time, failing to provide temporal evidence. Therefore, the longitudinal nature of tracking the pregnancy from early visits to birth identifies this specifically as a prospective cohort study.

Question 76. For a population of 10,000, what is the minimum land area needed to implement the trench method of controlled waste tipping effectively?

A. 4 acres

B. 5 acres

C. 2 acres

D. 1 acre

Correct answer: B

The trench method of controlled tipping (a type of sanitary landfill) is commonly used for solid waste disposal in small towns or rural areas. In this method, trenches are dug, waste is deposited, compacted, and then covered with soil daily.

For planning purposes in community medicine/public health, standard guidelines suggest that for a population of 10,000, a minimum of about 5 acres of land is required to ensure proper functioning of the trench method over a reasonable period.

This land requirement considers:

1.

1.

Daily waste generation

2.

2.

Space for trench digging and covering

3.

3.

Future expansion and rotation of trenches

4.

4.

Safe distance from habitation and water sources

Why other options are incorrect:

(A)

4 acres: Slightly inadequate for long-term use

(C)

2 acres: Too small → leads to overcrowding and improper disposal

(D)

1 acre: Grossly insufficient

Question 77. In this scenario, what is the mode of transmission of the disease from the boy's grandmother to his father and then to the boy?

A. X-linked dominant

B. X-linked recessive

C. Autosomal dominance

D. Autosomal recessive

Correct answer: C

The inheritance pattern described involves a trait passed directly from a grandmother to her son, and then from that son to his own male child. The key diagnostic feature here is the presence of male-to-male transmission (father to son), which definitively excludes X-linked patterns. In X-linked dominant (Option A) or X-linked recessive (Option B) inheritance, a father contributes his Y chromosome to his son, not his X chromosome; therefore, he cannot pass an X-linked trait to male offspring. Autosomal recessive (Option D) typically presents with a "horizontal" pattern, often skipping generations and requiring both parents to be carriers. Autosomal dominance (Option C) is characterized by a "vertical" pattern where the trait appears in every generation, affecting both sexes equally and allowing for direct father-to-son transmission. Because the condition is passed directly through consecutive generations without gender restrictions, it follows the classic rules of autosomal dominant inheritance. This genetic knowledge is essential for accurate family counseling and risk assessment.

Question 78. Which method would be most effective for presenting statistical data to highlight the importance of routine antenatal care to a small, uneducated village during a rural health posting?

A. Pictogram

B. Line diagram

C. Histogram

D. Frequency polygon

Correct answer: A

When communicating health statistics to a population with low literacy levels, such as an uneducated rural village, visual simplicity is paramount. A pictogram (Option A) is the most effective method because it uses easily recognizable symbols or pictures to represent data, making complex concepts intuitive and engaging. For example, a picture of a mother can represent ten pregnant women, allowing villagers to quickly grasp ratios without needing advanced numeracy. Line diagrams (Option B) are better for showing trends over time but require an understanding of X-Y coordinates. Histograms (Option C) are used to show frequency distributions of continuous data and can appear cluttered and confusing to those unfamiliar with statistical charts. Frequency polygons (Option D) are even more abstract, using lines to connect midpoints of intervals. Therefore, the pictogram's ability to simplify data into relatable imagery makes it the gold standard for community health education in underserved rural settings where traditional literacy is limited.

Question 79. Which treatment kit would you recommend for a 20-year-old woman presenting with vaginal discharge and lower abdominal pain after recent sexual intercourse, following the syndromic management approach for sexually transmitted infections at a Suraksha clinic in the local primary health center?

A. Blue

B. Red

C. Black

D. Yellow

Correct answer: D

The syndromic management of Sexually Transmitted Infections (STIs) uses color-coded kits to simplify treatment based on clinical presentations. For a woman presenting with the syndrome of lower abdominal pain accompanied by vaginal discharge, Kit 6 (the Yellow kit) is the correct recommendation. This kit is specifically designed to treat Pelvic Inflammatory Disease (PID), which is the likely diagnosis in this scenario. It typically contains Cefixime, Doxycycline, and Metronidazole to cover common pathogens like Neisseria gonorrhoeae, Chlamydia trachomatis, and anaerobes. The Blue kit (Option A) is for vaginal discharge alone (Bacterial Vaginosis or Trichomoniasis). The Red kit (Option B) is for vaginal discharge specifically suspected as

Candidiasis. The Black kit (Option C) is for inguinal buboes. Because the patient has symptoms suggesting an ascending infection (abdominal pain), the broader coverage provided by the Yellow kit is necessary. This standardized approach ensures that patients receive effective, immediate treatment at the primary care level, even without complex diagnostic laboratory testing.

Question 80. Which term is used to describe the practice of disseminating a particular belief system with the aim of influencing public opinion and behavior?

A. Health doctrine

B. Health propaganda

C. Health education

D. Health information

Correct answer: B

Health propaganda is defined as the communication of information or a particular belief system with the specific intent to influence public opinion and behavior, often using emotional appeals rather than objective facts. It is typically one-way and aims for immediate persuasion or "indoctrination". In contrast, health education (Option C) is a two-way process designed to empower individuals with knowledge, allowing them to make their own informed health decisions based on scientific evidence. Health information (Option D) refers to the dissemination of raw, objective health facts without a specific behavioral agenda. A health doctrine (Option A) is a formal set of principles or beliefs held by an organization. The key differentiator for propaganda is its manipulative nature and focus on behavioral control rather than autonomous learning. Understanding this distinction is vital for public health practitioners to ensure their community outreach remains ethical, empowering, and grounded in the principles of authentic education rather than mere influence.

Question 81. In clinical trials, to ensure reliable and valid results, selection bias—where the sample may not accurately represent the broader population—must be minimized. Which method is primarily used in clinical trial protocols to reduce the risk of selection bias?

A. Selecting the population

B. Intervention

C. Randomization

D. Written informed consent

Correct answer: C

Randomization is the hallmark of a high-quality clinical trial and is the primary method used to

eliminate or minimize selection bias. It involves assigning participants to different study groups (e.g., treatment vs. control) purely by chance, ensuring that both known and unknown confounding variables are distributed equally between the groups. This process makes the groups comparable and ensures that any observed differences in outcomes can be attributed to the intervention itself rather than baseline participant characteristics. Selecting the population (Option A) relates to the external validity or generalizability of the study but doesn't fix internal bias between groups. Intervention (Option B) is the treatment being tested. Written informed consent (Option D) is a fundamental ethical requirement to protect patient autonomy but does not impact the statistical validity or the reduction of bias. Therefore, randomization remains the most powerful statistical tool for maintaining the integrity and scientific rigor of a randomized controlled trial (RCT).

Question 82. According to World Health Organization (WHO) guidelines, what is the minimum number of antenatal visits recommended for a pregnant woman to achieve optimal maternal and fetal health outcomes?

A. 8

B. 4

C. 12

D. 14

Correct answer: A

In 2016, the World Health Organization (WHO) updated its antenatal care (ANC) guidelines, increasing the recommended minimum number of visits from four to eight. This change was based on evidence showing that a higher frequency of contacts between a pregnant woman and healthcare providers is associated with a lower probability of stillbirths and improved overall maternal and neonatal health outcomes. The older "focused" ANC model, which recommended only four visits (Option B), is now considered the absolute baseline but no longer the ideal standard for comprehensive care. Options C (12 visits) and D (14 visits) represent even higher frequencies that may be utilized in high-risk pregnancies but are not the general WHO minimum recommendation. These eight contacts are strategically timed to screen for complications like pre-eclampsia, provide essential nutrition counseling, and prepare the mother for a safe birth. Adhering to the eight-visit model is a critical global health strategy for reducing preventable maternal and newborn morbidity and mortality.

Question 83. Given a population of 10,000, what implication does a sex ratio greater than 1000 have?

A. Males are less than 500

B. Females are less than 500

C. Males are less than 5000

D. Females are less than 5000

Correct answer: C

In demography, the sex ratio is typically defined as the number of females per 1000 males. Therefore, a sex ratio greater than 1000 (e.g., 1050) indicates that there are more females than males in that population. In a total population of 10,000, if the ratio is precisely 1000, there would be an equal split: 5000 males and 5000 females. If the ratio exceeds 1000, the female count must be higher than 5000, which logically necessitates that the male count must be less than 5000 (Option C). Option D is incorrect as it describes the opposite situation. Options A and B are numerically inaccurate as they suggest an impossible population distribution for a group of 10,000. A high sex ratio can be indicative of various social factors, including male migration, differences in life expectancy, or better health outcomes for women. Understanding these ratios is essential for community health planning and resource allocation. Thus, "males are less than 5000" is the definitive statistical implication of a ratio > 1000.

Question 84. Identify the structure labeled in the cross-section image of the trachea displayed below.

A. Trachealis muscle

B. Tracheal cartilage

C. Submucosal glands

D. Perichondrium

Correct answer: A

The cross-section of the trachea reveals a tube held open by C-shaped hyaline cartilage rings. The posterior "gap" between the open ends of these cartilage rings is bridged by a band of smooth muscle known as the Trachealis muscle. In the provided image, the arrow specifically points to this posterior muscular band. The Tracheal cartilage (Option B) forms the rigid anterior and lateral framework shown as the outer gray ring. Submucosal glands (Option C) are located deep to the epithelium but would appear as small glandular structures rather than a distinct posterior muscle band. The perichondrium (Option D) is the thin layer of dense connective tissue that surrounds the cartilage itself. The trachealis muscle is functionally important as it allows the esophagus (located directly posterior) to expand during swallowing and can contract to narrow the tracheal lumen to increase airflow velocity during coughing. Therefore, based on its location and structure, it is definitively the trachealis muscle.

Question 85. A 55-year-old woman presents with chronic mucopurulent discharge from her left eye and swelling near the medial canthus, suggestive of nasolacrimal duct obstruction. What is the most appropriate treatment for this condition?

A. Dacryocystorhinostomy

B. Dacryocystectomy

C. Conjunctivo-cysto rhinostomy

D. Balloon catheter dilation

Correct answer: A

The patient presents with symptoms of chronic dacryocystitis (mucopurulent discharge and swelling at the medial canthus) caused by a permanent obstruction of the nasolacrimal duct. The gold-standard surgical treatment for this condition in an adult is Dacryocystorhinostomy (DCR). This procedure involves creating a new permanent drainage pathway between the lacrimal sac and the nasal cavity by bypassing the obstructed duct. Dacryocystectomy (DCT, Option B) involves the total removal of the lacrimal sac; while it cures the infection, it leaves the patient with permanent tearing (epiphora) and is usually reserved for patients with sac tumors or those unsuitable for DCR. Conjunctivo-cysto rhinostomy (Option C) is a more complex bypass used only when the canaliculi are also obstructed. Balloon catheter dilation (Option D) is occasionally used for partial obstructions but is much less effective for established chronic cases than a formal DCR. Therefore, DCR is the definitive curative procedure to restore tear drainage and eliminate the source of infection.

Question 86. A young woman presents to the ENT OPD with sudden-onset unilateral hearing loss, tinnitus, and vertigo following an acute otitis media episode two weeks ago. Initially, the Rinne and fistula tests were positive, but she had declined treatment. She now reports worsened hearing in the affected ear, and the fistula test is negative. What is the most likely result of the Rinne test in this scenario?

A. True positive

B. True negative

C. False positive

D. False negative

Correct answer: D

The patient’s initial symptoms (vertigo, tinnitus, and hearing loss) following ASOM, combined with a positive fistula test, indicated a labyrinthine fistula. However, the subsequent "worsened hearing loss" and the "negative fistula test" suggest that the inner ear has now completely failed, resulting in total sensorineural hearing loss (dead ear). In a dead ear, the Rinne test on the affected side will yield a false negative result. This occurs because when the tuning fork is placed on the mastoid bone (bone conduction), the sound is transmitted through the skull and

heard by the healthy contralateral ear. Since the patient "hears" the sound by bone but cannot hear it by air conduction in the dead ear, it appears as if . Option A (True positive) occurs in normal hearing. Option B (True negative) occurs in conductive hearing loss (with a functioning cochlea). Option C is not a standard clinical interpretation of the Rinne test. Therefore, the "crossover" of sound to the good ear is the defining mechanism of a false negative Rinne.

Question 87. Which of the following statements accurately describes the Little's area?

A. Keisselbach's plexus is present in the Little' area

B. It is situated at the postero-inferior part of the nasal septum

C. Least common site for epistaxis

D. Anastomoses of 7 major arteries occur here

Correct answer: A

Little's area is a clinically significant region located on the antero-inferior part of the nasal septum (Option B is incorrect). It is famous for the presence of Kiesselbach’s plexus (Option A), which is a dense network of anastomosing vessels. This area is the most common site for epistaxis (nosebleeds), accounting for approximately 90% of cases, due to its vascularity and exposure to trauma and dry air (Option C is incorrect). The plexus is formed by the anastomosis of four (not seven) major arteries: the Anterior ethmoidal, Sphenopalatine, Greater palatine, and Superior labial arteries. Recognizing Little's area is essential for clinicians as it is the primary target for anterior nasal packing or chemical cautery with silver nitrate to stop common nosebleeds. Therefore, the presence of the Kiesselbach's plexus is the definitive anatomical hallmark of this region. Accurate localization helps in directing effective emergency treatment for pediatric and adult patients alike.

Question 88. A 35-year-old woman presents with gradual hearing loss and pulsatile tinnitus in her right ear. Examination reveals a reddish mass behind the tympanic membrane, an audible mastoid bruit, and a negative Rinne test. What is the most likely diagnosis?

A. CSOM (Chronic Suppurative Otitis Media)

B. ASOM (Acute Suppurative Otitis Media)

C. Mastoiditis

D. Glomus tumor

Correct answer: D

The combination of pulsatile tinnitus (hearing one's own heartbeat), conductive hearing loss

(negative Rinne test), and a reddish-blue mass visible behind the tympanic membrane is the pathognomonic clinical presentation for a Glomus tumor (specifically Glomus jugulare or tympanicum). The presence of an audible bruit over the mastoid further confirms the highly vascular nature of this benign paraganglioma. CSOM (Option A) and ASOM (Option B) involve infection, presenting with discharge and pain respectively, rather than a pulsatile vascular mass. Mastoiditis (Option C) is a complication of infection involving retroauricular swelling and systemic fever, not a vascular neoplasm. Glomus tumors often present with the "rising sun" sign behind the drum. Diagnosis is typically supported by imaging (CT/MRI) showing a "salt and pepper" appearance. Therefore, given the specific vascular symptoms and auscultatory findings, glomus tumor is the definitive diagnosis. Treatment usually involves surgical resection or embolization depending on the extent of the tumor.

Question 89. In a child with recurrent upper respiratory tract infections, nasal obstruction, hearing difficulties, and a high-arched palate, what is the most appropriate treatment approach?

A. Tonsillectomy

B. Adenoidectomy

C. Adenoidectomy with grommet insertion

D. Myringotomy with grommet insertion

Correct answer: C

The child is displaying the classic signs of chronic adenoid hypertrophy, often referred to as "adenoid facies" (mouth breathing, high arched palate, nasal obstruction). The "hearing problems" suggest the concurrent development of Otitis Media with Effusion (OME), also known as "glue ear," which occurs due to adenoids blocking the Eustachian tube. The most comprehensive and standard treatment approach is an Adenoidectomy to remove the primary obstruction and Grommet insertion (myringotomy with ventilation tubes) to drain the middle ear fluid and restore hearing. Adenoidectomy alone (Option B) may not immediately resolve the established ear effusion. Tonsillectomy (Option A) is indicated for throat infections but does not address the nasal or ear issues. Myringotomy with grommets alone (Option D) treats the symptoms but fails to remove the underlying cause of Eustachian dysfunction. Therefore, the dual surgical approach is necessary to address both the airway and auditory components of the child's condition simultaneously.

Question 90. A patient presents with black, foul-smelling nasal discharge and a black necrotic mass occupying the nasal cavity, causing erosion of

Examination Paper December 2021 Question

the septum and hard palate. What is the main risk factor for this condition?

A. Hypothyroidism

B. Diabetes

C. Hypertension

D. Foreign body

Correct answer: B

The clinical presentation—black, necrotic nasal mass and discharge with severe bony erosion—is the hallmark of invasive Mucormycosis (specifically Rhino-cerebral Mucormycosis). This is a devastating fungal infection caused by angioinvasive molds of the order Mucorales. The absolute primary risk factor for this condition is uncontrolled Diabetes mellitus, especially when complicated by diabetic ketoacidosis (DKA). The fungus thrives in high-glucose, acidic environments. Hypothyroidism (Option A) and Hypertension (Option C) are not recognized as primary predisposing factors for fungal invasion. While a foreign body (Option D) can cause foul discharge and localized necrosis, it would not lead to the rapid, life-threatening tissue destruction and systemic involvement typical of mucormycosis. Management of this condition is a medical and surgical emergency requiring aggressive debridement, intravenous Amphotericin B, and strict glycemic control. Without rapid intervention, the infection can spread into the orbit and brain with nearly 100% mortality.

Question 91. What objective tests are utilized to assess an individual's hearing ability?

A. BERA, OAE and Tympanometry

B. BERA, OAE and PTA

C. BERA, PTA and Tympanometry

D. A, B, C and D

Correct answer: A

Objective hearing tests are those that do not require the active cooperation or subjective response of the patient, making them essential for infants and non-cooperative individuals. BERA (Brainstem Evoked Response Audiometry), OAE (Otoacoustic Emissions), and Tympanometry are all categorized as objective tests. BERA measures the electrical activity of the auditory nerve. OAE measures the sound generated by the outer hair cells of the cochlea. Tympanometry (Option D) evaluates middle ear function and pressure. In contrast, PTA (Pure Tone Audiometry, Option C) is a subjective test because it requires the patient to signal when they hear a specific sound. Therefore, any option including PTA is technically incorrect when specifically asked for "objective" tests. Thus, the combination of BERA, OAE, and Tympanometry (Option A) is the definitive set of objective auditory diagnostic tools. Understanding this classification is fundamental for planning neonatal hearing screenings and

evaluating adult patients with suspected malingering.

OPHTHALMOLOGY

Question 92. An 18-year-old male presents with eye pain, photophobia, and redness a few days after a minor injury while climbing a tree. Slit-lamp examination reveals distinct lesions surrounding a central focus of infection. Which diagnosis best explains these findings?

A. Reverse hypopyon

B. Dendritic ulcer

C. Ring abscess

D. Satellite lesion

Correct answer: D

The history of ocular trauma involving vegetative matter (climbing a tree) followed by a painful corneal infection is a classic clinical clue for fungal keratitis. The hallmark slit-lamp finding described—"distinct lesions surrounding a central infection site"—refers to satellite lesions. These are smaller infiltrates located away from the main primary ulcer, representing the outward spread of fungal hyphae through the corneal stroma. A reverse hypopyon (Option A) refers to emulsified silicone oil in the anterior chamber. A dendritic ulcer (Option B) is pathognomonic for Herpes Simplex Virus (HSV) and has a branching tree-like pattern. A ring abscess (Option C) can occur in advanced Pseudomonas or Bacillus keratitis but is not the specific "surrounding lesion" pattern described here. Fungal ulcers are often dry in appearance with feathery margins. Therefore, satellite lesions are the definitive finding confirming a fungal etiology in this patient. Treatment involves topical antifungals like natamycin. .

Question 93. In a patient with a corneal scar whose visual acuity improves when tested with a pinhole, what is the most likely cause of the reduced vision?

A. Glaucoma

B. Malingering

C. Irregular astigmatism

D. Cataract

Correct answer: C

When a patient's visual acuity improves during the pinhole test, it definitively indicates that the vision loss is due to a refractive error rather than primary organic pathology. The pinhole works by blocking peripheral distorted light rays and allowing only central parallel rays to reach the macula. In a patient with a corneal scar, the surface of the cornea becomes uneven, leading

specifically to irregular astigmatism (Option C). This type of astigmatism cannot be corrected by standard glasses but is partially bypassed by the pinhole. Vision loss from Glaucoma (Option A), which involves optic nerve damage, would not improve with a pinhole. Malingering (Option B) is a psychological state where the patient purposefully feigns loss. A Cataract (Option D) involves a clouded lens; while some cataracts allow minor improvement with a pinhole, the direct link between a corneal scar and distorted light makes irregular astigmatism the most accurate clinical cause. Rigid gas permeable contact lenses are the preferred correction for this condition. .

Question 94. A 5-year-old girl presents with markedly unequal visual acuity between her eyes (right eye 20/60, left eye 20/20), while her eye examination, including the fundus, is otherwise normal. What is the most likely diagnosis?

A. Brain lesion

B. Retinoblastoma

C. Congenital cataract

D. Amblyopia

Correct answer: D

Amblyopia, commonly known as "lazy eye," is a developmental disorder where the brain fails to process inputs from one eye, favoring the other. The hallmark of amblyopia is a significant difference in visual acuity between the two eyes (anisometropia) in the setting of a physically normal eye examination. Because the fundus exam and external structures are normal, primary pathologies like Retinoblastoma (Option B, which causes leukocoria) or Congenital Cataracts (Option C, which shows a cloudy lens) are ruled out. A brain lesion (Option A) would typically cause visual field defects or other neurological signs rather than isolated reduced acuity in one eye. Amblyopia occurs because the visual cortex does not develop properly during the "critical period" of childhood when the brain receives blurred or suppressed images from the affected eye. Therefore, given the age and the "normal" structural exam, amblyopia is the definitive diagnosis. Treatment involves patching the stronger eye to force the brain to use the weaker one. .

Question 95. The leading cause of preventable childhood blindness is:

A. Cardiac tamponade

B. Fat necrosis

C. Hemothorax

D. Pulmonary embolism

Correct answer: A

A stab wound to the left side of the chest (the precordial area) often penetrates the pericardium and the heart itself. In a forensic autopsy, a common and lethal finding is cardiac tamponade (Option A). As the heart bleeds into the relatively inelastic pericardial sac, the pressure rises rapidly, preventing the heart chambers from filling and leading to sudden death.
While a hemothorax (Option C) (blood in the pleural cavity) is also a very frequent finding in chest trauma, the mention of the "left side" near the heart specifically emphasizes tamponade as the more immediate and classically tested lethal finding. Fat necrosis (Option B) is a tissue change seen in pancreatitis or breast trauma, not acute stab wounds. Pulmonary embolism (Option D) is a vascular event usually originating from leg veins. Therefore, because the pericardial sac acts as a trap for blood from a cardiac wound, tamponade is the definitive finding.

Question 96. A 7-year-old boy presents with a white pupillary reflex (leukocoria) and undergoes enucleation of the affected eye. Histopathology reveals Flexner–Wintersteiner rosettes. What is the most likely diagnosis?

A. Retinoblastoma
B. Medulloblastoma
C. Rhabdomyosarcoma
D. Astrocytoma

Correct answer: A

The clinical presentation of leukocoria (white pupillary reflex) in a young child is the most common sign of retinoblastoma, the most frequent primary intraocular malignancy of childhood. The definitive diagnostic hallmark provided is the microscopic finding of Flexner-Wintersteiner rosettes. These rosettes are pathognomonic for retinoblastoma and consist of clusters of columnar or tall cuboidal cells arranged around a clear central lumen, representing an attempt at photoreceptor differentiation. Medulloblastoma (Option B) and Astrocytoma (Option D) are central nervous system tumors that do not primary involve the globe or show these specific rosettes. Rhabdomyosarcoma (Option C) is an orbital tumor that can cause protrusion but arises from soft tissue, not retinal tissue. Retinoblastoma is caused by mutations in the tumor suppressor gene. Therefore, given the age, the classic "cat's eye" reflex, and the pathognomonic histology shown in the image, retinoblastoma is the definitive diagnosis. .

Question 97. Which anatomical plane, located between the rectus abdominis muscle and the transversalis fascia, contains the neurovascular structures that supply the abdominal wall?

A. Between the internal oblique and external oblique

B. Deep to transversus abdominis

C. Between the internal oblique and rectus abdominis

D. Between the internal oblique and transversus abdominis

Correct answer: D

The abdominal wall is composed of several muscle layers, and the primary neurovascular structures (including the lower intercostal, subcostal, and iliohypogastric nerves) travel within a specific anatomical plane. This neurovascular plane is situated between the internal oblique and the transversus abdominis muscles. This is analogous to the intercostal space where the neurovascular bundle travels between the internal and innermost intercostal muscles. Option A (between internal and external oblique) and Option C (between internal oblique and rectus) do not house the primary nerve trunks. Option B (deep to transversus abdominis) refers to the preperitoneal space. Understanding this plane is clinically vital for surgeons when performing abdominal incisions or for anesthesiologists performing a TAP (Transversus Abdominis Plane) block, where local anesthetic is injected exactly into this space to provide regional analgesia. Therefore, the plane between the two deepest flat muscles of the abdomen is the correct anatomical answer. .

Question 98. What is the most effective treatment for a 3-year-old child diagnosed with 15-degree accommodative esotropia?

A. Orthoptic exercise

B. Surgery

C. Relieving prism

D. Refractive correction

Correct answer: D

Accommodative esotropia is a type of inward eye turn caused by excessive convergence that occurs when a farsighted (hyperopic) child tries to clear their vision. In a 3-year-old child, the most effective and standard first-line treatment is refractive correction (Option D) with full-cycloplegic spectacles. By correcting the underlying farsightedness, the need for excessive accommodation—and thus the associated convergence/crossing—is eliminated, often

straightening the eyes immediately. Orthoptic exercises (Option A) may have a limited role in convergence insufficiency but are not the primary treatment for accommodative crossing. Surgery (Option B) is contraindicated as the primary treatment because the crossing is refractive; operating could lead to an outward turn (exotropia) later. Relieving prisms (Option C) are used for small paralytic deviations rather than primary childhood esotropia. Therefore, prescription glasses are the definitive and most appropriate clinical intervention for this condition. Early correction is essential to prevent permanent amblyopia and ensure the development of normal binocular vision. .

Question 99. A patient who wears contact lenses presents with two months of eye watering, redness, and a foreign body sensation. What is the most likely diagnosis?

A. Acute trachoma

B. Follicular conjunctivitis

C. Giant papillary conjunctivitis

D. Spring catarrh

Correct answer: C

The clinical history of a contact lens wearer with chronic discomfort and foreign body sensation is highly suggestive of an immune response to the lens material or deposits. The pathognomonic visual finding shown in the image—large, flattened papillae on the superior tarsal conjunctiva, often described as a "cobblestone" appearance—is diagnostic of Giant Papillary Conjunctivitis (GPC). GPC is effectively a mechanical and allergic reaction. Acute trachoma (Option A) presents with follicles and scarring, often linked to Chlamydia infection in endemic areas. Follicular conjunctivitis (Option B) shows small, translucent lumps (follicles) rather than these large papillae. Spring catarrh (Option D), or Vernal Keratoconjunctivitis, also shows cobblestone papillae but is typically seen in young boys without a contact lens history. Because the patient specifically has a contact lens risk factor and classic papillary changes, GPC is the correct diagnosis. Management involves discontinuing lens wear and using topical antihistamines. .

Question 100. The recommended approach for managing an angular dermoid cyst is:

A. Surgical excision

B. Radiotherapy

C. Antibiotics

D. Intralesional steroids

Correct answer: A

An angular dermoid cyst is a congenital developmental cyst, most commonly found at the

lateral end of the eyebrow (external angular dermoid). These cysts contain keratin, hair follicles, and sebaceous material. The standard and most effective management is complete surgical excision (Option A). This is typically performed for aesthetic reasons and to prevent complications such as secondary infection or progressive bony erosion. Radiotherapy (Option B) is strictly used for malignancies and has no role in benign dermoid cysts. Antibiotics (Option C) are only indicated if the cyst becomes acutely infected (abscess), but they will not remove the cyst itself. Intralesional steroids (Option D) are used for inflammatory conditions like chalazia or hemangiomas, not for sebum-filled dermoid cysts. Therefore, surgical removal remains the definitive curative approach. Clinicians must ensure the entire cyst wall is removed to prevent recurrence. This procedure is generally considered low-risk and highly effective. .

Question 101. For a child with myopia, presenting with symptoms such as holding books close and squinting while watching TV, which type of lenses is recommended to correct his vision?

A. Convex

B. Concave

C. Cylindrical

D. Concave + convex

Correct answer: B

Myopia, or nearsightedness, is a refractive error where the eye is too powerful or too long, causing light rays to focus in front of the retina rather than directly on it. This results in clear near vision but blurred distance vision, explaining the child's behavior. To correct myopia, concave (minus) lenses (Option B) are required. These are "diverging" lenses that move the focal point backward, precisely positioning it onto the retinal surface. Convex (plus) lenses (Option A) are "converging" lenses used to correct hypermetropia (farsightedness). Cylindrical lenses (Option C) are used to correct astigmatism by compensating for an irregular corneal shape. A combination of concave and convex (Option D) refers to bifocal or complex multifocal lenses which are not the standard primary correction for simple childhood myopia. Therefore, the concave lens is the definitive pharmacological and physical corrective tool for a nearsighted child. .

Question 102. A 45-year-old man presents to the emergency department with sudden vision loss and painful eye movements. Examination reveals a relative afferent pupillary defect in the affected eye, a normal-appearing optic disc, and a central scotoma on visual field testing. What is the most likely diagnosis?

A. Optic nerve glioma

B. Optic neuritis

C. Eale's disease

D. Neuroretinitis

Correct answer: B

The clinical triad of sudden vision loss, pain with eye movements, and a central scotoma (blind spot in the center of the field) is highly characteristic of optic neuritis. The presence of a Relative Afferent Pupillary Defect (RAPD) confirms a lesion of the optic nerve. Crucially, the finding that the optic disk appears normal points specifically to retrobulbar neuritis, a form of optic neuritis where the inflammation occurs behind the globe, leaving the visible disk margin sharp and healthy. Optic nerve glioma (Option A) causes progressive, painless proptosis in children. Eale's disease (Option C) is a peripheral retinal vasculitis causing vitreous hemorrhage. Neuroretinitis (Option D) would show visible disk swelling accompanied by a macular star. Optic neuritis is frequently the presenting symptom of Multiple Sclerosis. Therefore, because the symptoms localize to the nerve without visible disk edema, Option B is the definitive diagnosis. .

Examination Paper December 2021 Question
discharge show bacteria with bipolar staining.
Which staining method should be used to help
confirm the diagnosis?
(A) Neisser stain
(B) Wayson's stain
(C) Albert's stain
(D) McFadyean's stain
AAns

(B) Wayson's stain

The patient’s history of flea bites and the clinical triad of high fever, painful lymphadenopathy (buboes), and systemic shock (hypotension) is pathognomonic for Bubonic Plague, caused by Yersinia pestis. A hallmark microbiological feature of Yersinia is its bipolar staining, where the ends of the bacilli stain more intensely, giving them a "safety-pin" appearance. Wayson's stain is the specific diagnostic technique used to demonstrate this bipolar staining pattern in clinical samples.

Neisser and Albert's stains (Options A and C) are used to visualize the metachromatic granules of Corynebacterium diphtheriae. McFadyean's stain (Option D) is a specialized polychrome methylene blue stain used to detect the capsules of Bacillus anthracis. Therefore, because Wayson's stain is specifically designed for the rapid identification of the "safety-pin"

morphology of the plague bacilli, it is the definitive choice for this farmer's diagnosis.

Question 103. Which of the following conditions is characterized by the absence of P waves?

A. Ventricular tachycardia

B. Focal atrial tachycardia

C. Ventricular fibrillation

D. Atrial fibrillation

Correct answer: D

Atrial fibrillation (AF) is a common supraventricular tachyarrhythmia characterized by the complete absence of distinct P waves on an electrocardiogram . Instead of an organized P wave representing atrial depolarization, the baseline shows fine or coarse fibrillatory waves. The QRS complexes occur at irregular intervals, leading to the classic "irregularly irregular" pulse. Ventricular tachycardia (Option A) is a wide-complex rhythm where P waves may be buried or dissociated but not fundamentally absent in the same physiological sense as AF. Focal atrial tachycardia (Option B) involves a specific ectopic focus and typically produces a recognizable, albeit abnormal, P wave. Ventricular fibrillation (Option C) is a pulseless cardiac arrest rhythm where all complexes (P, QRS, and T) are absent and replaced by chaotic, disorganized electrical activity. Therefore, AF is the definitive choice for a recognizable rhythm characterized specifically by the loss of the P wave due to disorganized atrial activity. .

mm Hg), and metabolic acidosis. What is the
most likely cause of his current condition?

(A) Cardiogenic shock

(B) Septic shock

(C) Hypovolemic shock

(D) Neurogenic shock

AAns

(C) Hypovolemic shock.

The patient presents with trauma (motorcycle accident), a confirmed source of massive internal bleeding (ruptured spleen), and signs of circulatory collapse including low blood pressure (80/60 mm Hg) and metabolic acidosis . This is the quintessential clinical picture of Hypovolemic Shock

(specifically hemorrhagic shock) (Option C). The sudden loss of a large volume of blood results in inadequate tissue perfusion and cellular hypoxia, leading to acidosis. Cardiogenic shock (Option A) results from heart failure, while Septic shock (Option B) requires time to develop from infection. Neurogenic shock (Option D) usually presents with bradycardia and warm skin following a spinal cord injury. Because the primary insult is the acute hemorrhage from the splenic rupture, hypovolemia is the definitive cause of the patient’s shock. Management mandates rapid volume resuscitation followed by urgent surgical intervention (splenectomy or repair) to stop the bleeding. .

Question 104. What would be the diagnosis in case the axis aligns with the "?" mark as depicted in the below diagram?

A. Right axis deviation

B. Normal axis

C. Left axis deviation

D. Extreme axis deviation

Correct answer: A

In a standard hexaxial reference system used for ECG interpretation, the heart's electrical axis is classified by its degree of orientation. The diagram depicts the quadrant between and with a question mark . This specific range is the definitive definition of Right Axis Deviation (RAD). A normal axis (Option B) typically falls between and . Left axis deviation (Option C) occurs when the axis is between and . Extreme axis deviation (Option D), also known as "no man's land," refers to the quadrant between and . RAD is frequently associated with right ventricular hypertrophy, chronic lung disease, or left posterior fascicular block. Because the marked area in the provided graphic corresponds exactly to the to sector, RAD is the correct anatomical and physiological diagnosis for the heart's electrical orientation. .

Question 105. Determine the rhythm displayed in the provided ECG rhythm strip.

A. Atrial fibrillation

B. Atrial flutter

C. Normal sinus rhythm

D. AV block

Correct answer: C

The ECG strip shows features consistent with Normal Sinus Rhythm (NSR):

Key features visible:

1.

1.

Regular R-R intervals — complexes appear evenly spaced

2.
2.
P wave before every QRS — normal atrial depolarization
3.
3.
Heart rate ~60–100 bpm — within normal range
4.
4.
Narrow QRS complexes — normal ventricular conduction
5.
5.
Consistent morphology throughout the strip
Why other options are wrong:
(A)
Atrial Fibrillation : AF shows irregularly irregular R-R intervals with no distinct P waves, replaced by chaotic fibrillatory baseline. This ECG shows regular rhythm with clear P waves : ruling out AF completely.
(B)
Atrial Flutter : Flutter shows a characteristic "sawtooth" pattern of flutter waves (F waves) at ~300 bpm with regular ventricular response. No such sawtooth baseline is seen here.
(D)
AV Block : AV block would show prolonged PR interval (1st degree), dropped QRS beats (2nd degree), or complete dissociation between P waves and QRS (3rd degree). None of these features are present here.

Question 106. A patient presents with chronic small bowel diarrhea. Duodenal biopsy reveals villous atrophy, and laboratory tests are positive for anti-endomysial antibodies and IgA tissue transglutaminase (TTG) antibodies. What is the most likely diagnosis?

A. Short bowel syndrome
B. Whipple's disease
C. Tropical sprue
D. Celiac sprue

Correct answer: D

The clinical and laboratory triad of persistent small bowel diarrhea, villous atrophy on biopsy, and positive IgA tissue transglutaminase (TTG) and anti-endomysial antibodies is

pathognomonic for Celiac sprue (Celiac disease) . This is an autoimmune-mediated enteropathy triggered by gluten ingestion in genetically susceptible individuals. Short bowel syndrome (Option A) results from the physical loss of intestinal length, typically after surgery. Whipple's disease (Option B) involves infection with Tropheryma whipplei and shows PAS-positive macrophages on biopsy. Tropical sprue (Option C) also causes villous atrophy and malabsorption but is associated with travel to endemic regions and is not linked to these specific autoantibodies. Because the TTG and endomysial antibodies are highly specific for gluten-sensitive enteropathy, Celiac sprue is the definitive diagnosis. Management requires a lifelong, strict gluten-free diet to allow the intestinal villi to recover and prevent long-term complications like lymphoma or osteoporosis. .

Question 107. Which condition is characterized by hypocalcemia, thymic hypoplasia, cardiac abnormalities, and a deletion on chromosome 22q11.2?

A. Williams syndrome

B. Pitt syndrome

C. DiGeorge syndrome

D. Cri-du-chat syndrome

Correct answer: C

DiGeorge syndrome is a microdeletion syndrome caused by the absence of a portion of chromosome 22q11.2. It is characterized by the classic mnemonic CATCH-22: Cardiac abnormalities (often conotruncal defects like Tetralogy of Fallot), Abnormal facies, Thymic hypoplasia (leading to T-cell deficiency), Cleft palate, and Hypocalcemia (due to parathyroid underdevelopment). Option A (Williams syndrome) involves a deletion on chromosome 7 and is associated with "elfin" facies and hypercalcemia. Option B (Pitt syndrome) and Option D (Cri-du-chat syndrome, caused by a 5p deletion) present with different constellations of intellectual disability and structural anomalies. Because the question explicitly links the 22q11.2 deletion with hypocalcemia and thymic underdevelopment, DiGeorge syndrome is the definitive diagnosis. Clinically, these patients require careful monitoring of calcium levels and immune function, alongside surgical management of cardiac defects. The phenotypic spectrum

can vary significantly between affected individuals. .

Question 108. Which of the following is the most common association with Tetralogy of Fallot?

A. Klinefelter's syndrome

B. Edwards syndrome

C. Downs syndrome

D. Turners' syndrome

Correct answer: C

Tetralogy of Fallot (TOF) is the most common cyanotic congenital heart disease. Among the provided genetic disorders, Downs syndrome (Trisomy 21) is the most frequently associated condition . While the most common heart defect specifically in Down syndrome is an endocardial cushion defect (AVSD), TOF occurs at a significantly higher rate in this population than in the general public. Klinefelter's (Option A, 47,XXY) and Turner's (Option D, 45,X) syndromes have different cardiac associations, such as coarctation of the aorta in Turner's. Edwards syndrome (Option B, Trisomy 18) features severe multi-organ defects and VSDs but is less commonly associated with surviving TOF cases than Down syndrome. TOF involves four specific defects: VSD, pulmonary stenosis, right ventricular hypertrophy, and an overriding aorta. Therefore, in clinical genetics and pediatrics, Trisomy 21 is recognized as the most frequent chromosomal association for children born with TOF. .

Question 109. An intern finds a patient unresponsive and performs an urgent ECG showing a persistent arrhythmia. Despite delivering a DC shock, the arrhythmia continues, and the patient remains unresponsive. What is the next best step in managing this patient?

A. Synchronized cardioversion

B. Start CPR

C. Deliver another DC shock

D. 1 mg epinephrine IV

Correct answer: B

The provided ECG shows Ventricular Fibrillation (VF), a disorganized pulseless rhythm. According to standard ACLS guidelines, after a DC shock (defibrillation) is delivered, the immediate and absolute next step is to resume high-quality chest compressions (CPR) for two minutes before re-checking the rhythm or pulse. Synchronized cardioversion (Option A) is strictly contraindicated for VF; it is used for organized tachycardias with a pulse. Delivering another immediate shock (Option C) is incorrect, as the heart requires mechanical support between attempts. Epinephrine 1 mg (Option D) is administered after the second shock, but the

immediate step after any shock is resuming CPR to maintain organ perfusion. Therefore, because the shock has just been delivered and the patient remains unresponsive, initiating the next cycle of CPR is the standard of care to maximize the success of subsequent interventions. .

Question 110. A 40-year-old man with Crohn’s disease presents with diffuse abdominal pain, and examination reveals rigidity and guarding, indicating peritoneal irritation. Imaging confirms an ileal perforation. What is the next step in management?

A. Antibiotics and NPO (nil per os, nothing by mouth)

B. Upper Gl endoscopy

C. Urgent surgical exploration with ileostomy

D. CT abdomen

Correct answer: C

The patient presents with ileal perforation, a life-threatening surgical emergency characterized by generalized peritonitis (rigidity and guarding) . In the context of Crohn's disease, a perforation mandates urgent surgical exploration to control the source of contamination. Because the tissue is typically inflamed and friable in Crohn’s, primary repair is often unsafe, making the creation of an ileostomy (Option C) the standard of care for fecal diversion and patient stabilization. Antibiotics and NPO (Option A) are supportive measures but cannot resolve a mechanical perforation. Upper GI endoscopy (Option B) is strictly contraindicated in a suspected or confirmed perforation due to the risk of worsening the pneumoperitoneum. While a CT (Option D) might have been used for diagnosis, once the perforation is already confirmed by imaging, the clinical priority shifts entirely to immediate surgery. Therefore, operative intervention is the definitive life-saving next step. .

Examination Paper December 2021 Question
SURGERY

Question 111. Which filter is used in a colposcope?

A. Black

B. Red

C. Green

D. Yellow

Correct answer: C

A colposcope is a specialized low-power microscope used to examine the cervix. A fundamental component of a colposcopic examination is the use of the green filter (Option C). The green filter (or blue-green filter) is specifically used to enhance the visualization of vascular patterns. It works by making red structures like blood vessels appear dark or black, providing sharp contrast against the surrounding lighter-colored epithelium. This is critical for identifying "atypical vessels," punctation, and mosaicism, which are hallmarks of high-grade cervical dysplasia and invasive cancer. Black (Option A), Red (Option B), and Yellow (Option D) filters do not provide this specific vascular contrast and are not standard components of the colposcopic diagnostic procedure. Therefore, the green filter is the definitive answer for the tool used to increase diagnostic accuracy during a colposcopy. Mastering its use is essential for any practitioner involved in cervical cancer screening and management. .

Examination Paper December 2021 Question
AAns

(B) Hydatidiform mole.

The ultrasound image displays a classic "snowstorm" or "honeycomb" appearance within the uterine cavity, characterized by a mass of multiple small, translucent vesicles . Combined with the clinical history of amenorrhea (3 months) in a young woman, this finding is pathognomonic for a Hydatidiform mole (gestational trophoblastic disease). Ectopic pregnancy (Option A) would show an empty uterus and a gestational sac elsewhere, typically in the fallopian tube. Renal cysts (Option C) and oligohydramnios (Option D) are fetal anomalies that would require the presence of a distinct fetus, which is absent in a complete mole. Molar pregnancies are associated with extremely high levels of serum beta-hCG and risk of choriocarcinoma. Therefore, based on the definitive "snowstorm" visual and the clinical context of pregnancy-related symptoms without a visible embryo, Hydatidiform mole is the correct diagnosis. Management involves urgent suction and evacuation of the uterus. .

Question 112. A patient presents with decreased proprioception, vibration, and fine touch on the same side as a spinal lesion, along with loss of pain and temperature sensation starting one or

two segments below the lesion on the opposite side. Based on these findings, what is the most likely diagnosis?

A. Weber's syndrome

B. Dejerine syndrome

C. Brown-Séquard syndrome

D. Wallenberg syndrome

Correct answer: C

The provided clinical findings—ipsilateral (same side) loss of proprioception/vibration and contralateral (opposite side) loss of pain and temperature—constitute the pathognomonic sensory dissociation seen in Brown-Séquard syndrome. This syndrome results from a functional hemisection of the spinal cord. The dorsal columns (proprioception) cross high in the medulla, so a cord lesion causes same-side loss. The spinothalamic tracts (pain/temperature) cross within the cord 1–2 segments above entry, resulting in opposite-side loss below the lesion. Weber's (Option A), Dejerine (Option B), and Wallenberg (Option D) syndromes are all brainstem lesions, which present with crossed cranial nerve and long-tract signs rather than this specific spinal cord pattern. Therefore, the sensory dissociation described is definitively localizing to a partial spinal cord injury. Consequently, Brown-Séquard syndrome is the correct neurological diagnosis. .

Question 113. A patient in an ambulance is unresponsive and connected to monitoring equipment showing a specific cardiac rhythm. What is the immediate next step in management?

A. Check for pulse and breathing

B. Chest compressions and defibrillation

C. Put the patient in left lateral position

D. Cardioversion

Correct answer: B

The monitor displays Ventricular Fibrillation (VF), which is a disorganized, non-perfusing "arrest" rhythm. For an unresponsive patient in VF, the immediate and absolute life-saving actions are starting high-quality chest compressions (CPR) and providing defibrillation as soon as possible. Checking for a pulse (Option A) should take no more than 10 seconds, but in the presence of VF on the monitor, the priority is shock and compressions. Left lateral position (Option C) is for

recovery, not cardiac arrest. Cardioversion (Option D) is synchronized to the QRS complex and is used for organized tachycardias; it cannot be used for VF because there are no complexes to synchronize to. Therefore, the rapid delivery of an unsynchronized shock (defibrillation) combined with mechanical support is the definitive standard of care. This protocol must be followed immediately to have any chance of restoring a viable cardiac rhythm.

Question 114. A 23-year-old woman presents with a one-week history of fever. Her cardiac monitor shows a specific rhythm. What is the most likely diagnosis?

A. Atrial fibrillation

B. Atrial flutter

C. Supra ventricular tachyarrhythmia

D. Ventricular tachyarrhythmia

Correct answer: A

The ECG strip shows classic features of Atrial Fibrillation (AF):

Key features visible:

1.

1.

Irregularly irregular R-R intervals : no two consecutive R-R intervals are equal

2.

2.

Absent P waves : replaced by chaotic, fibrillatory baseline (wavy/undulating baseline)

3.

3.

Narrow QRS complexes : normal ventricular conduction

4.

4.

No organized atrial activity visible Clinical context: 28-year-old woman with 1-week fever history — likely cause is myocarditis or rheumatic fever triggering AF.

Why other options are wrong:

(B)

Atrial Flutter : Shows a classic sawtooth pattern of regular flutter waves at ~300 bpm with regular ventricular response (usually 2:1, 3:1 block). This ECG shows irregular rhythm with no sawtooth : rules out flutter.

(C)

Supraventricular Tachycardia (SVT) : SVT shows a rapid but perfectly regular narrow complex tachycardia, usually 150–250 bpm with P waves often hidden in T waves. The irregularity here rules out SVT.

(D)

Ventricular Tachyarrhythmia : VT shows broad/wide QRS complexes (>0.12s) with rapid rate. The QRS complexes here are narrow : completely rules out VT.

Question 115. In patients affected by COVID-19, which pattern is frequently observed in chest CT scans?

A. Interlobular septal thickening

B. Air bronchograms

C. Ground glass opacity

D. Crazy paving pattern

Correct answer: C

In the radiological evaluation of patients with COVID-19 pneumonia, the most characteristic and frequently observed pattern on high-resolution CT (HRCT) of the chest is Ground Glass Opacity (GGO) (Option C). These GGOs are typically bilateral, multifocal, and peripheral or subpleural in distribution, often involving the lower lobes. While Crazy paving (Option D) and septal thickening (Option A) can occur in more advanced or severe stages of the disease, GGO remains the hallmark early finding. Air bronchograms (Option B) are more characteristic of dense bacterial consolidations rather than viral interstitial patterns. Therefore, because GGO is the quintessential radiographic marker used globally for the triage and diagnosis of COVID-19 during the pandemic, it is the definitive answer. These opacities represent localized inflammation and fluid within the alveolar spaces. Recognizing this pattern is critical for guiding clinical management and monitoring disease progression..

Question 116. On a hot summer day, a man working in the field suddenly collapses. Examination shows he is not visibly dehydrated, his radial pulse is palpable, and serum electrolytes are normal, but his body temperature is critically elevated. What is the most appropriate initial intervention?

A. Inject epinephrine immediately

B. Cover with hot damp sheets

C. Cover with cool damp sheets

D. Start CPR

Correct answer: C

The patient is suffering from Heat Stroke, a medical emergency defined by a core body temperature (≥ 40°C) and central nervous system dysfunction (collapse). The absolute priority

in heat stroke management is rapid cooling to prevent permanent organ damage and death. Therefore, the most appropriate initial response is to cover the patient with cool damp sheets (Option C) and use fans (evaporative cooling). Hot sheets (Option B) would be fatal. Epinephrine (Option A) is for anaphylaxis and is not indicated. CPR (Option D) is only started if the patient is pulseless and not breathing; here, the pulse is palpable. Other cooling methods include ice-water immersion or internal cooling. Because the patient's biological enzymes begin to denature at this extreme temperature, every minute spent cooling is life-saving. Consequently, Option C represents the definitively correct first-aid and medical stabilizing maneuver.

Question 117. In which of the following conditions is the
Dystrophin protein completely absent?

A. Becker's Muscular Dystrophy
B. Duchenne Muscular Dystrophy
C. Myasthenia gravis
D. Lambert Eaton myasthenic syndrome

Correct answer: B

Duchenne Muscular Dystrophy (DMD) is an X-linked recessive disorder caused by a frameshift mutation in the DMD gene. This results in a complete absence of the protein dystrophin (Option B). Dystrophin is essential for maintaining the structural integrity of the muscle fiber's sarcolemma; its absence leads to progressive muscle necrosis and weakness. In Becker's Muscular Dystrophy (Option A), the mutation allows for the production of a truncated, partially functional dystrophin protein, resulting in a milder phenotype. Myasthenia gravis (Option C) and Lambert-Eaton syndrome (Option D) are autoimmune disorders affecting the neuromuscular junction (acetylcholine receptors or calcium channels) and do not involve dystrophin defects. Therefore, the absolute lack of this critical structural protein is pathognomonic specifically for Duchenne's. This leads to the characteristic clinical findings of pseudohypertrophy and Gowers' sign in young boys. .

181. A patient is admitted to the ICU two days after a femur fracture. They are on a rebreathing oxygen unit with an arterial oxygen saturation of 100%, but pulse oximetry (SpO_2) reads 60%. The patient is confused, and chest X-ray shows clear lung fields. What is the most likely diagnosis?

(A) Pulmonary embolism
(B) Fat embolism

Question 118. protein, resulting in a milder phenotype.
Myasthenia gravis (Option C) and Lambert-
Eaton syndrome (Option D) are autoimmune

disorders affecting the neuromuscular junction (acetylcholine receptors or calcium channels) and do not involve dystrophin defects.
Therefore, the absolute lack of this critical structural protein is pathognomonic specifically for Duchenne's. This leads to the characteristic clinical findings of pseudohypertrophy and Gowers' sign in young boys. .
A patient is admitted to the ICU two days after a femur fracture. They are on a rebreathing oxygen unit with an arterial oxygen saturation of 100%, but pulse oximetry (SpO_2) reads 60%. The patient is confused, and chest X-ray shows clear lung fields. What is the most likely diagnosis?
A. Pulmonary embolism
B. Fat embolism
C. ARDS (Acute Respiratory Distress Syndrome)
D. Occult pneumothorax
Correct answer: B
The clinical triad of a recent long-bone (femur) fracture, confusion (neurological symptoms), and severe hypoxemia (60%) in the presence of a clear chest X-ray is pathognomonic for Fat Embolism Syndrome (FES). FES occurs when fat globules from the marrow are released into the systemic circulation. Pulmonary embolism (Option A) typically presents with chest pain and would show signs on CT, not just a clear X-ray. ARDS (Option C) would show diffuse, bilateral "white-out" or infiltrates on X-ray, rather than clear fields. Occult pneumothorax (Option D) would show localized findings or mediastinal shift. The "mismatch" between the profound hypoxemia and the normal initial radiograph is a key diagnostic clue for FES. Therefore, based on

the specific orthopedic trauma history and the multi-system clinical picture, Fat Embolism is the definitive diagnosis. Treatment is primarily supportive with oxygen and stabilization. .

A patient presents with sudden chest pain and dyspnea, and pulmonary embolism is suspected. Which imaging modality is most appropriate to confirm the diagnosis?

(A)

Doppler echocardiography

(B)

CT pulmonary angiography

(C)

Ventilation-perfusion scan of the lungs

(D)

MR pulmonary angiography

Question 119. Analyzing the statements given about cystic masses of the neck, identify the false statement:

A. Type 3 branchial fistula has its internal orifice on the cricopharyngeus

B. Cystic hygroma is filled with clear lymph

C. Thyroglossal cyst moves upwards on swallowing and tongue protrusion

D. Fluctuation is positive in branchial cysts

Correct answer: A

The statement claiming that a Type 3 branchial fistula opens on the cricopharyngeus is false (Option A). Anatomically, a second branchial fistula opens into the tonsillar fossa, while a third branchial fistula (and fourth) has its internal orifice located in the pyriform fossa of the larynx. The cricopharyngeus is a muscle of the esophagus and is not the standard site for these embryological remnants. All other statements are true: Cystic hygroma is a lymphatic malformation filled with clear lymph (Option B). A Thyroglossal cyst is unique because it is attached to the hyoid bone, meaning it moves upwards with both swallowing and tongue protrusion (Option C). A branchial cyst is a fluid-filled lesion, so the clinical fluctuation test is positive (Option D). Therefore, based on the specific anatomical tracts of branchial anomalies, the description of the internal opening in Option A is the definitive error. .

Question 120. In nasopharyngeal carcinoma, which of the following is a component of trotter's triad?

A. Conductive hearing

loss,
ipsilateral
temporopa-
rietal
neuralgia,
Palatal
paralysis
B. Sensorineural hearing loss, contralateral
tempo-
roparietal
neuralgia,
palatal
paralysis
C. Sensorineural
hearing
loss,
ipsilateral
temporo-
parietal
neuralgia,
palatal
paralysis
D. Conductive
hearing
loss,
contralateral
temporo-
parietal
neuralgia,
palatal
paralysis

Correct answer: A

Trotter's triad is a specific constellation of clinical findings indicating deep invasion of a nasopharyngeal carcinoma into the skull base. The three definitive components are:

1.

Conductive hearing loss: Due to the tumor blocking the Eustachian tube, leading to middle ear effusion.

2.

Ipsilateral temporoparietal neuralgia: Caused by the invasion of the maxillary nerve (CN V2).
3.
Palatal paralysis : Resulting from the involvement of the levator veli palatini muscle or its nerve supply.
Option A correctly lists these three features. All other options are incorrect as they mention sensorineural loss (Option B and C) or contralateral neuralgia (Option B and D). Trotter's triad is a classic board examination topic because it represents a late-stage, anatomical presentation of NPC. Therefore, because it describes the specific mechanical and neurological impacts of local tumor spread, Option A is the only accurate description of this clinical triad. .

Question 121. A 24-year-old male pedestrian is struck by a motorbike, sustaining abdominal trauma with visible bruising. He remains hypotensive despite IV fluid resuscitation, and FAST examination is positive for intra-abdominal fluid. What is the most appropriate next step in management?

A. Abdominal CT scan
B. Abdominal MRI scan
C. Exploratory laparotomy
D. Diagnostic peritoneal lavage

Correct answer: C

The patient is hemodynamically unstable (hypotensive at despite fluids) and has positive FAST findings (confirmed intra-abdominal fluid/blood) following trauma. According to ATLS (Advanced Trauma Life Support) protocols, an unstable patient with a positive FAST scan requires immediate exploratory laparotomy (Option C) to control the source of internal bleeding. An abdominal CT scan (Option A) is only indicated for hemodynamically stable patients; taking an unstable patient to the CT suite is dangerous and contraindicated. MRI (Option B) is not used in acute trauma. Diagnostic peritoneal lavage (Option D) is redundant and invasive once the FAST has already confirmed the presence of fluid. Therefore, because surgical intervention is the definitive life-saving next step for ongoing hemorrhage, immediate operative exploration is mandatory. The goal is to identify and repair visceral injuries, most commonly splenic or hepatic lacerations in this scenario. .

Question 122. What is the Battle sign?

A. Mastoid ecchymosis
B. Periorbital hematoma
C. Bezold abscess
D. Perichondritis

Correct answer: A

In clinical forensic and trauma surgery, the Battle sign is a pathognomonic physical indicator of a basilar skull fracture, specifically involving the petrous portion of the temporal bone. It is defined as mastoid ecchymosis (bruising over the mastoid process behind the ear) (Option A). This bruising results from blood tracking along the path of the posterior auricular artery. Periorbital hematoma (Option B), also known as "Raccoon eyes," is a different sign indicating a fracture of the anterior cranial fossa. Bezold abscess (Option C) is a complication of mastoiditis, involving an abscess in the sternocleidomastoid muscle. Perichondritis (Option D) is an infection of the ear cartilage. Because the Battle sign is specifically localized to the mastoid area following head trauma, mastoid ecchymosis is the definitive answer. Its appearance may be delayed for 24–48 hours after the injury occurs. .

Question 123. An 80-year-old man develops pain and swelling in the right calf following immobilization for a right intertrochanteric fracture. What is the most likely diagnosis?

A. Chronic osteomyelitis

B. Deep vein thrombosis

C. Compartment syndrome

D. Arterial claudication

Correct answer: B

The patient possesses several classic risk factors for Deep Vein Thrombosis (DVT) (Option B): advanced age (80 years), a recent major lower limb fracture, and immobilization . The clinical signs of pain and swelling localized specifically to the calf muscle are the most common presentations of an acute clot in the lower extremity venous system. Chronic osteomyelitis (Option A) presents with long-term discharge and localized bone pain, not acute swelling. Compartment syndrome (Option C) is a surgical emergency characterized by "pain out of proportion" and loss of pulses, typically following acute crush injuries rather than prolonged immobilization. Arterial claudication (Option D) causes pain only during exercise that is relieved by rest. Therefore, because the patient fits the "Virchow's Triad" perfectly (stasis and vascular injury), DVT is the most probable and dangerous diagnosis. Clinicians must urgently confirm this with Doppler ultrasound to prevent a lethal pulmonary embolism. .

Question 124. A young girl presents with continuous urinary dribbling despite normal voiding and has never achieved full continence since birth. What is the most likely diagnosis?

A. Ectopic ureter

B. Ureterocele

C. Congenital megaureter

D. Vesicoureteric reflux

Correct answer: A

The clinical history of continuous dribbling of urine in a female patient who otherwise voids normally is the pathognomonic presentation of an Ectopic Ureter (Option A). In these cases (often associated with a duplex system), the ureter bypasses the urinary sphincter and opens into the vagina or vestibule. Because the opening is distal to the sphincter, urine leaks out continuously. However, because the other ureter is normally positioned in the bladder, the child can still void normally. Ureterocele (Option B), congenital megaureter (Option C), and Vesicoureteric reflux (Option D) are all internal urinary abnormalities that may cause infections or obstruction but do not cause this specific "leakage while voiding" paradox. Therefore, because the symptoms date back to birth and follow this unique pattern, ectopic ureter is the definitive diagnosis. Diagnosis is usually confirmed by intravenous urography or MRI. Surgical reimplantation into the bladder is the curative treatment. .

Question 125. A patient underwent laparoscopic cholecystectomy, was discharged after drain removal on the first postoperative day, but returned on the second day with abdominal pain and fever. Ultrasound reveals a fluid collection in the subhepatic space. What is the most likely cause of this collection?

A. Infection

B. Surgical site pain

C. Bile leak

D. Retained gallstones

Correct answer: C

The acute presentation of fever, increasing abdominal pain, and a localized subhepatic fluid collection shortly after a cholecystectomy is highly suspicious for a Bile leak (Option C). Post-laparoscopic bile leaks often result from a dislodged clip on the cystic duct or a minor injury to the common bile duct. The leaked bile causes localized chemical peritonitis and fluid accumulation (biloma). General infection (Option A) would not typically present with a large organized collection this rapidly without an underlying leak. Surgical site pain (Option B) would not cause a large ultrasound collection and fever. Retained stones (Option D) usually cause jaundice and biliary colic rather than a large subhepatic fluid pocket. Therefore, because a biloma is the most common reason for a large, acute postoperative collection in this specific

space, bile leak is the definitively probable cause. Management involves ERCP and stenting to decompress the biliary system.

Question 126. How should a 40-year-old woman with an asymptomatic gallbladder polyp, detected on ultrasound and without gallstones, be managed?

A. Regular follow-up every 2 months

B. Polypectomy

C. Laparoscopic cholecystectomy

D. Open cholecystectomy

Correct answer: A

Gallbladder polyps are common findings on ultrasound. For a patient who is asymptomatic, has no gallstones, and possesses a small polyp measuring only , the standard of care is regular follow-up via ultrasound (Option A). Most polyps under are benign (cholesterol polyps) and have a very low risk of malignancy. Surgical intervention via Laparoscopic Cholecystectomy (Option C) or Open Cholecystectomy (Option D) is generally reserved for polyps , those that are symptomatic, or those that show rapid growth on serial imaging. A simple polypectomy (Option B) is not a standard procedure for gallbladder disease. The frequency of follow-up (2–6 months initially) is designed to monitor for stability. Therefore, because the lesion is small and asymptomatic, conservative monitoring is the definitive and most appropriate management choice to avoid unnecessary surgery. Consequently, Option A represents the standard clinical guideline for this patient. .

Question 127. A 52-year-old woman with a history of chronic cholecystitis recently underwent cholecystectomy and now presents with worsening digestive symptoms. What is the most common post-cholecystectomy complication that could explain her complaints?

A. Acute kidney injury

B. Osteoporosis

C. Steatorrhea

D. Colorectal cancer

Correct answer: C

Following a cholecystectomy, the body no longer has a reservoir to store and concentrate bile. Bile now flows continuously and less efficiently into the small intestine. For some patients, this leads to malabsorption of fats, resulting in the most common long-term postoperative digestive complication: Steatorrhea (Option C). Steatorrhea is characterized by oily, foul-smelling stools and bloating. Acute kidney injury (Option A) and Osteoporosis (Option B) are unrelated to the removal of the gallbladder. While some epidemiological studies have suggested a very slight potential increase in the long-term risk of colorectal cancer (Option D), it is not a "common complication" that would explain immediate worsening of digestive issues after surgery. Therefore, the physiological loss of bile storage and its impact on fat digestion identifies steatorrhea as the definitive clinical consequence described. Management typically involves dietary modifications, such as consuming smaller, lower-fat meals to improve digestion. .

Question 128. A 28-year-old man sustains a head injury while playing soccer, briefly loses consciousness, then regains full awareness and engages normally. Several hours later, he develops a severe headache, confusion, and drowsiness. Which type of brain injury is classically associated with this pattern of a lucid interval following the initial trauma?

A. Subdural hemorrhage

B. Parenchymal hemorrhage

C. Epidural hematoma

D. Subarachnoid hemorrhage

Correct answer: C

The clinical pattern of an initial loss of consciousness followed by a temporary period of recovery—termed a "lucid interval"—is the classic hallmark of an Epidural Hematoma (EDH) . This condition typically results from a blow to the side of the head, causing a skull fracture that lacerates the middle meningeal artery. The high-pressure arterial bleeding slowly peels the dura away from the skull. During the lucid interval, the patient appears neurologically intact while the hematoma expands. Once the intracranial pressure reaches a critical threshold, rapid deterioration occurs, leading to symptoms like severe headache, confusion, and eventually coma. Subdural hemorrhage (Option A) usually follows a more gradual onset, often in elderly patients or infants. Subarachnoid hemorrhage (Option D) classically presents as a sudden "thunderclap" headache. Parenchymal hemorrhage (Option B) involves bleeding within the brain tissue itself. Because the specific "lucid interval" sequence is pathognomonic for middle

meningeal arterial bleeding, Epidural hematoma is the definitive diagnosis. .

Question 129. A 34-year-old man presents with a painless right groin lump extending into the scrotum. On examination, a cough impulse is noted when pressing with the index finger on the swelling, and the swelling can be fully reduced through the deep inguinal ring with an audible gurgling sound. What is the most likely diagnosis?

A. Femoral hernia

B. Direct inguinal hernia

C. Indirect inguinal hernia

D. Umbilical hernia

Correct answer: C

The clinical findings of a groin lump extending into the scrotum that is reducible through the deep inguinal ring definitively identifies an Indirect Inguinal Hernia . Indirect hernias enter the inguinal canal through the internal (deep) ring, lateral to the inferior epigastric vessels, and often follow the path of the spermatic cord into the scrotum. The "gurgling sound" noted during reduction is a classic sign indicating that the hernia sac contains loops of bowel. Direct inguinal hernias (Option B) occur through a weakness in the posterior wall of the inguinal canal (Hesselbach’s triangle) and do not typically enter the scrotum or reduce through the deep ring. Femoral hernias (Option A) are found below and lateral to the pubic tubercle and are more common in females. Umbilical hernias (Option D) occur at the navel. Because the defect is specifically associated with the deep inguinal ring and reaches the scrotum, indirect inguinal hernia is the correct anatomical diagnosis.

Question 130. Which of the following is the most common type of renal stones?

A. Calcium oxalate

B. Cystine

C. Triple phosphate (also known as struvite)

D. Uric acid

Correct answer: A

In the global population, calcium oxalate stones are the most frequently encountered type of renal calculi, accounting for approximately 75–80% of all cases . These stones are typically radiopaque on X-ray and can form in both acidic and alkaline urine. Triple phosphate stones (Option C), also called struvite or staghorn calculi, are associated with chronic urinary tract infections caused by urease-producing bacteria like Proteus. Uric acid stones (Option D) are unique because they are radiolucent and are often seen in patients with gout or high purine

diets. Cystine stones (Option B) are rare and result from a specific genetic defect in amino acid transport. Identifying the chemical composition of the stone is vital for metabolic evaluation and preventing recurrence through dietary modifications and pharmacological therapy. Therefore, based on broad epidemiological data, calcium oxalate is the definitive "most common" type of stone. Patients are often advised to maintain high fluid intake to reduce the concentration of stone-forming salts. .

Question 131. A 66-year-old man presents with urinary symptoms, back pain, elevated PSA, radiolucent pelvic bone lesions on X-ray, and enlarged lower abdominal lymph nodes on MRI, suggestive of advanced prostate cancer with bone metastases and nodal involvement. Which medication is indicated for treatment in this scenario?

A. Anastrozole

B. Desogestrel

C. Goserelin

D. Oxandrolone

Correct answer: C

The patient presents with metastatic, hormone-sensitive prostate cancer, characterized by elevated PSA and osteoblastic bone lesions. The mainstay of management for advanced disease is Androgen Deprivation Therapy (ADT) to lower testosterone levels. Goserelin (Option C) is a Gonadotropin-Releasing Hormone (GnRH) agonist used for this purpose. It initially causes a surge in LH and FSH, followed by downregulation of the pituitary receptors, which effectively leads to chemical castration. Anastrozole (Option A) is an aromatase inhibitor used for breast cancer. Desogestrel (Option B) is a progestogen used for female contraception. Oxandrolone (Option D) is an anabolic steroid which would be contraindicated in prostate cancer as it could stimulate tumor growth. Therefore, Goserelin is the correct pharmacological choice for suppressing the hormonal drive of the malignancy. ADT often provides significant symptomatic relief and can stabilize metastatic bone disease in elderly patients with prostate adenocarcinoma. Consequently, Goserelin is a standard component of systemic treatment protocols for these patients. .

Question 132. A 50-year-old man presents with recently noticed scrotal swelling. On examination, the testis is palpable separately from the swelling, and the swelling transilluminates positively. The patient reports no pain or discomfort. What is the most likely diagnosis?

A. Spermatocele

B. Epididymal cyst

C. Secondary hydrocele

D. Primary hydrocele

Correct answer: A

The patient presents with a painless scrotal swelling that transilluminates positively, and importantly, the testis is palpable separately from the swelling. This combination of findings indicates that the swelling is extra-testicular and cystic, arising from the epididymis, rather than surrounding the testis.

A spermatocele is a retention cyst of the epididymis that contains milky fluid rich in spermatozoa. It typically occurs in adult men and is most commonly located above and behind the testis. On examination, it is soft, fluctuant, non-tender, and shows positive transillumination. A key distinguishing feature is that the testis can be clearly felt separately below the swelling.

Although an epididymal cyst has similar features, in clinical exams, spermatocele is the preferred answer in adults presenting with these classical findings.

Hydrocele is ruled out because it surrounds the testis, making it difficult to palpate separately.

Question 133. A 33-year-old man is referred from the infertility clinic to the surgical OPD after palpation reveals a “bag of worms” sensation along with dilated veins in the scrotum. What is the most likely diagnosis?

A. Hydrocele

B. Varicocele

C. Testicular torsion

D. Epididymo Orchitis

Correct answer: B

The pathognomonic physical finding of a "bag of worms" sensation in the scrotum is diagnostic of a Varicocele. This condition involves the abnormal dilation and tortuosity of the veins in the pampiniform plexus. It is most commonly found on the left side due to the anatomical drainage of the left spermatic vein into the renal vein. Varicoceles are a leading cause of correctable male infertility because the blood pooling increases scrotal temperature, which impairs spermatogenesis. Testicular torsion (Option C) is an acute surgical emergency presenting with sudden, severe pain. Hydrocele (Option A) presents as a painless, transilluminant fluid collection. Epididymo-orchitis (Option D) is an inflammatory condition characterized by acute pain, swelling, and often fever. Given the specific context of the infertility clinic referral and the characteristic "bag of worms" palpation, varicocele is the definitive diagnosis. Treatment

involves surgical ligation or embolization of the dilated veins. .
207. The
barium
swallow
image
shows
a
characteristic appearance of the esophagus.
In which condition is this finding typically
observed?

Examination Paper December 2021 Question

Question 134. 206. (B) Varicocele.
The pathognomonic physical finding of a "bag of worms" sensation in the scrotum is diagnostic of a Varicocele. This condition involves the abnormal dilation and tortuosity of the veins in the pampiniform plexus. It is most commonly found on the left side due to the anatomical drainage of the left spermatic vein into the renal vein. Varicoceles are a leading cause of correctable male infertility because the blood pooling increases scrotal temperature, which impairs spermatogenesis. Testicular torsion (Option C) is an acute surgical emergency presenting with sudden, severe pain. Hydrocele (Option A) presents as a painless, transilluminant fluid collection. Epididymo-orchitis (Option D) is an inflammatory condition characterized by acute pain, swelling, and often fever. Given the specific context of the infertility clinic referral and the characteristic "bag of worms" palpation, varicocele is the definitive diagnosis. Treatment involves surgical ligation or embolization of the dilated veins. .
The barium swallow image shows a characteristic appearance of the esophagus. In which condition is this finding typically observed?

A. Diffuse esophageal spasm

B. Esophageal carcinoma

C. Esophageal ulcer

D. Achalasia cardia

Correct answer: A

The barium swallow image shows a characteristic “corkscrew” or “rosary bead” appearance of the esophagus. This pattern is produced by multiple simultaneous, uncoordinated contractions of the esophageal muscles, which is typical of diffuse esophageal spasm (DES).

In DES, normal peristalsis is replaced by non-propulsive, high-amplitude contractions, leading to the segmented, irregular outline seen on imaging. Patients may present with intermittent dysphagia and chest pain, often mimicking cardiac pain.

Why other options are incorrect:

Question 135. An elderly male presents with purulent discharge from a perianal opening. Examination in the lithotomy position reveals an external opening at the 11 o’clock position, about 4 cm from the anal verge. What is the most likely location of the internal opening, and from where does it originate?

A. 12 o'clock and at external anal sphincter

B. 11 o'clock and at internal anal sphincter

C. 9 o'clock and at anal verge

D. 6 o'clock and crypt of the dentate line

Correct answer: D

The management of a fistula-in-ano is guided by Goodsall’s Law. According to this rule, an external opening located posterior to a transverse line through the anus (such as the 11 o'clock position) will have a curved tract that enters the anal canal at the midline posterior (6 o'clock position). Furthermore, most fistulae originate in an infected anal crypt at the dentate line . Option B describes a straight tract, which according to Goodsall's law, only applies to anterior

fistulae located within 3 cm of the anus. Option A and C do not follow standard anatomical tract guidelines. Because the external opening is both posterior and relatively far from the anus (4 cm), the track is expected to be complex and curved, meeting at the midline posterior crypt. Understanding these landmarks is essential for successful fistulectomy or seton placement. .

Question 136. Pressure sores occur when the pressure exceeds _____ mmHg.

A. 30

B. 40

C. 50

D. 60

Correct answer: A

Pressure sores (decubitus ulcers) develop due to localized ischemia when prolonged pressure is applied to soft tissue over bony prominences. Physiologically, the normal capillary filling pressure is approximately 25 to 32 mmHg. When external pressure exceeds 30 mmHg (Option A) for a significant duration, it overcomes the capillary pressure, leading to vessel collapse, tissue hypoxia, and eventually necrosis . Options B (40), C (50), and D (60) are much higher thresholds; while they would certainly cause damage, the fundamental threshold for initiating ischemic injury is the 30 mmHg mark. Prevention strategies in immobilized patients focus on frequent repositioning to ensure that no single area is subjected to pressure above this critical limit for more than two hours. Understanding this physiological threshold is essential for nursing and surgical care to prevent preventable skin breakdown. Therefore, 30 mmHg is the definitive value for the onset of pressure-induced tissue injury. .

Question 137. What is the most appropriate treatment for a patient with a 10 cm renal cell carcinoma located in the lower pole of the kidney, with no regional lymph node involvement?

A. Radical nephrectomy

B. Partial nephrectomy

C. Radiotherapy

D. Chemotherapy

Correct answer: A

For a large Renal Cell Carcinoma (RCC) measuring 10 cm (classified as stage T2a), the gold standard treatment is a Radical Nephrectomy . This procedure involves the complete removal of the kidney, the surrounding Gerota’s fascia, and the adrenal gland (if indicated). While partial nephrectomy (Option B) is preferred for small masses (cm), it is generally unsuitable and technically difficult for a large 10 cm tumor, even if it is located at the lower pole. RCC is notoriously resistant to both conventional radiotherapy (Option C) and systemic chemotherapy

(Option D); therefore, surgery remains the only curative modality. Modern management for large tumors may utilize a laparoscopic or robotic-assisted radical approach to minimize patient morbidity. Given the size of the lesion and the localized nature (negative nodes), radical surgical excision provides the best long-term oncological control and survival benefit for this patient. .

Question 138. A 56-year-old woman with a history of multiple pregnancies presents with grade II/III uterine prolapse and cystocele. She reports involuntary urine leakage when coughing or sneezing. What type of urinary incontinence does she most likely have?

A. Overflow incontinence

B. Urge incontinence

C. Stress incontinence

D. Neurogenic bladder

Correct answer: C

The involuntary leakage of urine during activities that increase intra-abdominal pressure—such as coughing or sneezing—is the defining symptom of Stress Incontinence . In this patient, the history of multiple pregnancies and the presence of a cystocele (bladder prolapse) and uterine prolapse indicate a significant weakening of the pelvic floor and the urethral support structures (hypermobility). Urge incontinence (Option B) involves a sudden, uncontrollable need to void and is caused by detrusor overactivity. Overflow incontinence (Option A) results from an overdistended bladder due to obstruction or nerve damage, leading to continuous dribbling. Neurogenic bladder (Option D) results from specific neurological lesions (e.g., spinal cord injury). Because the leakage is strictly associated with mechanical "stress" on the bladder in a patient with documented pelvic floor laxity, stress incontinence is the definitive diagnosis. Management often includes pelvic floor exercises or surgical "sling" procedures. .

Question 139. A patient has undergone a gastrectomy (partial or total removal of the stomach) and is being monitored for postoperative complications and nutritional changes. Which condition is most likely to develop as a direct result of this surgery?

A. Folic acid deficiency

B. Vitamin B12 deficiency

C. Gastric ulcer

D. Constipation

Correct answer: B

A direct and major consequence of total or subtotal gastrectomy is the development of Vitamin B12 deficiency . The stomach’s parietal cells secrete Intrinsic Factor (IF), which is essential for the absorption of Vitamin B12 in the terminal ileum. Once the stomach or its secreting mucosa is removed, the patient can no longer absorb dietary B12, eventually leading to megaloblastic anemia and subacute combined degeneration of the spinal cord if not supplemented. Folic acid (Option A) is absorbed primarily in the small intestine and is less specifically affected by the loss of the stomach. Gastric ulcers (Option C) are what the surgery often treats, and constipation (Option D) is not a specific metabolic consequence of gastrectomy compared to the profound risk of B12 malabsorption. Therefore, lifelong intramuscular Vitamin B12 injections are a mandatory component of postoperative care for gastrectomy patients. Recognition of this risk allows for the prevention of irreversible neurological damage. .

Question 140. A 23-year-old woman presents with acute right lower abdominal pain for 4 hours, with tenderness at McBurney’s point. Which investigation is most appropriate to confirm a diagnosis of appendicitis?

A. CT Scan

B. Plain X-ray

C. Serum ESR

D. MRI Abdomen

Correct answer: A

While acute appendicitis is often a clinical diagnosis based on history and tenderness at McBurney's point, a CT Scan of the abdomen (ideally with contrast) is currently the most accurate and "best suited" investigation to confirm the diagnosis (Option A) . It has high sensitivity and specificity for identifying an inflamed appendix, periappendiceal fat stranding, or an appendicolith. A plain X-ray (Option B) is rarely useful and may only show non-specific signs. Serum ESR (Option C) is a non-specific marker of inflammation that does not provide localized diagnostic information. MRI (Option D) is highly accurate but is generally reserved as a second-line option for pregnant patients or children to avoid ionizing radiation. Therefore, for a 23-year-old non-pregnant female, the CT scan remains the definitive gold standard imaging modality. It allows for prompt surgical planning and helps rule out other pelvic pathologies like ovarian torsion. .

Question 141. A 45-year-old patient is incidentally found to

have an asymptomatic Grade I meningioma on MRI, confirmed by histopathology. What is the most appropriate initial management approach for this patient?

A. Reassurance

B. Surgical excision

C. Chemotherapy

D. Radiotherapy

Correct answer: B

A 45-year-old patient with a confirmed Grade I meningioma via histopathology is best managed with surgical excision. The histopathological confirmation itself implies tissue acquisition, and at this age with a confirmed tumor, definitive treatment is warranted. Gross Total Resection (GTR) offers potential cure with minimal recurrence rates, making surgery the gold standard.

Why Other Options Are Wrong:

A.

Reassurance : While watch-and-wait suits truly incidental, unbiopsied, small meningiomas in elderly patients, a histopathologically confirmed tumor in a young 45-year-old demands definitive treatment due to long life expectancy and cumulative growth risk.

C.

Chemotherapy : Meningiomas are notoriously chemoresistant. No chemotherapeutic agent has proven efficacy in Grade I meningioma. Completely inappropriate here.

D.

Radiotherapy : Reserved for Grade II/III, post-operative residual disease, or surgically inaccessible tumors. It is not a primary treatment for resectable Grade I meningioma.

Question 142. A man considering a vasectomy consults his physician to learn about the procedure and common misconceptions. Which of the following statements about vasectomy is incorrect?

A. The procedure is done under local anesthesia

B. Sterility is achieved 3 weeks after the procedure

C. A no-scalpel technique is being widely used now

D. The vas deferens is the structure that is divided in the procedure

Correct answer: B

The statement that sterility is achieved 3 weeks after a vasectomy is incorrect (Option B) . After the procedure, viable sperm remain in the vas deferens distal to the ligation site. It typically takes approximately 12 to 16 weeks—or roughly 20 ejaculations—to clear these remaining sperm. The patient is NOT considered sterile until a follow-up semen analysis confirms azoospermia (zero sperm). All other statements are correct: the procedure is routinely performed under local anesthesia (Option A); the "no-scalpel" technique is indeed the modern standard of care (Option C); and the vas deferens is the target structure divided to prevent sperm transport (Option D). Therefore, patients must be strictly warned to use alternative contraception for at least 3 months following the surgery. Failure to adhere to this waiting period is a common cause of post-vasectomy unintended pregnancy. .

Question 143. A 30-year-old lactating woman presents with localized redness, warmth, and tenderness of one breast. Fluctuation is positive, and ipsilateral axillary lymph nodes are mildly enlarged. Repeated aspirations with antibiotics have failed, and ultrasound confirms a fluid collection. What is the appropriate management for her breast abscess and the recommended course of action for treating her pain and fever?

A. Incision and drainage

B. Broad spectrum antibiotics only

C. Breast conservation surgery

D. Punch biopsy

Correct answer: A

The clinical presentation of a lactating mother with localized breast inflammation, fluctuation (indicating pus), and axillary lymphadenopathy is diagnostic of a breast abscess . The history of failed aspirations and persistent fever despite antibiotics confirms that the infection has progressed to an encapsulated collection that requires surgical intervention. The gold-standard treatment for a confirmed breast abscess is surgical incision and drainage (Option A). This allows for the complete evacuation of the abscess cavity and rapid resolution of the source of infection. Antibiotics alone (Option B) are insufficient for a fluctuant collection. Breast conservation surgery (Option C) and punch biopsy (Option D) are used for managing breast malignancies, which is not suggested by this acute infectious picture. Therefore, because of the presence of a non-draining fluid collection confirmed by ultrasound, incision and drainage is the definitive next step in management.

Question 144. A 23-year-old woman presents with a palpable,

firm, movable lump in her left breast, confirmed as benign on mammography. What is the most appropriate next step in management?

A. Biopsy

B. Reassurance and follow-up

C. Surgical excision

D. Start Tamoxifen

Correct answer: B

The presentation of a palpable, firm, and highly movable breast mass (colloquially known as a "breast mouse") in a 23-year-old woman is characteristic of a fibroadenoma . Once the benign nature of the lesion has been established through clinical exam and imaging (mammogram or ultrasound), the most appropriate management for a small, asymptomatic fibroadenoma is reassurance and regular follow-up (Option B). Immediate surgical excision (Option C) is generally only indicated if the mass is rapidly growing, painful, or large (cm), or if the patient requests it for cosmetic reasons. A biopsy (Option A) might be considered for definitive confirmation, but in a low-risk 23-year-old with classic benign features on imaging, it is not the mandatory "next" step. Tamoxifen (Option D) is used for breast cancer treatment, not benign lesions. Therefore, conservative observation is the definitive standard of care for simple fibroadenomas. .

Question 145. A 22-year-old woman presents with a large right ovarian mass. Histopathology shows the tumor contains elements from all three germ layers. What is the most likely type of ovarian tumor?

A. Dysgerminoma

B. Teratoma

C. Thecoma

D. Theca lutein cyst

Correct answer: B

A tumor that contains tissues derived from all three germ layers (ectoderm, mesoderm, and endoderm)—such as hair, teeth, bone, and nervous tissue—is definitively a teratoma (Option B) . In young women, the most common type is the benign mature cystic teratoma, also known as a dermoid cyst. Dysgerminoma (Option A) is a germ cell tumor composed of uniform, undifferentiated cells and does not contain differentiated tissues from the three layers. Thecoma (Option C) is a solid, sex-cord stromal tumor that secretes estrogen. Theca lutein cysts (Option D) are functional cysts usually associated with high hCG levels (e.g., in molar pregnancies) rather than true neoplastic growths. Because the "three germ layer" origin is the pathognomonic histological definition of this tumor, teratoma is the correct diagnosis. Most

teratomas are benign, but they are prone to ovarian torsion due to their heavy, asymmetrical weight. .

Question 146. Which of the subsequent medications can lead to the development of gynecomastia?

A. Tamoxifen

B. Oxytocin

C. Spironolactone

D. Clomiphene citrate

Correct answer: C

Gynecomastia is the benign enlargement of male breast tissue due to an imbalance between estrogen and androgen action. Spironolactone (Option C) is a potassium-sparing diuretic well-known for causing gynecomastia as a side effect . It works as a direct androgen receptor antagonist and also inhibits testosterone synthesis, effectively tilting the hormonal balance in favor of estrogen. Tamoxifen (Option A) is actually a Selective Estrogen Receptor Modulator (SERM) used to treat painful gynecomastia in men. Oxytocin (Option B) is a reproductive hormone without significant effects on breast tissue growth in males. Clomiphene citrate (Option D) is an ovulation-inducing agent that can occasionally cause breast symptoms but is not a primary recognized cause of clinical gynecomastia compared to spironolactone. Therefore, due to its potent anti-androgenic activity, Spironolactone is the definitive answer. Patients on long-term therapy are often monitored for this bothersome but reversible side effect. .

AAns

(B) Pointing index sign

The image shows the index finger remaining extended while the other fingers are flexed into a fist. This is the classic Pointing Index Sign, also called the "Index finger sign" seen in anterior interosseous nerve (AIN) palsy — a branch of the median nerve. AIN injury causes paralysis of FDP to index finger and FPL, so when making a fist, the index finger cannot flex at the DIP joint and remains pointing straight out. This is commonly associated with supracondylar fractures or forearm fractures compressing the AIN.

Why Other Options are Wrong:

(A)

Froment's Sign : Tests ulnar nerve integrity; patient cannot pinch paper between thumb and index finger without flexing the thumb IP joint (FPL compensation). No index pointing involved.

(C)

Benediction Sign : Also a median nerve palsy sign but seen at rest, where index and middle

fingers remain extended due to FDS/FDP weakness. Different nerve level injury.

(D)

Policeman Tip Deformity : Associated with Erb's palsy (C5-C6 brachial plexus injury), showing shoulder adduction, internal rotation, and elbow extension : an entirely different deformity.

Question 147. A patient presents with a hard, irregular left-sided scrotal mass that does not reduce in size when lying down or on manipulation, lacks a cough impulse, and is associated with para-aortic lymph node enlargement. What is the most likely diagnosis?

A. Hydrocele

B. Direct inguinal hernia

C. Indirect inguinal hernia

D. Metastasising testicular tumor

Correct answer: D

The clinical findings of a hard, irregular, and non-reducible scrotal mass (no cough impulse) in the presence of para-aortic lymphadenopathy are pathognomonic for a testicular malignancy . The lymphatic drainage of the testes follows their embryological path of descent from the high posterior abdominal wall; therefore, testicular cancer typically bypasses the inguinal nodes and spreads first to the para-aortic nodes at the level of the renal vessels (L1-L2). Hydrocele (Option A) presents as a soft, cystic, transilluminant swelling. Inguinal hernias (Option B and C) would typically have a positive cough impulse and reduce when lying down. Because the mass is solid, non-reducible, and has a specific pattern of deep abdominal lymphatic spread, a metastasizing testicular tumor is the definitive diagnosis. Further evaluation requires serum tumor markers (AFP, hCG, LDH) and a radical orchidectomy for tissue diagnosis. .

Question 148. A 55-year-old woman undergoes a routine check-up, during which a suspicious breast lump is identified. Biopsy confirms breast cancer. Which histological subtype of breast cancer is associated with the most favorable prognosis?

A. Luminal A

B. Luminal B

C. ER negative

D. Basal-like

Correct answer: A

In the molecular classification of breast cancer, the Luminal A subtype is recognized as having the most favorable prognosis . Luminal A tumors are characterized by being Estrogen Receptor

(ER) positive and Progesterone Receptor (PR) positive, while being HER2 negative. Most importantly, they have a low Ki-67 index, indicating that the tumor cells are growing slowly. Luminal B (Option B) tumors are also ER-positive but have a higher growth rate and potentially poorer prognosis. ER-negative (Option C) and Basal-like (Option D, often triple-negative) subtypes are generally more aggressive, have higher recurrence rates, and carry a significantly worse prognosis than the Luminal A category. Therefore, because Luminal A tumors are well-differentiated and respond excellently to endocrine therapy, they represent the "best-case" molecular subtype for long-term survival. Recognizing these subtypes is essential for customizing the oncology treatment plan. .

Question 149. A 53-year-old patient with breast cancer and a history of heart failure is being evaluated for chemotherapy. Which of the following drugs should be avoided because it can worsen heart failure?

A. Methotrexate

B. Epirubicin

C. Cyclophosphamide

D. Cisplatin

Correct answer: B

In the treatment of breast cancer, the class of drugs known as anthracyclines, which includes Epirubicin and Doxorubicin, is notorious for causing dose-dependent, permanent cardiotoxicity . These drugs can induce cardiomyopathy and significantly exacerbate pre-existing heart failure (Option B). Therefore, in a patient with a documented history of cardiac failure, Epirubicin should be strictly avoided or used with extreme caution. Methotrexate (Option A), Cyclophosphamide (Option C), and Cisplatin (Option D) have other systemic toxicities (such as renal or pulmonary) but are not classically associated with the direct, profound cardiotoxicity seen with anthracyclines. Modern oncology protocols for cardiac patients often utilize "anthracycline-free" regimens to ensure patient safety. Regular monitoring of the ejection fraction via echocardiography is mandatory for any patient receiving epirubicin. Therefore, Epirubicin is the definitive pharmacological answer for the drug to avoid in this specific clinical scenario. .

Question 150. A woman with a history of infertility is currently receiving HMG treatment. Based on the ultrasound findings provided, what is the most likely diagnosis?

A. Ovarian
hyperstimulation

syndrome

B. Theca lutein cyst

C. PCOD

D. None

Correct answer: A

The provided ultrasound image shows ovaries that are massively enlarged with multiple large, thin-walled cystic follicles bilaterally. In the clinical context of a woman undergoing infertility treatment with HMG (Human Menopausal Gonadotropins), this appearance is pathognomonic for Ovarian Hyperstimulation Syndrome (OHSS) . OHSS is a potentially life-threatening iatrogenic complication of ovulation induction, characterized by increased capillary permeability leading to fluid shifts into the third space (ascites, pleural effusion). Theca lutein cysts (Option B) present similarly but are usually associated with molar pregnancies rather than infertility drugs. PCOD (Option C) would show much smaller, peripheral "string of pearls" follicles rather than these massive cysts. Therefore, the combination of recent HMG use and the characteristic "multicystic" ovarian enlargement confirms OHSS. Management involves intensive fluid and electrolyte monitoring and prevention of further gonadotropin exposure. .

Question 151. During a seminar on cervical cancer epidemiology, high-risk HPV serotypes linked to malignancy are discussed. Which combination of HPV serotypes is most strongly associated with the development of cervical cancer?

A. 16, 19, 31, 32

B. 16, 18, 31, 32

C. 16, 19, 31, 33

D. 16, 18, 31, 33

Correct answer: D

Cervical cancer is definitively caused by persistent infection with high-risk serotypes of the human papillomavirus (HPV). Globally, HPV 16 and 18 are the two most oncogenic types, responsible for approximately 70% of all cervical cancer cases. Other recognized high-risk types include 31, 33, 45, 52, and 58. Option D (16, 18, 31, 33) accurately identifies a grouping of the most significant high-risk serotypes . Options A, B, and C include serotypes 19 or 32, which are not standard members of the primary "high-risk" oncogenic group for cervical cancer. The

integration of high-risk HPV DNA into the host genome leads to the overexpression of E6 and E7 oncoproteins, which disrupt tumor suppressor genes p53 and Rb, respectively. Therefore, this specific combination represents the most critical viral etiologies for cervical malignancy. Modern HPV vaccines target these types to effectively reduce the incidence of cervical cancer. .

Question 152. A 14-year-old girl presents with cyclical abdominal pain, a midline hypogastric mass, and primary amenorrhea. On per vaginal examination, a bluish swelling is observed. What is the most likely cause of her condition?

A. Bartholin cyst

B. Transverse vaginal septum

C. Imperforate hymen

D. Endometrioma

Correct answer: C

The clinical triad of primary amenorrhea (no menarche), cyclical abdominal pain, and a bluish bulging membrane at the introitus is pathognomonic for an imperforate hymen . The blue color is due to the accumulated menstrual blood (hematocolpos) reflecting through the translucent hymenal membrane. This accumulation also explains the midline hypogastric lump (hematometra). A transverse vaginal septum (Option B) can cause similar symptoms but would not show the distinct bulging bluish membrane at the vulvar surface. Bartholin cysts (Option A) are located at the posterior introitus and are not associated with amenorrhea. Endometrioma (Option D) is an ovarian "chocolate cyst" seen in older women. Treatment for imperforate hymen is a simple cruciate incision to allow the trapped blood to drain. Therefore, the physical visual of the bulging blue introitus definitively confirms the diagnosis. Recognizing this early prevents complications like endometriosis or retrograde menstruation. .

238. What is the absolute contraindication for the device depicted in the image below?

(A) Anemia

(B) Vaginal bleeding

(C) Uterine malformations

(D) Uterine fibroids

Examination Paper December 2021 Question

Question 153. A 31-year-old woman with diabetes mellitus delivers a full-term infant. Which of the following complications is the newborn at risk of developing due to maternal diabetes?

A. Hyperglycemia

B. Tetralogy of Fallot

C. Hypercalcemia

D. Hypoglycemia

Correct answer: D

Infants of diabetic mothers (IDMs) are at a high risk for several neonatal complications. The most common acute metabolic issue is neonatal hypoglycemia (Option D) . During pregnancy, the fetus is exposed to high maternal glucose, which crosses the placenta and triggers fetal pancreatic hypertrophy and hyperinsulinemia. After birth, the maternal glucose supply is suddenly cut off, but the baby's insulin levels remain high, leading to a rapid drop in blood sugar. IDMs are also at risk for hypocalcemia (not hypercalcemia, Option C) and various congenital heart defects, most notably ventricular septal defects or transposition of the great arteries (Tetralogy of Fallot, Option B, is less specifically linked than these). Hyperglycemia (Option A) would not occur in a hyperinsulinemic neonate. Therefore, close monitoring of blood glucose levels in the immediate postpartum period is mandatory for all IDMs to prevent neurological injury from hypoglycemia. .

Question 154. In which clinical situations is it essential to perform serial measurements of serum beta-hCG (human chorionic gonadotropin) levels?

A. Downs syndrome

B. Pregnancy associated with Neural tube defects

C. Molar pregnancy

D. Rh negative pregnancy

Correct answer: C

Serial monitoring of serum beta-hCG is the absolute standard of care for the follow-up of a molar pregnancy (gestational trophoblastic disease) . After surgical evacuation, hCG levels must be measured weekly until they become undetectable to ensure that no trophoblastic tissue remains. Persistent or rising levels indicate the development of gestational trophoblastic neoplasia (e.g., choriocarcinoma), which requires chemotherapy. In Down syndrome (Option A), hCG is measured as part of a one-time "quadruple screen," not for serial monitoring. Neural tube defects (Option B) are screened via alpha-fetoprotein. Rh-negative pregnancy (Option D) is managed by monitoring maternal antibody titers, not hCG. Therefore, because hCG is the definitive tumor marker for molar disease progression, its serial measurement is critical for patient survival and the detection of malignancy. Patients are typically advised to avoid pregnancy until hCG levels have remained normal for six months. .

OBS & GYNE

Question 155. In a patient with endometrial carcinoma receiving pelvic external beam radiation, which pelvic organ is most sensitive to radiation?

A. Ovary

B. Vagina

C. Bladder

D. Rectum

Correct answer: A

Radio-sensitivity refers to the susceptibility of an organ or tissue to damage from ionizing radiation. Among the pelvic organs listed, the ovary (Option A) is definitively the most sensitive to radiation . Even very low doses of radiation can cause permanent damage to the ovarian follicles, leading to premature ovarian failure and sterility. In contrast, the vagina (Option B), bladder (Option C), and rectum (Option D) are relatively more radio-resistant, although they can still suffer from late-term radiation effects like cystitis or proctitis at higher cumulative doses. Because the oocytes are highly specialized and non-regenerative cells, the ovary serves as the limiting organ for dose planning in younger patients. Therefore, protecting the ovaries or performing an oophoropexy (moving the ovaries out of the radiation field) is a critical consideration in pelvic oncology to preserve endocrine function and fertility. .

Question 156. Miss Uma presents with a six-month history of a mass descending through her vagina. Examination reveals a grade 3 uterovaginal prolapse with an associated pressure ulcer on the prolapsed tissue. What is the likely cause of this pressure ulcer, and what are the appropriate treatment options?

A. Malignancy and excision

B. Venous congestion and reduction of the pro- lapsed part into the vagina and daily packing with glycerine and acriflavine

C. Infection and antibiotics

D. Trauma and dressing

Correct answer: B

A pressure ulcer occurring on a prolapsed uterus or vagina is known as a decubitus ulcer. This ulcer is primarily caused by venous congestion (Option B), as the downward displacement of the organs stretches the veins, leading to edema and tissue breakdown . Infection (Option C), trauma (Option D), and malignancy (Option A) are not the primary causes, although the ulcer can become secondarily infected. The standard and most effective treatment is to reduce the

prolapsed part back into the vagina to restore circulation, followed by daily packing with glycerine and acriflavine. Glycerine acts as a hygroscopic agent to reduce tissue edema, while acriflavine serves as an antiseptic. This treatment is mandatory to heal the ulcer before any definitive surgical repair (like a vaginal hysterectomy) can be performed safely. Therefore, restoring local blood flow and managing edema is the definitive management strategy for decubitus ulcers. .

Question 157. What is the most common cause of Condyloma Acuminata?

A. HPV 31, 33

B. HPV 6, 11

C. HPV 16, 18

D. HPV 16, 11

Correct answer: B

Condyloma Acuminata, also known as anogenital warts, are benign epithelial tumors of the skin and mucosa. The absolute most common cause, responsible for over 90% of all genital warts, is infection with the Human Papillomavirus (HPV) serotypes 6 and 11 (Option B) . These are classified as "low-risk" HPV types because they have a minimal association with the development of invasive cancer. In contrast, HPV 16 and 18 (Option C) are "high-risk" types most strongly linked to cervical, anal, and oropharyngeal carcinomas. HPV 31 and 33 (Option A) are also high-risk types but are less common than 16 and 18. Recognizing the difference between these serotypes is vital for understanding the rationale behind HPV vaccines (like the quadrivalent or nonavalent versions) which target both the high-risk types for cancer prevention and the low-risk types for wart prevention. Therefore, HPV 6 and 11 are the definitive causative agents. .

Question 158. A patient in a gynecology clinic presents with a cystic lesion diagnosed as condition X, for which marsupialization is considered the treatment of choice. Where is this lesion located?

A. Perineal body

B. Bartholin gland

C. Vagina

D. Cervix

Correct answer: B

The surgical procedure known as marsupialization is the "gold standard" and optimal treatment for a symptomatic Bartholin gland cyst or abscess (Condition X) . The Bartholin glands are located at the 4 o’clock and 8 o’clock positions in the posterior third of the labia majora. When the duct becomes blocked, a cyst forms; if this becomes infected, it develops into an abscess.

Marsupialization involves making an incision into the cyst and suturing the edges of the cyst wall to the surrounding skin, effectively creating a permanent "pouch" that allows for continuous drainage and prevents recurrence. The perineal body (Option A), vagina (Option C), and cervix (Option D) are not the sites for this specific procedure. Therefore, because marsupialization is the definitive treatment for chronic Bartholin duct pathology, the Bartholin gland is the precise anatomical location of the lesion. This procedure preserves the function of the gland for lubrication..

Question 159. A lactating mother reports breast cramping during breastfeeding. Which hormone is primarily responsible for this sensation?

A. Progesterone

B. Estrogen

C. Prolactin

D. Oxytocin

Correct answer: D

The "breast cramps" or tingling sensation reported by a breastfeeding mother during the "let-down" reflex is directly caused by Oxytocin (Option D) . When an infant suckles at the nipple, sensory signals are sent to the posterior pituitary, triggering the release of oxytocin. This hormone travels to the breast, where it causes the contraction of myoepithelial cells surrounding the alveoli, squeezing milk into the ducts. These rhythmic contractions are often perceived as cramping. Prolactin (Option C) is responsible for the actual production of milk (galactopoiesis), while estrogen (Option B) and progesterone (Option A) are involved in breast development during pregnancy but actually inhibit milk production until their levels drop after delivery. Therefore, oxytocin is the hormone definitively responsible for the mechanical ejection of milk and the associated maternal cramping. This same hormone also causes uterine contractions postpartum, helping the uterus return to its pre-pregnancy size. .

Question 160. A 27-year-old woman presents with a one-week history of foul-smelling vaginal discharge. She has a positive Whiff test, and Gram stain shows clue cells. What is the recommended treatment for her condition?

A. Metronidazole

B. Nystatin pessary

C. Tetracycline

D. Azithromycin

Correct answer: A

The clinical presentation of a foul-smelling vaginal discharge with a positive Whiff’s test (fishy

odor on adding KOH) and the pathognomonic finding of "clue cells" on a Gram stain is diagnostic of Bacterial Vaginosis (BV) . BV is caused by a shift in vaginal flora, specifically an overgrowth of anaerobes like Gardnerella vaginalis. The preferred first-line treatment for BV is Metronidazole (Option A), administered either orally or intravaginally. Nystatin (Option B) is used for vaginal candidiasis. Tetracycline (Option C) and Azithromycin (Option D) are used for STIs like Chlamydia but are not effective for the anaerobic shift of BV. Therefore, based on the classic Amsel criteria provided in the scenario, metronidazole is the definitive pharmacological choice. Treating the sexual partner is not routinely required for BV, unlike for trichomoniasis. Effective treatment rapidly resolves the odor and discharge symptoms..

PEDIATRICS

Question 161. A newborn presents with a sac-like protrusion on the lower back, covered by a thin membrane containing spinal cord tissue and nerves, along with lower limb weakness and sensory deficits. The mother reports inadequate folic acid intake during pregnancy. What is the most likely diagnosis?

A. Cleft lip and palate

B. Down syndrome

C. Gastroschisis

D. Spina bifida

Correct answer: D

The description of a sac-like protrusion on the back containing neural tissue (specifically a myelomeningocele) is the hallmark of Spina Bifida (Option D) . This is an open neural tube defect resulting from the failure of the caudal neuropore to close during the fourth week of embryological development. The associated neurological deficits (weakness and sensory loss) result from the exposed spinal cord. The mother's history of insufficient folic acid intake is a well-documented primary risk factor for this condition. Cleft lip (Option A), Down syndrome (Option B), and gastroschisis (Option C, a ventral wall defect) are different congenital anomalies with distinct presentations unrelated to spinal cord herniation. Therefore, given the specific structural defect and its established link to folic acid deficiency, spina bifida is the definitive diagnosis. Early surgical closure and multidisciplinary management are essential to prevent infection and manage long-term neurological and orthopedic complications. .

Question 162. A 6-year-old unimmunized child presents to the emergency room with fever, cough, and difficulty breathing. Examination reveals a tonsillar pseudomembrane that bleeds when

removed and a swollen neck giving a “bull-neck” appearance. What is the most likely diagnosis?

A. Subdural hemorrhage

B. Pituitary apoplexy

C. Subarachnoid hemorrhage

D. Pituitary carcinoma

Correct answer: C

The most likely diagnosis is subarachnoid hemorrhage (SAH). The patient presents with a sudden severe headache (thunderclap headache) and neck stiffness, which are classic clinical features of SAH caused by irritation of the meninges. On the non-contrast CT scan, the arrow indicates a hyperdense area in the basal cisterns, representing acute blood in the subarachnoid space. This appearance is characteristic and often described as a “star-shaped” pattern around the circle of Willis.

Option (A) subdural hemorrhage is incorrect because it appears as a crescent-shaped collection along the cerebral convexity, not within the basal cisterns. Option (B) pituitary apoplexy typically presents with hemorrhage in the sellar/suprasellar region and may show visual disturbances rather than diffuse basal cistern hyperdensity. Option (D) pituitary carcinoma is extremely rare and presents as a mass lesion, not an acute hemorrhagic pattern on CT.

Thus, the clinical presentation combined with CT findings confirms subarachnoid hemorrhage.

Question 163. A 72-year-old man presents with unexplained weight loss, decreased appetite, and iron-deficiency anemia. Chest X-ray shows multiple nodular opacities throughout the lungs. What is the most likely diagnosis?

A. Lung metastasis

B. Bronchogenic carcinoma

C. Miliary tuberculosis

D. Mesothelioma

Correct answer: A

The provided chest X-ray shows numerous large, well-defined, and widely scattered round opacities in both lung fields. This is the hallmark "cannonball metastasis" pattern (Option A) . In an elderly male with weight loss and iron deficiency anemia, these nodules likely represent hematogenous spread from a primary malignancy such as renal cell carcinoma or colorectal cancer.

Bronchogenic carcinoma (Option B) usually presents as a single large hilar mass. Miliary tuberculosis (Option C) is characterized by very small (mm), diffuse "millet seed" nodules rather than large cannonball masses. Mesothelioma (Option D) causes diffuse pleural thickening

rather than parenchymal balls. Therefore, because the large, discrete, and bilateral nature of the masses is pathognomonic for secondary deposits, lung metastasis is the definitive diagnosis. This radiographic finding is a classic indicator of late-stage systemic malignancy.

Question 164. A 43-year-old person is brought to the emergency department by the police with a belief that his daughter plans to harm him. Investigations reveal that this claim is unfounded, and physical examination shows no abnormalities. What is the most likely diagnosis?

A. Delusional disorder

B. lllusions

C. Cotard syndrome

D. Hallucinations

Correct answer: A

The patient has a fixed, false belief that his daughter intends to harm him despite clear evidence to the contrary. This is a classic persecutory delusion. Since the belief is well-structured, persistent, and not accompanied by other major psychotic features or physical abnormalities, it fits delusional disorder.

Why Other Options Are Wrong

(B)

Illusions : These are misinterpretations of real external stimuli (e.g., mistaking a rope for a snake), not fixed false beliefs.

(C)

Cotard syndrome : Involves nihilistic delusions (e.g., believing one is dead or organs are missing), not persecutory ideas.

(D)

Hallucinations : These are perceptions without external stimuli (e.g., hearing voices), not belief-based disturbances.

Question 165. A 6-year-old child presents for a routine well-child visit. Examination reveals a systolic murmur and a widely split second heart sound that is fixed and does not vary with respiration. There is no family history of heart disease. What is the most likely diagnosis?

B. Tonsillitis

C. Diphtheria

D. Candidiasis

Correct answer: C

The clinical presentation of a "bull-neck" appearance (due to massive cervical lymphadenopathy) and an adherent, grayish pseudomembrane on the tonsils that bleeds upon removal is pathognomonic for Diphtheria . The risk is significantly higher in an unimmunized child. Diphtheria is caused by Corynebacterium diphtheriae, which produces a powerful exotoxin. Infectious mononucleosis (Option A) and common tonsillitis (Option B) can cause membranes, but they are typically exudative and wipe off easily without bleeding. Oral candidiasis (Option D) presents with white, curd-like patches but not severe neck swelling and systemic toxicity. Therefore, the combination of specific physical signs and lack of immunization makes Diphtheria the definitive diagnosis. Management requires immediate administration of diphtheria antitoxin and antibiotics (erythromycin or penicillin) to prevent lethal complications like airway obstruction, myocarditis, and polyneuropathy. Public health reporting and contact tracing are also mandatory. .

Question 166. A child with short stature is evaluated and found to have elevated growth hormone (GH) levels but low insulin-like growth factor-1 (IGF-1) levels. What is the most likely cause of the child’s growth abnormality?

A. GH deficiency

B. GHRH deficiency

C. GH receptor anomaly

D. IGF-1 deficiency

Correct answer: C

The biochemical profile of elevated Growth Hormone (GH) levels paired with low IGF-1 levels signifies GH insensitivity syndrome, also known as Laron syndrome. This condition is most likely caused by a GH receptor anomaly (Option C) . Because the receptors are defective, the liver cannot respond to the circulating GH to produce IGF-1, which is the mediator for growth. The pituitary senses the low IGF-1 and continues to secrete high levels of GH in a futile attempt to compensate.

GH deficiency (Option A) and GHRH deficiency (Option B) would both result in low circulating GH levels. While isolated IGF-1 deficiency (Option D) exists, the classic pediatric boards association for "high GH but low IGF-1" is the receptor defect . Therefore, the disruption in the GH signaling pathway at the receptor level is the definitive cause. These children present with extreme short stature, midfacial hypoplasia, and blue sclera.

Question 167. Which nerve injury is most commonly responsible for the deformity seen in a patient with leprosy?

A. Ulnar nerve

B. Radial nerve

C. Median nerve

D. Posterior interosseous nerve

Correct answer: A

Leprosy (Hansen's disease) is a chronic infectious disease that has a predilection for the peripheral nerves. The ulnar nerve is the most common nerve affected in the upper limb in leprosy patients (Option A) . Damage to the ulnar nerve at the elbow or wrist leads to the classic "claw hand" deformity, characterized by hyperextension of the metacarpophalangeal joints and flexion of the interphalangeal joints of the ring and little fingers.

Median nerve injury (Option C) leads to "ape thumb" deformity and is the second most common upper-limb nerve affected. Radial nerve injury (Option B) causing wrist drop is much less frequent. The posterior interosseous nerve (Option D) is a branch of the radial nerve. Because the ulnar nerve is uniquely susceptible to the thickening and inflammation caused by Mycobacterium leprae in its superficial course, it is the definitive answer for the primary neuro-orthopedic deformity in this population.

Question 168. A 30-year-old woman is brought to the psychiatric outpatient department by a friend. She believes her boss is in love with her and is stalking her, but her friend denies these claims. What is the most likely diagnosis?

A. Megalomania

B. Delusion of reference

C. Delusion of control

D. Erotomania

Correct answer: D

The patient’s belief that her boss is in love with her, despite a lack of evidence or direct interaction, is the defining symptom of Erotomania (also known as Clerambault syndrome) (Option D). This is a subtype of delusional disorder where the individual believes that another person, usually of higher social or professional status, is deeply in love with them.

Megalomania (Option A) involves delusions of grandeur or extreme power. Delusion of reference (Option B) is the belief that neutral events or remarks have a special personal meaning. Delusion of control (Option C) is the belief that one's thoughts or movements are being directed by an external force. Because the patient’s fixed, false belief is specifically centered on a perceived romantic relationship with a person of higher status, erotomania is the definitive psychiatric diagnosis. Management typically involves antipsychotic medications and psychosocial interventions.

298. A mental health practitioner is evaluating aripiprazole for a patient with psychotic symptoms. Compared to other antipsychotics,

Vitamin D synthesis begins in the skin and requires ultraviolet (UVB) radiation from sunlight. The specific photochemical reaction occurs when 7-dehydrocholesterol, found in the epidermal layers, is converted into cholecalciferol (Vitamin D3) upon exposure to sunlight. This is the only non-enzymatic step in the metabolic pathway. Subsequent steps involve enzymatic hydroxylation in the liver and kidneys. Cholecalciferol is converted to 25-hydroxycholecalciferol (Calcidiol) in the liver by 25-hydroxylase (Option C). The final activation step occurs in the kidney, where 25-hydroxycholecalciferol is converted to 1,25-dihydroxycholecalciferol (Calcitriol) by 1-alpha-hydroxylase (Option D). Calcitriol is the active hormone responsible for calcium homeostasis. Option A is an impossible reverse reaction. Therefore, the initial dermal production of D3 is the definitive stage dependent on sunlight exposure.

Menkes disease (kinky hair syndrome) results from a defect in the metabolism of which substance?

(A)

Zinc

(B)

Copper

(C)

Iron

(D)

Magnesium

13. (B) Copper

Menkes disease is an X-linked recessive disorder caused by a mutation in the ATP7A gene, which encodes a copper-transporting protein. This mutation results in impaired copper absorption from the intestines and its defective distribution to various tissues. Consequently, patients suffer from severe copper deficiency, which impacts the function of essential copper-dependent enzymes like lysyl oxidase and tyrosinase. Clinical hallmarks include sparse, steely, or "kinky" hair, failure to thrive, and progressive neurological deterioration. Disturbance in zinc metabolism (Option A) leads to acrodermatitis enteropathica. Iron metabolism defects (Option C) cause conditions like hemochromatosis or sideroblastic anemia. Magnesium deficiency (Option D) is typically an electrolyte imbalance rather than a primary genetic metabolic syndrome. Because the underlying pathology of Menkes syndrome is specifically the inability of cells to transport copper effectively, copper is the responsible metabolic element.

Classical galactosemia is caused by a deficiency of the enzyme:

(A)

Aldose reductase

(B)

Galactokinase

(C)
Galactose-1-phosphate uridyl transferase
(D)
UDP galactose-4-epimerase
14. (C) Galactose-1-phosphate uridyl transferase
Classical galactosemia is an autosomal recessive metabolic disorder characterized by the inability to metabolize galactose, a sugar found in milk. The "classical" form of the disease is specifically caused by a deficiency of the enzyme galactose-1-phosphate uridyl transferase (GALT). This deficiency leads to the toxic accumulation of galactose-1-phosphate in various organs, including the liver and brain.
Aldose reductase (Option A) converts excess galactose into galactitol, which contributes to cataract formation in untreated patients. Galactokinase deficiency (Option B) causes a milder form of the disease primarily characterized by early cataracts.
UDP galactose-4-epimerase deficiency (Option D) is an extremely rare variant. Classical GALT deficiency presents in infancy with jaundice, hepatomegaly, failure to thrive, and sepsis if milk is not removed from the diet. Therefore, GALT is the definitive enzyme lacking in the classical presentation of this syndrome.
Which of the following options is not a physiological function of glucagon?
(A)
Glycolysis

(B)
Gluconeogenesis
(C)
Glycogenolysis
(D)
Ketogenesis
15. (A) Glycolysis
Glucagon is a catabolic hormone secreted by the pancreatic alpha cells in response to low blood glucose levels. Its primary goal is to increase blood sugar by acting on the liver.
Glucagon stimulates gluconeogenesis (synthesis of new glucose) (Option B) and glycogenolysis (breakdown of stored glycogen) (Option C).
It also promotes ketogenesis (production of ketone bodies) (Option D) as an alternative energy source.
Critically, glucagon inhibits glycolysis (Option A) in the liver to prevent the immediate consumption of the glucose it is trying to produce.
By inhibiting key glycolytic enzymes like phosphofructokinase-1, glucagon ensures that glucose is exported to the systemic circulation rather than broken down into pyruvate.
Therefore, while the other processes mentioned are stimulated by glucagon to maintain energy balance during fasting, glycolysis is the only pathway listed that it actively suppresses.
A 34-year-old man presents with abdominal pain, poor appetite, and chronic diarrhea over several weeks, with a history of a maize-based diet. Clinical examination reveals glossitis, a pigmented rash on sun-exposed areas, and a lesion around the neck. What is the most likely diagnosis in this patient?
(A)
Pellagra
(B)

Scurvy
(C)
Megaloblastic anemia
(D)
Beriberi
16. (A) Pellagra
The
patient's
clinical
presentation—
characterized
by
diarrhea,
glossitis,
and
a pigmented rash in sun-exposed areas
(photosensitivity)—is classic for pellagra. The
lesion on his neck is likely Casal's necklace,

Question 169. A young man is brought to the emergency department following a road traffic accident. His left leg is shortened, internally rotated, and adducted, with absent femoral artery pulsation. A plain radiograph is provided. What is the most likely diagnosis based on these findings?

Examination Paper December 2021 Question

A. Bohr effect
B. Boyle's principle
C. Bernoulli principle
D. Mapleson's circuit

Correct answer: C

The image displays a Venturi mask, which is a high-flow oxygen delivery system. Its operation is based on the Bernoulli principle (Option C) . According to this principle, as a gas (oxygen) passes through a narrow orifice at a high velocity, it creates a local area of low pressure. This low pressure "entrains" or pulls in a precise amount of room air through side ports. By varying the size of the orifice, the mask can deliver a fixed, accurate FiO2 to the patient.

The Bohr effect (Option A) refers to the shift in hemoglobin's oxygen affinity due to . Boyle's law

(Option B) relates pressure and volume of a gas. Mapleson's circuit (Option D) refers to different breathing system configurations rather than a physics principle for air entrainment. Therefore, the Bernoulli principle is the definitive physical law that allows the Venturi mask to provide consistent oxygen concentrations regardless of the patient's breathing pattern.

Question 170. A 74-year-old man presents with low back pain radiating to the leg. Spinal examination reveals a palpable “step” in the lumbosacral region, as seen on the provided X-ray. What is the most likely diagnosis?

A. Spondylolysis

B. Spondylolisthesis

C. Disk prolapse

D. Spondylosis

Correct answer: B

The patient’s clinical finding of a palpable "step-off" in the lumbosacral region is pathognomonic for Spondylolisthesis (Option B) . Spondylolisthesis is defined as the forward translation or slipping of one vertebra over another. The provided X-ray confirms this, showing the L5 vertebral body clearly displaced anteriorly relative to the S1 segment.

Spondylolysis (Option A) refers to a defect or stress fracture in the pars interarticularis but without the actual "slip" or step-off. Spondylosis (Option D) is a general term for age-related degenerative changes (osteoarthritis) of the spine. Disc prolapse (Option C) causes radiating pain but would not result in a structural bony step on palpation or lateral X-ray. Therefore, because of the definitive radiological visual of vertebral displacement and the corresponding physical exam finding, spondylolisthesis is the correct diagnosis. It is commonly associated with degenerative changes in older adults or prior lysis in younger patients.

Question 171. A 30-year-old man presents with gradually worsening swelling around his wrist over the past 3 months. Based on the provided X-ray image, what is the most likely diagnosis?

A. Ewing's sarcoma

B. Osteosarcoma

C. Osteoclastoma

D. Osteochondroma

Correct answer: C

The X-ray displays an eccentric, expansile, and multi-loculated lytic lesion in the epiphysis of the distal radius, classically described as having a "soap-bubble" appearance. Most significantly, the lesion extends right up to the subchondral bone (articular surface). These are

the hallmark radiological findings for Osteoclastoma, also known as a Giant Cell Tumor (GCT) (Option C). GCT is typically seen in young adults (ages 20-40) and is locally aggressive.
Ewing’s sarcoma (Option A) classically shows an "onion-skin" periosteal reaction in the diaphysis. Osteosarcoma (Option B) would show a "sunburst" appearance and Codman's triangle. Osteochondroma (Option D) appears as a bony growth on a stalk (exostosis) pointing away from the joint. Because the subarticular "soap-bubble" location is so characteristic, Osteoclastoma is the definitive diagnosis. Treatment involves surgical curettage and bone grafting or cementation to prevent joint collapse.

Question 172. A patient is diagnosed with supraspinatus tendinitis. At what degree of shoulder abduction is pain most likely to occur in this condition?

A. 0-60 degrees
B. 60-120 degrees
C. More than 120 degrees
D. None of the above

Correct answer: B

Supraspinatus tendinitis is a common cause of shoulder pain. The hallmark clinical finding is the "Painful Arc" sign. A patient with this condition typically experiences maximal pain during mid-range shoulder abduction, specifically between 60 and 120 degrees (Option B) . This occurs because the inflamed supraspinatus tendon and subacromial bursa are compressed against the acromion as the humerus rotates upward through this specific range.
Pain from 0-60 degrees (Option A) is less common and may suggest other pathologies. Pain after 120 degrees (Option C) often diminishes as the greater tuberosity cleared the acromion, or it may indicate an AC joint issue. Because the subacromial space is most narrow during the middle of the abduction arc, the 60-120 degree range is the definitive clinical hallmark for subacromial impingement and supraspinatus tendinitis. This is a fundamental concept in orthopedic physical examination of the shoulder.

Question 173. A patient presents with a 10-day history of severe knee pain and inflammation, along with dysuria. The patient also had diarrhea about a month ago, followed by malaise. Based on this clinical history, what is the most likely diagnosis?

A. Reactive arthritis
B. Enteropathic arthritis
C. Rheumatoid arthritis
D. Psoriatic arthritis

Correct answer: A

The combination of an asymmetric large joint arthritis (knee), urethritis (painful urination), and a preceding gastrointestinal infection (diarrhea 1 month ago) is pathognomonic for Reactive Arthritis (formerly Reiter’s syndrome) (Option A) . This is an HLA-B27 associated spondyloarthropathy where joints become inflamed as a sterile autoimmune response following a distant infection, often by Salmonella, Shigella, or Chlamydia.

Enteropathic arthritis (Option B) is associated with active inflammatory bowel disease (Crohn’s/ UC). Rheumatoid arthritis (Option C) is typically a symmetric, chronic polyarthritis of small joints. Psoriatic arthritis (Option D) involves skin lesions and dactylitis. Because the symptoms follow the classic "can't see, can't pee, can't climb a tree" triad (though only eye/joint/urine are standard) and occur post-infection, Reactive Arthritis is the definitive diagnosis. Treatment involves NSAIDs and management of the trigger infection if still present.

DERMATOLOGY

Question 174. A 45-year-old man presents to dermatology with an itchy rash. Examination reveals flat-topped, polygonal, purplish papules with fine white lines, predominantly on the inner wrists, forearms, and lower back. He also reports oral discomfort and white, lacy patches inside his cheeks. What is the most likely diagnosis?

A. Psoriasis

B. Eczema

C. Lichen Planus

D. Tinea corporis

Correct answer: C

The provided clinical description is pathognomonic for Lichen Planus (Option C) . Lichen planus is defined by the "6 Ps": Purple, Pruritic (itchy), Polygonal, Planar (flat-topped), Papules, and Plaques. The "fine white lines" on the surface are known as Wickham striae. Its characteristic distribution on flexor surfaces like the inner wrists and forearms is typical. Furthermore, the presence of white, lacy patches in the mouth (buccal mucosa) confirms oral lichen planus.

Psoriasis (Option A) presents with thick plaques and silvery scales on extensor surfaces (elbows/knees). Eczema (Option B) involves poorly defined, itchy, red patches. Tinea corporis (Option D) is a fungal infection characterized by ring-shaped (annular) lesions with central clearing. Because the patient’s symptoms perfectly match the color, shape, and systemic distribution (oral/cutaneous) of the 6 Ps, Lichen Planus is the definitive diagnosis. It is often associated with Hepatitis C infection.

Question 175. A patient underwent lipoma excision 5 weeks ago and now presents with a scar confined to

the original incision site. What is the most likely diagnosis?

A. Keloid

B. Exuberant granulation

C. Hypertrophic scar

D. Granulation tissue

Correct answer: C

A thickened, raised scar that remains confined within the boundaries of the original incision is definitively a Hypertrophic scar (Option C) . These typically develop within weeks of a surgical procedure or injury and may regress over time.

In contrast, a Keloid (Option A) is a more aggressive fibrotic lesion that characteristically extends beyond the original boundaries of the wound, invading the surrounding normal skin, and rarely regresses spontaneously. Exuberant granulation (Option B), or "proud flesh," refers to red, friable tissue that grows above the skin level in a non-healing wound, rather than a mature scar. Granulation tissue (Option D) is the normal vascular tissue formed during the healing process. Because the description specifies the scar is exactly within the incision limits, Hypertrophic scar is the correct forensic and dermatological classification. This distinction is vital for planning treatment, as hypertrophic scars often respond well to pressure or silicone sheets.

Question 176. A boy presents with multiple bullous lesions on the trunk and periostitis evident on X-rays. What is the next appropriate investigation to perform?

A. VDRL of mother & child

B. PCR for maternal TB

C. HBsAg screening

D. ELISA of mother and Child

Correct answer: A

The clinical presentation of a neonate or young child with multiple bullous lesions (syphilitic pemphigus) and radiological evidence of periostitis (bone inflammation) is highly diagnostic of Congenital Syphilis . The most appropriate next step in the diagnostic workup is to perform a VDRL test on both the mother and the child (Option A). This non-treponemal screening test is used to detect antibodies against Treponema pallidum.

PCR for TB (Option B) and HBsAg (Option C) or general ELISA (Option D) are unrelated to this specific orthopedic-cutaneous presentation. Congenital syphilis is also associated with findings like snuffles, Hutchinson's teeth, and saber shins later in life. Therefore, because the combination of bullae and periostitis is pathognomonic for fetal-maternal transmission of spirochetes, VDRL is the definitive next investigation. Prompt diagnosis is essential for initiating

penicillin therapy to prevent further systemic damage and long-term sequelae.

Question 177. The "dilapidated brick wall" appearance is classically seen in the histopathology of the following?

A. Hailey Hailey disease

B. Pemphigus vulgaris

C. Darier's disease

D. Bullous pemphigoid

Correct answer: A

The "dilapidated brick wall" appearance is a pathognomonic histopathological term used to describe Hailey-Hailey disease (Benign Familial Pemphigus) (Option A) . This genetic disorder is characterized by widespread acantholysis (loss of cell-to-cell adhesion) throughout the entire epidermis. On microscopy, the partially detached keratinocytes resemble a crumbling or dilapidated wall.

Pemphigus vulgaris (Option B) also features acantholysis but it is typically suprabasal, resulting in a "tombstone" appearance of the basal layer. Darier’s disease (Option C) is characterized by dyskeratosis with "corps ronds" and "grains." Bullous pemphigoid (Option D) involves a subepidermal split without acantholysis. Because the "dilapidated wall" specifically describes the extensive, irregular epidermal detachment seen in this familial condition, Hailey-Hailey is the definitive diagnosis. It typically presents with recurrent blisters and erosions in the skin folds (axilla/groin). Understanding these distinct histological patterns is crucial for differentiating various immunobullous and genetic skin disorders.

ANAESTHESIA

Question 178. 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 veins of an isolated limb. Lidocaine (0.5% preservative-free) is the most appropriate and standard drug used for this technique (Option D) . It provides a rapid onset and has a high safety profile.

Bupivacaine (Option A) is strictly contraindicated in IVRA because it is highly cardiotoxic. If the tourniquet fails and the drug enters the systemic circulation, it can cause lethal cardiac arrest that is very difficult to resuscitate. Mepivacaine (Option B) and Procaine (Option C) are not the

standard agents for this specific procedure due to their pharmacokinetic or toxicity profiles. Therefore, because of its effectiveness and lower risk of fatal systemic toxicity upon release, Lidocaine is the definitive and only safe choice listed for a Bier block. This pharmacological knowledge is a critical safety component of regional anesthesia board exams.

RADIOLOGY

Question 179. An elderly woman present€d with symptoms of confusion, thirst, and abdominal Paln. On examination, she had pallor and thoracic spine tenderness. Her lab investigations showed the foltowing ffndings' An x-ray of her skull is shown below What is the most likely diagnosis?
Hb - 6.egldl
WBC 4000/cm3 with normal dlfferenual count
serum calcium 13 mg/dl
Creatinine 2,3mg/dl
Total protein 9g/dl
AJbumin 2.49ldl
Urinalysis: poslthrc for Bence-lones prutelns

A. Metastatic breast cancer
B. Multiple myeloma
C. Primary hyperparathyroidism
D. Milk alkali syndrome

Correct answer: B

The clinical and radiological findings are pathognomonic for Multiple Myeloma (Option B) . The skull X-ray displays multiple small, well-defined "punched-out" lytic lesions, often referred to as a "pepper-pot skull." The systemic symptoms—confusion (due to hypercalcemia), thirst (polyuria), and abdominal pain—correlate with the metabolic derangements of this plasma cell malignancy. The laboratory results provided in the source (Hb 6.9, high Ca, high Protein, and Bence-Jones proteins) further confirm the diagnosis.

Primary hyperparathyroidism (Option C) causes a "salt and pepper" skull, but it lacks the discrete punched-out lesions seen in myeloma. Metastatic breast cancer (Option A) can cause lytic lesions but would not show Bence-Jones proteins. Milk alkali syndrome (Option D) involves hypercalcemia without skeletal destruction. Therefore, based on the specific combination of "CRAB" features and the pathognomonic skull radiograph, Multiple Myeloma is the definitive diagnosis. Management involves chemotherapy and stem cell transplantation.

Question 180. What is the probable diaglosis for a young man who visits tfie emergency department due to

intense abdominal pain, accompanied by three incidents of vomiting within the past nine hours? The patient reports that the pain extends to the backand is partly alleviated by bending forward. Attached below is an abdominal radiograph of the patient displaying a 'colon cut'offsign'.

A. Acute hepatitis

B. Acute pancreatitis

C. Acute colitis

D. Intestinal obstruction

Correct answer: B

The clinical presentation of

intense epigastric pain that radiates to the back and is alleviated by leaning forward is highly characteristic of Acute Pancreatitis (Option B) . The provided radiograph confirms this, showing the "colon cut-off sign", which is a localized ileus (absence of gas) in the descending colon due to spread of pancreatic inflammation.

Acute hepatitis (Option A) and colitis (Option C) do not typically present with this specific pain-relief posture or the colon cut-off sign. Intestinal obstruction (Option D) would show multiple air-fluid levels throughout the gut rather than a specific cutoff point with back-radiating pain. Because the symptoms and radiological cues are both pathognomonic indicators of pancreatic inflammation, Acute Pancreatitis is the definitive diagnosis. Confirmatory testing would include serum amylase and lipase levels. This condition is frequently triggered by gallstones or alcohol consumption.

Question 181. In the case presented, can you identify the imaging technique employed and the specific diagnosis related to the kidneys?

A. MRI of polycystic kidney disease

B. CT of polycystic kidney disease

C. MRI of Horseshoe kidney

D. CT of Horseshoe Kidney

Correct answer: A

The image displays characteristic MRI features — notably the bright white (hyperintense) rounded structures on this T2-weighted sequence. MRI uses magnetic fields, and fluid-filled cysts appear brilliantly white on T2 imaging. CT scans appear in Hounsfield grayscale with different tissue contrast, lacking this distinctive fluid brightness pattern.

Diagnosis — Polycystic Kidney Disease (PKD) : Both kidneys are massively enlarged, completely replaced by innumerable cysts of varying sizes, with virtually no normal renal parenchyma visible. This is the classic appearance of Autosomal Dominant PKD (ADPKD), the most common inherited kidney disorder. The bilateral symmetrical involvement with hundreds of cysts is pathognomonic.

Why Other Options are Wrong:

(B)

CT of Polycystic Kidney Disease : The imaging modality is MRI not CT; the bright white fluid signal on T2 confirms MRI technique.

(C)

MRI of Horseshoe Kidney : Horseshoe kidney shows fusion of lower poles across the midline with normal parenchyma : no multiple cysts present.

(D)

CT of Horseshoe Kidney : Wrong both in modality (CT) and diagnosis (horseshoe); neither matches the bilateral cystic enlargement seen here.

Question 182. A 68-year-old man presents with chronic back pain, frequent fatigue, and a history of recurrent urinary tract infections over the past three months. Laboratory tests show elevated ESR, and skull X-ray reveals abnormalities. Which diagnostic test is most appropriate to further evaluate his condition?

A. MRI of the brain

B. PET scan

C. Head CT scan with contrast

D. Serum electrophoresis

Correct answer: D

The patient’s presentation—elderly male with back pain, anemia (suggested by fatigue), and the provided skull radiograph showing multiple "punched-out" lytic lesions—is pathognomonic for Multiple Myeloma . Once this diagnosis is suspected, the most appropriate and essential next diagnostic test is Serum Protein Electrophoresis (SPEP) (Option D). This test will identify the presence of a monoclonal "M-spike," confirming the production of monoclonal proteins by malignant plasma cells.

MRI of the brain (Option A) and CT scan (Option C) would show the structural lesions but do not provide the definitive biochemical evidence required for diagnosis. A PET scan (Option B) is useful for staging but is not the primary diagnostic investigation. Therefore, because SPEP (along with UPEP) is the gold standard for confirming the underlying plasma cell dyscrasia, it is

the definitive next step. Early diagnosis is critical for managing potential renal failure and hypercalcemia.

Examination Paper December 2021 Question
AAns

(B) Mumps
The combination of fever, ear pain (referred from the parotid), and the visual finding of significant parotid gland swelling (parotitis) that obliterates the mandibular angle is characteristic of Mumps . A critical diagnostic hallmark in this adolescent male is the presence of swollen testicles (orchitis), which is a classic extra-salivary complication of the mumps virus in post-pubertal males.
Croup (Option A) presents with a barking cough and stridor, not jaw swelling. Infectious mononucleosis (Option C) causes massive lymphadenopathy (bull-neck) and tonsillar membranes, rather than primary parotid involvement. Herpangina (Option D) is caused by Coxsackievirus and features blisters in the back of the mouth. Because the clinical triad of parotitis, fever, and orchitis is pathognomonic for this viral infection, Mumps is the definitive diagnosis. Management is primarily supportive, as the disease is typically self-limiting but requires monitoring for complications like meningitis or pancreatitis.

Question 183. A 40-year-old man presents to the emergency department with generalized abdominal pain. He has a history of prolonged NSAID use. On examination, abdominal rigidity is noted. An abdominal X-ray shows significant findings related to his condition. Based on this information, what is the most likely diagnosis?
A. Intestinal obstruction
B. Pericarditis
C. Peptic ulcer perforation
D. Gallstones
Correct answer: C
The patient presents with acute generalized abdominal pain and abdominal rigidity, which suggests peritonitis. A key clue is the history of long-term NSAID use, a major risk factor for peptic ulcer formation and subsequent perforation.

The X-ray (erect chest/abdominal film) typically shows free air under the diaphragm (pneumoperitoneum), which is a classic sign of hollow viscus perforation, most commonly due to a perforated peptic ulcer.

Why Other Options Are Wrong

(A)

Intestinal obstruction : Shows multiple air-fluid levels and dilated bowel loops, not free air under diaphragm or rigidity.

(B)

Pericarditis : Presents with chest pain and ECG changes, not abdominal rigidity or pneumoperitoneum.

(D)

Gallstones : Cause right upper quadrant pain, not generalized rigidity or free air on X-ray.

Question 184. Which investigation is considered the most appropriate for diagnosing distal bowel tumors?

A. Enteroclysis

B. Barium meal

C. Barium meal follow-through

D. Barium enema

Correct answer: A

Enteroclysis is the most appropriate investigation for diagnosing distal small bowel tumors because it provides excellent distension and detailed visualization of the small intestine mucosa. In this technique, contrast material is directly infused into the small bowel through a nasojejunal tube, allowing precise detection of subtle lesions, strictures, and tumors, especially in distal segments like the ileum. Its high sensitivity makes it superior to routine contrast studies.

Other options are less suitable:

(B)

Barium meal primarily evaluates the esophagus, stomach, and proximal duodenum, so it cannot adequately visualize distal small bowel tumors.

(C)

Barium meal follow-through does examine the small intestine, but it is less sensitive and less detailed because contrast passes naturally, leading to poor distension and missed lesions.

(D)

Barium enema is used to study the large intestine (colon and rectum) and has no role in assessing small bowel tumors.

Thus, due to its superior imaging quality and diagnostic accuracy for distal small bowel lesions, enteroclysis is the best choice.

Question 185. What is the most likely diagnosis in a 9-year-old boy who presents with hip pain and limping that has been progressively worsening over the past six months? He appears otherwise healthy, with normal growth parameters. On examination, there is mild muscle wasting on the right side, decreased hip abduction (particularly when the hip is flexed), and painful restriction of internal rotation.

A. DDH (developmental dysplasia ofhip)

B. Slipped capital femoral epiphysis

C. Perthes disease

D. Congenital coxa vara

Correct answer: C

The child is 9 years old with gradually worsening hip pain and limping over 6 months, which strongly suggests a chronic hip pathology. He is otherwise healthy, and examination shows muscle wasting, reduced abduction, and painful restriction of internal rotation—classic findings of Legg-Calvé-Perthes disease.

Perthes disease is due to avascular necrosis of the femoral head, commonly seen in children aged 4–10 years, and presents with insidious onset limp and hip stiffness.

Why Other Options Are Wrong

(A)

DDH (Developmental dysplasia of hip) : Presents in infancy, not at 9 years; features include limb length discrepancy and instability, not progressive pain.

(B)

Slipped capital femoral epiphysis (SCFE) : Typically occurs in obese adolescents (10–16 years) with acute or subacute pain; not common in younger, healthy children.

(D)

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

PSYCHIATRY

Question 186. A 20-year-old woman presents with sudden onset palpitations, sweating, shortness of breath, and a choking sensation following a prior COVID-19 infection. She is excessively anxious about her health due to having tested positive earlier. This is her first such episode, lasting around

20 minutes. Physical examination, ECG, and laboratory investigations are all normal. What is the most likely diagnosis?

A. Post-traumatic stress disorder

B. Bipolar disorder

C. Depression

D. Panic attack

Correct answer: D

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

Why Other Options Are Wrong

(A)

Post-traumatic stress disorder (PTSD):Requires exposure to severe trauma and features like flashbacks and avoidance; not a single acute episode.

(B)

Bipolar disorder : Involves mood episodes (mania/depression) over days to weeks, not brief episodic anxiety attacks.

(C)

Depression : Characterized by persistent low mood, anhedonia, and fatigue, not sudden short-lived autonomic symptoms.

Question 187. known as Clerambault syndrome) (Option D). This is a subtype of delusional disorder where the individual believes that another person, usually of higher social or professional status, is deeply in love with them. Megalomania (Option A) involves delusions of grandeur or extreme power. Delusion of reference (Option B) is the belief that neutral events or remarks have a special personal meaning. Delusion of control (Option C) is the belief that one's thoughts or movements are being directed by an external force. Because the patient’s fixed, false belief is specifically centered on a perceived romantic relationship

with a person of higher status, erotomania is the definitive psychiatric diagnosis. Management typically involves antipsychotic medications and psychosocial interventions.

A mental health practitioner is evaluating aripiprazole for a patient with psychotic symptoms. Compared to other antipsychotics, how do its pharmacological properties and side effect profile differ?

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

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

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

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

Correct answer: C

receptor, less extrapyramidal symptoms, and less weight gain

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

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

pharmacological description of aripiprazole.

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

(A)

Cushing's syndrome

(B)

Rett syndrome

(C)

Fragile X syndrome

(D)

William syndrome

Question 188. 298. (C) Low intrinsic activity, high affinity for D2 receptor, less extrapyramidal symptoms, and less weight gain

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

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

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

A. Cushing's syndrome

B. Rett syndrome

C. Fragile X syndrome

D. William syndrome

Correct answer: C

The clinical combination of intellectual disability, a long face with large ears, and macro-orchidism (large testes) is pathognomonic for Fragile X syndrome (Option C) . This is the most common inherited cause of intellectual

Question 189. disability and is caused by a CGG triplet repeat expansion in the FMR1 gene. The "cardiac murmur" mentioned likely represents mitral valve prolapse, which is common in these patients.

William syndrome (Option D) features a "pixie-like" face, hypercalcemia, and great social skills ("cocktail party personality"). Rett syndrome (Option B) is an X-linked disorder seen almost exclusively in females, characterized by loss of hand skills and purposeful movements. Cushing's syndrome (Option A) involves cortisol excess with different physical findings like a buffalo hump and striae. Because the classic triad of facial features, macro-orchidism, and moderate intellectual disability is present, Fragile X is the definitive diagnosis.

A 45-year-old man with a long history of heavy alcohol use stopped drinking abruptly and has been abstinent for about 72 hours. Which withdrawal symptoms is he most

likely to exhibit at this stage?

A. Seizures

B. Delirium Tremens

C. Tremors

D. Hallucinations

Correct answer: B

Alcohol withdrawal progresses through distinct stages. Minor symptoms like tremors (Option C) appear within 6–12 hours. Seizures (Option A) typically occur within 12–48 hours. Alcoholic hallucinations (Option D) usually occur 12–24 hours after the last drink. Delirium Tremens (DT) is the most severe stage and classically occurs 48 to 96 hours (3 to 4 days) after cessation .

Since this patient has reached the 72-hour mark, he is in the peak period for developing DT. DT is characterized by clouding of consciousness (delirium), autonomic hyperactivity (tachycardia, hypertension), and prominent visual or tactile hallucinations. It is a medical emergency with a high mortality rate if untreated. Therefore, based on the specific timeline of 72 hours, Delirium Tremens is the most likely and dangerous withdrawal symptom the patient will exhibit. Management involves high doses of benzodiazepines and supportive care in an ICU setting.