NEET PG 2011

Questions with Solutions

Detailed step-by-step solutions

General Instructions

(i) This booklet contains 296 questions, each provided with a complete, step-by-step solution.

(ii) It comprises 296 single-correct multiple-choice questions.

(iii) These questions follow the NEET PG examination pattern.

(iv) Each correct answer is awarded +4 marks, with -1 for an incorrect answer.

(v) The actual NEET paper has 180 questions to be attempted in 3 hours 20 minutes.

(vi) Use of calculators is not permitted.

(vii) Attempt each question on your own before reviewing the given solution.

1. Regarding anterior choroidal artery syndrome, all are true except?

(A) Hemiparesis

(B) Hemisensory loss

(C) Predominant involvement of anterior limb of internal capsule

(D) Homonymous hemianopia

Correct Answer: (C) Predominant involvement of anterior limb of internal capsule

Solution:

Step 1: Identify the vascular territory. The anterior choroidal artery is a branch of the internal carotid artery. It supplies the posterior limb of the internal capsule, the optic tract and lateral geniculate body, and parts of the medial temporal lobe.
Step 2: Map the territory to the clinical triad. Damage to the posterior limb of the internal capsule and adjacent structures produces the classic anterior choroidal artery syndrome triad: contralateral hemiplegia or hemiparesis (corticospinal fibres in the posterior limb), contralateral hemianesthesia or hemisensory loss (thalamocortical sensory fibres), and contralateral homonymous hemianopia (optic tract or lateral geniculate body).

Step 3: Test each option. Hemiparesis is true. Hemisensory loss is true. Homonymous hemianopia is true. The statement that there is predominant involvement of the ANTERIOR limb of the internal capsule is false, because the anterior choroidal artery supplies the POSTERIOR limb, not the anterior limb.
Step 4: Note the supply of the anterior limb for contrast. The anterior limb is supplied mainly by the lenticulostriate branches of the middle cerebral artery and the recurrent artery of Heubner from the anterior cerebral artery.
Conclusion: The exception is predominant involvement of the anterior limb of the internal capsule, so the correct answer is option 3.

Quick Tip: The anterior choroidal artery supplies the posterior limb of the internal capsule, not the anterior limb.

2. A surgeon removes a part of the liver to the left of the falciform ligament. Which segments has the surgeon removed?

(A) 1 & 4a

(B) 2 & 3

(C) 1 & 4b

(D) 1 & 3

Correct Answer: (B) 2 & 3

Solution:

Step 1: Recall the surface landmark. The falciform ligament marks the boundary on the anterior surface of the liver. The portion of the liver lying to the LEFT of the falciform ligament is the anatomical left lobe.
Step 2: Relate the left lobe to Couinaud segments. The part to the left of the falciform ligament corresponds to the left lateral section, which is made up of Couinaud segments II and III.
Step 3: Name the procedure. Removal of segments II and III is called a left lateral segmentectomy or left lateral sectionectomy (also loosely termed left lobectomy in older nomenclature). It is the standard sublobar resection for

lesions lateral to the falciform ligament.
Step 4: Eliminate the distractors. Segment I (caudate lobe) lies posteriorly around the inferior vena cava and is not lateral to the falciform ligament, so any option containing segment 1 is wrong. Segment IV (4a and 4b) lies to the RIGHT of the falciform ligament, so options with 4a or 4b are also wrong.
Conclusion: Segments II and III are removed, so the correct answer is option 2.

Quick Tip: Liver to the left of the falciform ligament is the left lateral section, Couinaud segments II and III.

3. Which of the following passes through the foramen magnum?

(A) Internal carotid artery

(B) Sympathetic chain

(C) Hypoglossal nerve

(D) Vertebral artery

Correct Answer: (D) Vertebral artery

Solution:

Step 1: Recall the foramen magnum. It is the large opening in the occipital bone at the base of the skull through which the medulla oblongata becomes continuous with the spinal cord.
Step 2: List its contents. The foramen magnum transmits the medulla oblongata and its meninges, the two vertebral arteries, the anterior and posterior spinal arteries, the spinal roots of the accessory nerve (ascending into the skull), and the membrana tectoria and alar ligaments.
Step 3: Test each option against the correct foramen. The internal carotid artery passes through the carotid canal, not the foramen magnum. The sympathetic chain ascends as the cervical sympathetic chain and does not pass through the foramen magnum. The hypoglossal nerve passes through the hypoglossal canal. The vertebral artery enters the cranial cavity through the foramen magnum.

Conclusion: The structure passing through the foramen magnum is the vertebral artery, so the correct answer is option 4.

Quick Tip: The vertebral arteries enter the skull through the foramen magnum; the others use the carotid or hypoglossal canal.

4. Deoxygenated blood is not seen in?

(A) Pulmonary artery

(B) Umbilical artery

(C) Umbilical vein

(D) Right heart

Correct Answer: (C) Umbilical vein

Solution:

Step 1: Recall the general rule and its exceptions. Most arteries carry oxygenated blood and most veins carry deoxygenated blood, but the pulmonary and umbilical vessels are the classic exceptions.

Step 2: Analyse each vessel. The pulmonary artery carries deoxygenated blood from the right ventricle to the lungs. The right heart (right atrium and right ventricle) receives systemic venous return and therefore contains deoxygenated blood.

Step 3: Analyse the fetal umbilical vessels. The umbilical arteries carry deoxygenated blood from the fetus to the placenta. The umbilical vein, in contrast, carries OXYGENATED blood from the placenta back to the fetus.

Step 4: Trace the fetal pathway to confirm. Oxygenated blood travels from the placenta through the umbilical vein, then via the ductus venosus to the inferior vena cava and right atrium, where it is preferentially shunted across the foramen ovale. Thus the umbilical vein is the one vessel in the list that does not carry deoxygenated blood.

Conclusion: Deoxygenated blood is not seen in the umbilical vein, so the correct answer is option 3.

Quick Tip: The umbilical vein is the exception: it carries oxygenated blood from the placenta to the fetus.

5. All of the following are pneumatic bones except?

(A) Frontal

(B) Ethmoid

(C) Mandible

(D) Maxilla

Correct Answer: (C) Mandible

Solution:

Step 1: Define a pneumatic bone. A pneumatic bone contains an air-filled cavity (sinus) within it, which makes the bone light, aids resonance of the voice, and helps warm and humidify inspired air.
Step 2: List the pneumatic bones of the skull. The air-containing bones that enclose the paranasal sinuses are the frontal bone (frontal sinus), the ethmoid bone (ethmoidal air cells), the sphenoid bone (sphenoidal sinus), and the maxilla (maxillary sinus).
Step 3: Test each option. Frontal is pneumatic (frontal sinus). Ethmoid is pneumatic (ethmoidal air cells). Maxilla is pneumatic (maxillary sinus). The mandible does not contain an air sinus, so it is NOT a pneumatic bone.
Conclusion: The exception is the mandible, so the correct answer is option 3.

Quick Tip: Pneumatic bones enclose paranasal sinuses; the mandible has no air sinus.

6. All are seen in injury to the common peroneal nerve except?

(A) Loss of sensation over the sole

(B) Foot drop

(C) Injury to neck of fibula

(D) Loss of dorsiflexion of toe

Correct Answer: (A) Loss of sensation over the sole

Solution:

Step 1: Recall the function of the common peroneal (fibular) nerve. It supplies the anterior and lateral compartments of the leg, so it controls dorsiflexion of the ankle and toes (deep peroneal nerve) and eversion of the foot (superficial peroneal nerve). A useful aid is PED: the Peroneal nerve Everts and Dorsiflexes.
Step 2: Recall its sensory and anatomical features. It supplies sensation to the anterolateral leg and the dorsum of the foot. It winds superficially around the neck of the fibula, where it is easily injured.
Step 3: Predict the deficits of injury. Loss of dorsiflexion and eversion produces foot drop. Injury commonly occurs at the neck of the fibula. Sensory loss occurs over the dorsum of the foot.
Step 4: Identify the exception. Sensation over the SOLE of the foot is supplied by the tibial nerve (via the medial and lateral plantar nerves), not the common peroneal nerve. Therefore loss of sensation over the sole is a feature of tibial nerve injury, not common peroneal nerve injury.
Conclusion: The exception is loss of sensation over the sole, so the correct answer is option 1.

Quick Tip: Sole sensation is tibial nerve territory; the common peroneal nerve covers the dorsum of the foot.

7. Which among the following is a branch from the trunk of the brachial plexus?

(A) Suprascapular nerve

(B) Lateral thoracic nerve

(C) Anterior thoracic nerve

(D) Nerve to subclavius

Correct Answer: (A) Suprascapular nerve

Solution:

Step 1: Recall the organisation of the brachial plexus: roots, trunks, divisions, cords, and branches. Branches arise at several levels.
Step 2: Recall the branches that arise from the TRUNKS. From the upper trunk arise two branches: the suprascapular nerve and the nerve to subclavius. (The suprascapular nerve is the classic single named branch of the trunk asked in exams.)
Step 3: Test each option. The suprascapular nerve is a branch of the upper trunk, so it is correct. The lateral pectoral nerve (lateral thoracic / anterior thoracic terminology) arises from the lateral cord, not the trunk. The medial pectoral nerve arises from the medial cord. The nerve to subclavius, although also from the upper trunk, is here best contrasted against the standard single-best answer; among the given options the suprascapular nerve is the recognised trunk branch and the intended answer.
Step 4: Confirm the others are not trunk branches. The pectoral (thoracic) nerves come from the cords, so they are excluded.
Conclusion: The branch from the trunk of the brachial plexus is the suprascapular nerve, so the correct answer is option 1.

Quick Tip: The suprascapular nerve arises from the upper trunk; pectoral nerves come from the cords.

8. Main blood supply of the neck of the femur is from?

(A) Lateral circumflex femoral artery

(B) Medial circumflex femoral artery

(C) Profunda femoris artery

(D) External iliac artery

Correct Answer: (B) Medial circumflex femoral artery

Solution:

Step 1: The blood supply to the head and neck of the femur comes mainly from the retinacular arteries, which are branches of the trochanteric anastomosis.
Step 2: The trochanteric anastomosis is formed chiefly by the medial and lateral circumflex femoral arteries, with contributions from the superior and inferior gluteal arteries.
Step 3: Of these, the medial circumflex femoral artery is the dominant contributor. It passes posteriorly around the neck of the femur and gives off the posterior and superior retinacular vessels, which supply the greater part of the head and neck.
Step 4: The lateral circumflex femoral artery supplies a smaller anterior portion, while the artery of the ligamentum teres supplies only a tiny area around the fovea.
Step 5: Because the medial circumflex femoral artery is the main supply, an intracapsular fracture of the neck of the femur frequently disrupts it and leads to avascular necrosis of the head.
Conclusion: The main blood supply of the neck of the femur is the medial circumflex femoral artery (option 2).

Quick Tip: Think of the dominant vessel of the trochanteric anastomosis whose injury causes avascular necrosis after a neck fracture.

9. Right isomerism is associated with?

(A) Asplenia

(B) Two spleens

(C) One spleen

(D) Polysplenia

Correct Answer: (A) Asplenia

Solution:

Step 1: Isomerism (heterotaxy) describes a situation where paired thoracoabdominal structures lose their normal left-right asymmetry and both sides develop a similar (mirror-image) morphology.
Step 2: In right isomerism, both sides of the body take on right-sided characteristics. This means there are bilateral trilobed (right-type) lungs and bilateral eparterial bronchi.
Step 3: The spleen is normally a left-sided organ. Since both sides become right-sided in right isomerism, the left-sided structure (the spleen) tends to be absent, producing asplenia.
Step 4: Right isomerism is therefore classically called the asplenia syndrome (Ivemark syndrome) and is associated with severe cyanotic congenital heart disease.
Step 5: By contrast, left isomerism gives bilateral left-sided features and is associated with polysplenia (multiple spleens).
Conclusion: Right isomerism corresponds to asplenia (option 1).

Quick Tip: The spleen is a left-sided organ, so bilateral right-sidedness means it is missing.

10. The urethral crest is situated in the:

(A) Prostatic urethra

(B) Membranous urethra

(C) Penile urethra

(D) Bulbar urethra

Correct Answer: (A) Prostatic urethra

Solution:

Step 1: The male urethra is divided into prostatic, membranous, and spongy (penile, including the bulbar part) portions.
Step 2: The prostatic urethra runs through the prostate and shows a longitudinal ridge on its posterior wall called the urethral crest.
Step 3: The middle of the urethral crest bears a rounded elevation, the seminal colliculus (verumontanum), on which the prostatic utricle and the two ejaculatory ducts open.
Step 4: On either side of the urethral crest is a groove, the prostatic sinus, into which the prostatic ductules drain.
Step 5: These features (crest, colliculus, prostatic sinuses) are unique to the prostatic urethra and are not present in the membranous, penile, or bulbar parts.
Conclusion: The urethral crest is located in the prostatic urethra (option 1).

Quick Tip: The crest carries the verumontanum where the ejaculatory ducts open.

11. What is the type of joint seen at the growth plate (epiphyseal plate)?

(A) Fibrocartilaginous joint

(B) Primary cartilaginous joint

(C) Secondary cartilaginous joint

(D) Gomphosis

Correct Answer: (B) Primary cartilaginous joint

Solution:

Step 1: Cartilaginous joints are of two kinds. In a primary cartilaginous joint (synchondrosis) the bones are united by hyaline cartilage; in a secondary cartilaginous joint (symphysis) the bones are united by fibrocartilage.
Step 2: The growth plate, or epiphyseal plate, is a layer of hyaline cartilage lying between the epiphysis and the metaphysis of a growing long bone.
Step 3: Because the uniting tissue is hyaline cartilage, the growth plate is classified as a primary cartilaginous joint (synchondrosis).
Step 4: It is a temporary joint that permits longitudinal growth of the bone and is usually immovable; it ossifies completely after growth ceases.
Step 5: Examples of secondary cartilaginous joints (fibrocartilage) include the pubic symphysis and the intervertebral discs, while a gomphosis is the peg-and-socket fibrous joint of a tooth in its socket.
Conclusion: The growth plate is a primary cartilaginous joint (option 2).

Quick Tip: Hyaline cartilage uniting two bones means synchondrosis.

12. Which among the following is not a component of the hypogastric sheath?

(A) Broad ligament of uterus

(B) Transverse cervical ligament

(C) Lateral ligament of uterus

(D) Lateral ligament of bladder

Correct Answer: (A) Broad ligament of uterus

Solution:

Step 1: The hypogastric sheath is a condensation of pelvic fascia that extends from the lateral pelvic wall toward the pelvic viscera, carrying the branches of the internal iliac (hypogastric) vessels and the ureter.
Step 2: It splits into three named laminae (ligaments) that pass to different organs: the lateral ligament of the bladder anteriorly, the transverse cervical (cardinal/Mackenrodt) ligament in the middle, and the lateral (rectal) ligament posteriorly. The lateral cervical ligament is sometimes termed the lateral ligament

of the uterus.
Step 3: These three laminae are the true components derived from the hypogastric sheath and provide passive support to the pelvic organs.
Step 4: The broad ligament of the uterus is NOT part of the hypogastric sheath. It is a double fold of peritoneum draped over the uterus and adnexa and is a peritoneal structure, not a fascial condensation.
Conclusion: The broad ligament of the uterus is not a component of the hypogastric sheath (option 1).

Quick Tip: The sheath gives fascial laminae; a peritoneal fold does not belong.

13. All of the following are seen in the floor of the third ventricle except?

(A) Infundibulum

(B) Oculomotor nerve

(C) Mammillary body

(D) Optic stalk

Correct Answer: (D) Optic stalk

Solution:

Step 1: The floor of the third ventricle is formed by hypothalamic and midbrain structures, listed from anterior to posterior.
Step 2: The structures forming the floor are: the optic chiasma, the infundibulum (with the tuber cinereum), the mammillary bodies, the posterior perforated substance, and the tegmentum of the midbrain.
Step 3: The infundibulum and the mammillary bodies are therefore genuine components of the floor, so options 1 and 3 are seen there.
Step 4: The oculomotor nerve emerges from the interpeduncular fossa, which is part of the floor region in the midbrain, so it can be related to the floor as well.
Step 5: The optic stalk is an embryonic structure that connects the developing optic vesicle to the forebrain and later becomes the optic nerve. It is not an adult structure of the floor of the third ventricle; it is the optic chiasma (not the stalk)

that lies in the floor.
Conclusion: The optic stalk is not seen in the floor of the third ventricle (option 4).

Quick Tip: It is the chiasma, not a developmental stalk, that lies in the floor.

14. Lines of Blaschko are:

(A) Lymphatics

(B) Blood vessels

(C) Nerves

(D) Lines of development

Correct Answer: (D) Lines of development

Solution:

Step 1: Lines of Blaschko are invisible patterns on the skin that follow the routes taken by epidermal cells (keratinocytes and melanocytes) as they migrate and proliferate during embryonic development.
Step 2: They form a V or fountain shape over the back, S or whorled patterns on the abdomen and flanks, and linear streaks down the limbs.
Step 3: They do not correspond to dermatomes (nerves), to the course of blood vessels, or to lymphatic drainage. This distinguishes them from Langer lines and from dermatomal patterns.
Step 4: They become apparent only in disease, when a mosaic or X-linked skin disorder (such as incontinentia pigmenti, epidermal naevi, or lichen striatus) lays down lesions along these developmental tracks.
Step 5: Hence the lines of Blaschko represent embryonic lines of skin development (lines of cutaneous cell migration).
Conclusion: Lines of Blaschko are lines of development (option 4).

Quick Tip: They trace embryonic skin cell migration, not nerves or vessels.

15. All of the following are affected in low radial nerve palsy except?

(A) Extensor carpi radialis longus

(B) Extensor carpi radialis brevis

(C) Finger extensors

(D) Sensation on dorsum of hand

Correct Answer: (A) Extensor carpi radialis longus

Solution:

Step 1: Define the lesion. Low radial nerve palsy means injury to the deep branch of the radial nerve, the posterior interosseous nerve (PIN), distal to the elbow after the radial nerve has divided into superficial and deep branches.
Step 2: Identify what is supplied above this level. The extensor carpi radialis longus (ECRL) is supplied by the radial nerve proper before it divides, so its fibres branch off proximal to the PIN. Therefore in a low (PIN) lesion the ECRL is spared.
Step 3: Identify what is supplied by the PIN. The PIN supplies the extensor carpi radialis brevis, the finger and thumb extensors (extensor digitorum, extensor indicis, extensor digiti minimi, abductor pollicis longus, extensor pollicis longus and brevis), and the supinator. These are all weakened in a low lesion.
Step 4: Sensation. The PIN is essentially a motor nerve, and cutaneous sensation of the dorsum of the hand is carried by the superficial radial nerve, which also branches off proximally. Thus sensation is preserved, and finger drop occurs without true complete wrist drop because the ECRL still works.
Step 5: Pick the exception. The stem asks which structure is NOT affected. Since the ECRL is supplied above the lesion, it is the exception.
Hence the correct answer is option A, Extensor carpi radialis longus.

Quick Tip: ECRL is supplied by the radial nerve before it divides into the posterior interosseous branch.

16. Site not affected in posterior cerebral artery infarct is?

(A) Midbrain

(B) Pons

(C) Thalamus

(D) Striate cortex

Correct Answer: (B) Pons

Solution:

Step 1: Recall the posterior cerebral artery (PCA) territory. The PCA is the terminal branch of the basilar artery and supplies the occipital lobe, the inferomedial temporal lobe, and through its perforating branches the midbrain and the thalamus.
Step 2: Match each option. The midbrain is supplied by paramedian and short circumferential branches of the PCA and basilar tip, so it can be involved. The thalamus receives the thalamoperforating and thalamogeniculate branches from the PCA, so it can be involved. The striate (primary visual) cortex in the occipital lobe is the classic cortical territory of the PCA, so it is involved and produces homonymous hemianopia.
Step 3: Identify the odd one out. The pons is supplied by the pontine perforating branches that arise directly from the basilar artery, not from the PCA.
Step 4: Conclusion. A PCA infarct does not affect the pons.
Hence the correct answer is option B, Pons.

Quick Tip: The pons is fed by pontine branches of the basilar artery, not the PCA.

17. Bifurcation of common carotid artery is palpated at?

(A) Upper border of cricoid cartilage

(B) Upper border of thyroid cartilage

(C) Hyoid bone

(D) Cricothyroid membrane

Correct Answer: (B) Upper border of thyroid cartilage

Solution:

Step 1: Recall the course of the common carotid artery. It ascends in the carotid sheath and divides into the internal and external carotid arteries.
Step 2: Locate the level of division. The bifurcation lies at the level of the upper border of the thyroid cartilage, which corresponds to the C4 vertebral level.
Step 3: Relate to surface landmarks. The upper border of the thyroid cartilage is a readily palpable surface landmark, so the bifurcation and the carotid sinus can be palpated there.
Step 4: Eliminate the others. The cricoid cartilage (C6) marks the level of the larynx becoming the trachea and pharynx becoming the oesophagus, not the carotid bifurcation. The hyoid bone lies at C3, above the bifurcation. The cricothyroid membrane is the site for emergency cricothyroidotomy, not the carotid division.
Step 5: Conclusion. The bifurcation is palpated at the upper border of the thyroid cartilage.
Hence the correct answer is option B.

Quick Tip: The carotid bifurcation lies at C4, the level of the upper border of the thyroid cartilage.

18. In L5 root involvement, which among the following is not affected?

(A) Thigh adduction

(B) Knee flexion

(C) Knee extension

(D) Toe extension

Correct Answer: (A) Thigh adduction

Solution:

Step 1: Map the L5 myotome. The L5 nerve root contributes to hip extension and abduction, knee flexion, ankle dorsiflexion, and especially big toe and toe extension (extensor hallucis longus is the signature L5 muscle).
Step 2: Check each option against L5. Knee flexion (hamstrings) is partly L5 and S1, so it can be affected. Knee extension (quadriceps) is mainly L3 and L4 but receives an L5 contribution, so it may be mildly affected. Toe extension (extensor digitorum longus and extensor hallucis longus) is a core L5 function and is clearly affected.
Step 3: Examine thigh adduction. The adductor muscles of the thigh are supplied by the obturator nerve from roots L2, L3 and L4. This action does not involve L5.
Step 4: Conclusion. Thigh adduction is preserved in an L5 lesion.
Hence the correct answer is option A, Thigh adduction.

Quick Tip: Thigh adductors are obturator-supplied (L2 to L4), outside the L5 myotome.

19. Muscular component of dorsal aorta develops from?

(A) Septum transversum

(B) Paraxial mesoderm

(C) Intermediate mesoderm

(D) Lateral plate mesoderm

Correct Answer: (B) Paraxial mesoderm

Solution:

Step 1: Recall the subdivisions of mesoderm. The intraembryonic mesoderm organises into paraxial mesoderm (somites), intermediate mesoderm, and lateral plate mesoderm (splanchnic and somatic layers).
Step 2: Trace the origin of vessel walls. The endothelial lining of the dorsal aorta arises from angioblasts of splanchnic mesoderm, but the surrounding smooth muscle and connective tissue of the vessel wall in the trunk are contributed by the sclerotome derivatives of the paraxial mesoderm (the somites adjacent to the

aorta).
Step 3: Eliminate the wrong choices. The septum transversum is a mesodermal mass that forms the central tendon of the diaphragm and part of the liver, not the aortic wall. The intermediate mesoderm forms the urogenital system. The lateral plate mesoderm forms the body wall, limb connective tissue, serous membranes and the smooth muscle of the gut, not the muscular coat of the dorsal aorta in the trunk.
Step 4: Conclusion. The muscular component of the dorsal aorta is derived from paraxial mesoderm.
Hence the correct answer is option B.

Quick Tip: Somite-derived paraxial mesoderm supplies the trunk dorsal aorta smooth muscle.

20. Diaphragm develops from all except:

(A) Septum transversum

(B) Dorsal mesocardium

(C) Pleuroperitoneal membrane

(D) Cervical myotomes

Correct Answer: (B) Dorsal mesocardium

Solution:

Step 1: List the four embryonic contributors to the diaphragm. The diaphragm forms from the septum transversum, the paired pleuroperitoneal membranes, the dorsal mesentery of the oesophagus, and muscle from the cervical myotomes of somites C3 to C5.
Step 2: Match each part. The septum transversum becomes the central tendon. The pleuroperitoneal membranes close the pericardioperitoneal canals and form the dorsolateral part. The dorsal mesentery of the oesophagus forms the crura. The cervical myotomes provide the muscular part along with the phrenic nerve.
Step 3: Check the odd option. The dorsal mesocardium is a fold of mesoderm

that suspends the developing heart tube; its breakdown forms the transverse pericardial sinus. It has no role in diaphragm formation.
Step 4: Conclusion. The diaphragm develops from all the listed structures except the dorsal mesocardium.
Hence the correct answer is option B.

Quick Tip: Dorsal mesocardium forms the transverse pericardial sinus, not the diaphragm.

21. Posterior relations of head of pancreas are all except?

(A) Common bile duct

(B) First part of duodenum

(C) Right crus of diaphragm

(D) Inferior vena cava

Correct Answer: (B) First part of duodenum

Solution:

Step 1: Recall the posterior relations of the head of the pancreas. Behind the head lie the inferior vena cava, the terminal parts of the renal veins, the right crus of the diaphragm, the right renal artery, and the common bile duct as it descends in a groove on the posterior surface.
Step 2: Check each option. The common bile duct grooves the posterior surface of the head, so it is a posterior relation. The right crus of the diaphragm lies behind, so it is a posterior relation. The inferior vena cava lies directly behind the head, so it is a posterior relation.
Step 3: Examine the first part of the duodenum. The first part of the duodenum is related to the upper part and anterosuperior aspect of the head, lying above and in front, not behind. It is therefore not a posterior relation.
Step 4: Conclusion. The exception is the first part of the duodenum.
Hence the correct answer is option B.

Quick Tip: The first part of the duodenum lies above and in front of the head, not behind it.

22. Which of the following is not supplied by the anterior division of the mandibular nerve (V3)?

(A) Temporalis

(B) Medial pterygoid

(C) Lateral pterygoid

(D) Masseter

Correct Answer: (B) Medial pterygoid

Solution:

Step 1: The mandibular nerve (V3) is the only division of the trigeminal nerve that carries motor fibres to the muscles of mastication, and it divides into a small anterior division and a large posterior division just below the foramen ovale.
Step 2: The anterior division of V3 is mainly motor. It gives the masseteric nerve (to masseter), deep temporal nerves (to temporalis), the nerve to lateral pterygoid, and one sensory branch, the buccal nerve.
Step 3: The nerve to medial pterygoid arises from the main trunk of V3 (not from the anterior division) before the trunk splits. This nerve also supplies tensor tympani and tensor veli palatini.
Step 4: Therefore, of the four listed muscles, temporalis, lateral pterygoid and masseter are all supplied by the anterior division, while the medial pterygoid is supplied by the main trunk and is the correct answer to this 'not supplied' question.
Conclusion: The medial pterygoid is not supplied by the anterior division of V3, so option B is correct.

Quick Tip: The nerve to one pterygoid leaves the main V3 trunk, not the anterior division.

23. Basal metabolic rate is most closely associated with?

(A) Lean body mass

(B) Body surface area

(C) Daily activity

(D) Food intake

Correct Answer: (A) Lean body mass

Solution:

Step 1: Basal metabolic rate (BMR) is the energy expended by the body at complete rest, in a neutrally temperate environment and in the post-absorptive state (about 12 hours after the last meal, with an inactive digestive system).
Step 2: Because BMR is measured at rest and after fasting, daily activity (option C) and food intake (option D) are excluded by definition, as they add energy expenditure above the basal level.
Step 3: BMR was classically expressed per unit of body surface area, but the metabolically active component of the body is the lean (fat-free) mass. Adipose tissue is relatively inert metabolically.
Step 4: If two people have the same surface area but different lean body mass, the one with greater lean mass has the higher BMR, since BMR scales with metabolically active tissue $\left(\text{BMR} \propto \text{body weight}^{0.75}\right)$.
Conclusion: BMR is most closely associated with lean body mass, so option A is correct.

Quick Tip: Metabolically active tissue burns the fuel, fat is largely inert.

24. Mineralocorticoid receptor is not present in?

(A) Liver

(B) Colon

(C) Hippocampus

(D) Kidney

Correct Answer: (A) Liver

Solution:

Step 1: The mineralocorticoid receptor (MR, also called the aldosterone receptor or NR3C2) is a nuclear receptor encoded by the NR3C2 gene on chromosome 4q31.
Step 2: MR is expressed widely in aldosterone-responsive and other tissues: kidney, colon, heart, central nervous system (especially the hippocampus), brown adipose tissue and sweat glands.
Step 3: In epithelial tissues such as the renal tubule and colon, MR activation increases epithelial sodium channel (ENaC), the Na+/K+ pump and SGK1, driving sodium and water reabsorption and potassium excretion, which raises extracellular volume and blood pressure.
Step 4: Among the options, kidney, colon and hippocampus are all classic MR-expressing tissues. The liver is not a recognised mineralocorticoid target tissue and does not express the MR in this context.
Conclusion: Mineralocorticoid receptor is not present in the liver, so option A is correct.

Quick Tip: Think of aldosterone targets: kidney, colon, heart, hippocampus, not the hepatocyte.

25. The primary action of nitric oxide (NO) in the gastrointestinal tract is?

(A) Vasodilatation

(B) Vasoconstriction

(C) GI smooth muscle relaxation

(D) Slow smooth muscle contraction

Correct Answer: (C) GI smooth muscle relaxation

Solution:

Step 1: Nitric oxide (NO), also known as endothelium-derived relaxing factor (EDRF), is synthesized by endothelial cells in response to various stimuli and acts on adjacent smooth muscle.
Step 2: NO diffuses to smooth muscle cells and acts via cyclic GMP (cGMP), which lowers intracellular calcium and produces smooth muscle relaxation.
Step 3: In the gut, peristalsis is triggered when the bowel wall is stretched by its contents. This creates a ring of contraction behind the bolus and a zone of relaxation ahead of it (the law of the intestine).
Step 4: The receptive (downstream) relaxation in front of the bolus is produced by enteric neurons that release NO, VIP and ATP. NO mediates this through a non-adrenergic non-cholinergic (NANC) mechanism, relaxing GI smooth muscle.
Conclusion: The primary action of NO in the GIT is GI smooth muscle relaxation, so option C is correct.

Quick Tip: NO is the NANC inhibitory transmitter that relaxes gut muscle ahead of the bolus.

26. The main site of water absorption is?

(A) Jejunum

(B) Colon

(C) Ileum

(D) Stomach

Correct Answer: (A) Jejunum

Solution:

Step 1: Each day a large volume of water enters the gastrointestinal tract. About 2000 mL is ingested and about 7000 mL comes from endogenous secretions (saliva, gastric, pancreatic, biliary and intestinal secretions), giving a total water load of roughly 9000 mL.
Step 2: The bulk of this fluid is reabsorbed in the small intestine. Approximately 5500 mL is reabsorbed in the jejunum and about 2000 mL in the ileum.
Step 3: The colon reabsorbs about 1300 mL, and the remaining roughly 200 mL is lost in the stool.
Step 4: Comparing the figures, the jejunum reabsorbs the largest single volume of water, far more than the ileum, colon or stomach.
Conclusion: The main site of water absorption is the jejunum, so option A is correct.

Quick Tip: Compare absolute volumes: the proximal small bowel reclaims the most, not the colon.

27. A small airway has laminar flow because?

(A) Reynolds number more than 2000

(B) Diameter is very small

(C) The linear velocity of airflow in the small airway is extremely low

(D) Total cross-sectional area is low

Correct Answer: (C) The linear velocity of airflow in the small airway is extremely low

Solution:

Step 1: Whether flow is laminar or turbulent is predicted by the Reynolds number (Re):

$$Re = \frac{D v d}{V}$$

where D is diameter, v is mean linear velocity, d is density and V is viscosity.
Step 2: A high Reynolds number favours turbulence and a low Reynolds number favours laminar flow. Re greater than about 3000 gives turbulent flow, and Re less than about 2000 gives laminar flow.
Step 3: Although each small airway has a tiny diameter, the small airways are extremely numerous, so their total cross-sectional area is very large (not low). Velocity of flow is inversely proportional to total cross-sectional area.
Step 4: Because the total cross-sectional area of the small airways is large, the linear velocity of airflow there is very low. A low velocity gives a low Reynolds number, which keeps the flow laminar.
Conclusion: Small airways have laminar flow because the linear velocity of airflow in them is extremely low, so option C is correct. (Options A and D are factually wrong: laminar flow needs a low Re, and the total cross-sectional area is large.)

Quick Tip: Huge combined cross-section drops velocity, which drops the Reynolds number.

28. Orthopnoea in congestive heart failure develops due to?

(A) Reservoir function of pulmonary veins

(B) Pooling of blood in lower limb veins

(C) Pulmonary hypertension

(D) Systemic hypertension

Correct Answer: (A) Reservoir function of pulmonary veins

Solution:

Step 1: Orthopnoea is the sensation of breathlessness in the recumbent (lying flat) position that is relieved by sitting up or standing. It is usually a later manifestation of heart failure than exertional dyspnoea.
Step 2: On lying down, fluid that was pooled in the splanchnic circulation and the lower-extremity veins is redistributed back into the central circulation,

increasing venous return to the heart and lungs.
Step 3: In a failing heart, the left ventricle cannot accommodate this increased venous return. Blood backs up into the pulmonary veins, which act as a reservoir and become engorged.
Step 4: The resulting rise in pulmonary capillary pressure causes interstitial and alveolar congestion, reducing lung compliance and producing breathlessness on lying flat, which is relieved on sitting up as the fluid redistributes again.
Conclusion: Orthopnoea in CHF develops because of the increased venous return and the reservoir function of the pulmonary veins, so option A is correct.
(Reference: Harrison, 17th edition, page 1446.)

Quick Tip: Lying flat shifts pooled blood centrally and the failing heart backs it up into the lungs.

29. Which nucleus is involved in the Papez circuit?

(A) Pulvinar

(B) VPL nucleus

(C) Intralaminar nucleus

(D) Anterior nucleus of thalamus

Correct Answer: (D) Anterior nucleus of thalamus

Solution:

Step 1: The Papez circuit is the classic neural loop of the limbic system that underlies emotion and memory processing.
Step 2: Trace the pathway: hippocampus to fornix to mammillary bodies, then mammillary bodies via the mammillothalamic tract to the anterior nucleus of the thalamus.
Step 3: From the anterior nucleus of the thalamus, fibres project to the cingulate gyrus, then to the entorhinal cortex and back to the hippocampus, completing the circuit.
Step 4: Therefore the thalamic nucleus that is an integral relay in this circuit is

the anterior nucleus of the thalamus. The pulvinar, VPL, and intralaminar nuclei are not part of the Papez circuit.
Conclusion: The correct answer is the anterior nucleus of the thalamus (option D), matching the printed key.

Quick Tip: Follow the mammillothalamic tract from the mammillary bodies to its thalamic target.

30. All of the following are true about phagocytosis EXCEPT:

(A) Amoeba and other protozoans live their life by it

(B) Used to ingest particles < 0.5 microns in size

(C) Used to ingest particles > 0.5 microns in size

(D) Digestion occurs within phagolysosomes

Correct Answer: (B) Used to ingest particles < 0.5 microns in size

Solution:

Step 1: Phagocytosis ("cell eating") is the engulfment of large solid particles, typically those greater than about 0.5 micron, such as bacteria, dead cells, and debris.
Step 2: Pinocytosis ("cell drinking") handles fluid and very small particles smaller than about 0.5 micron, so ingesting particles < 0.5 micron is a feature of pinocytosis, not phagocytosis.
Step 3: Evaluate the options. Amoeba and other free-living protozoans indeed feed by phagocytosis (true). Ingesting particles > 0.5 micron is correct for phagocytosis (true). After engulfment, the phagosome fuses with a lysosome to form a phagolysosome where digestion occurs (true).
Step 4: The only false statement is that phagocytosis ingests particles < 0.5 micron.
Conclusion: The exception is option B, matching the printed key.

Quick Tip: Sub-half-micron uptake belongs to pinocytosis, not phagocytosis.

31. Thiamine deficiency causes decreased energy production because:

(A) It is required for the process of transamination

(B) It is a co-factor in oxidative reduction

(C) It is a co-enzyme for transketolase in the pentose phosphate pathway

(D) It is a co-enzyme for pyruvate dehydrogenase and alpha-ketoglutarate dehydrogenase

Correct Answer: (D) It is a co-enzyme for pyruvate dehydrogenase and alpha-ketoglutarate dehydrogenase

Solution:

Step 1: The active coenzyme form of thiamine (vitamin B1) is thiamine pyrophosphate (TPP).
Step 2: The question links the deficiency specifically to decreased energy (ATP) production. TPP is the essential coenzyme for two key oxidative decarboxylation steps that feed the TCA cycle and oxidative phosphorylation: pyruvate dehydrogenase (pyruvate to acetyl-CoA) and alpha-ketoglutarate dehydrogenase (alpha-ketoglutarate to succinyl-CoA).
Step 3: Loss of these two dehydrogenases blocks entry of carbon into the TCA cycle and stalls the cycle itself, so NADH/FADH2 generation and therefore ATP output fall sharply, explaining the energy deficit.
Step 4: Transketolase (option C) is also TPP-dependent but belongs to the non-oxidative pentose phosphate pathway and is the basis of the diagnostic erythrocyte transketolase test, not the main route of energy production. Thiamine is not the cofactor for transamination (that needs pyridoxal phosphate) or a general oxidation-reduction cofactor.
Conclusion: Decreased energy production is due to its role as coenzyme for pyruvate dehydrogenase and alpha-ketoglutarate dehydrogenase, option D, matching the printed key.

Quick Tip: Think about which oxidative decarboxylations feed and drive the TCA cycle.

32. What factor is responsible for deciding whether an antibody will remain membrane bound or get secreted?

(A) Carbohydrate content

(B) Class switching

(C) Differential RNA splicing

(D) Surface charge

Correct Answer: (C) Differential RNA splicing

Solution:

Step 1: The heavy-chain gene of an immunoglobulin can produce either a membrane-bound form (with a hydrophobic transmembrane anchor) or a secreted form (without the anchor).
Step 2: The choice between these two forms is set at the level of the primary RNA transcript by differential (alternative) RNA splicing and choice of polyadenylation site of the same heavy-chain gene.
Step 3: If the transcript retains the exons encoding the hydrophobic C-terminal transmembrane segment, the antibody stays anchored as a B-cell receptor; if those exons are spliced out and an earlier poly-A site is used, a soluble secreted antibody is made.
Step 4: Class switching (option B) changes the isotype (IgM to IgG, etc.), not the membrane-versus-secreted decision. Carbohydrate content and surface charge do not govern this choice.
Conclusion: The deciding factor is differential RNA splicing, option C, matching the printed key.

Quick Tip: One heavy-chain transcript, two endings: it is decided during RNA processing.

33. Vitamin K is involved in the post-translational modification of which amino acid?

(A) Glutamate

(B) Aspartate

(C) Tyrosine

(D) Tryptophan

Correct Answer: (A) Glutamate

Solution:

Step 1: Vitamin K acts as a coenzyme for the enzyme gamma-glutamyl carboxylase.
Step 2: This enzyme carries out the post-translational gamma-carboxylation of specific glutamate (Glu) residues, converting them to gamma-carboxyglutamate (Gla) residues.
Step 3: The added carboxyl groups let these residues chelate calcium, which is essential for the activity of vitamin K-dependent clotting factors II, VII, IX, X and proteins C and S.
Step 4: The modification targets glutamate, not aspartate, tyrosine, or tryptophan. (Tyrosine and aspartate undergo other unrelated modifications; vitamin K is specific to glutamate carboxylation.)
Conclusion: Vitamin K modifies glutamate residues, option A, matching the printed key.

Quick Tip: Think gamma-carboxylation and the Gla domains of clotting factors.

34. Which among the following is NOT a cause of fasting hypoglycemia?

(A) Glucagon excess

(B) Glucose-6-phosphatase deficiency

(C) Cirrhotic liver damage

(D) Glycogen synthase deficiency

Correct Answer: (A) Glucagon excess

Solution:

Step 1: Fasting hypoglycemia results when the liver cannot maintain blood glucose between meals, i.e. when glycogenolysis or gluconeogenesis fails or when glucose-raising counter-regulation is lost.
Step 2: Glucagon is the principal hyperglycemic hormone; an excess of glucagon raises blood glucose, so glucagon excess causes hyperglycemia, not hypoglycemia. It cannot be a cause of fasting hypoglycemia.
Step 3: Check the others. Glucose-6-phosphatase deficiency (von Gierke disease, GSD I) prevents release of free glucose from the liver, causing severe fasting hypoglycemia. Cirrhotic liver damage depletes glycogen stores and impairs gluconeogenesis, causing fasting hypoglycemia. Glycogen synthase deficiency (GSD 0) means little hepatic glycogen is stored, so glucose cannot be supplied during fasting, again causing fasting hypoglycemia.
Step 4: The one option that does not cause fasting hypoglycemia is glucagon excess.
Conclusion: The answer is glucagon excess, option A, matching the printed key.

Quick Tip: Which listed factor would raise, not lower, blood glucose?

35. Cell fusion is an innovative method of preparing specific antibodies. Techniques to induce cell fusion include all of the following EXCEPT:

(A) Attaching inactive viral particles on the cell membrane

(B) Adding ethylene glycol

(C) Applying a small electric current

(D) Reducing the viscosity of the membrane

Correct Answer: (D) Reducing the viscosity of the membrane

Solution:

Step 1: Cell fusion (used to make hybridomas for monoclonal antibodies) requires bringing two plasma membranes close together and destabilising them so they merge.
Step 2: Recognised methods include: inactivated fusogenic viruses such as Sendai virus on the membrane (true), chemical fusogens like polyethylene glycol / ethylene glycol that dehydrate and bridge the membranes (true), and electrofusion using a brief electric pulse (electroporation-type current) (true).
Step 3: Reducing the viscosity of the membrane is not a standard fusion-inducing technique; fusogens actually work by perturbing and bringing membranes together, not by simply lowering membrane viscosity, so this statement is the exception.
Step 4: Hence the false (except) option is reducing the viscosity of the membrane.
Conclusion: The answer is reducing the viscosity of the membrane, option D, matching the printed key.

Quick Tip: Recall the three real fusogens: virus, chemical (PEG), and electric pulse.

36. The urea cycle occurs in which of the following organs?

(A) Liver

(B) Intestine

(C) Brain

(D) Kidney

Correct Answer: (A) Liver

Solution:

Step 1: Recall the purpose of the urea cycle. It converts toxic ammonia (NH_3), produced mainly from amino acid catabolism, into urea for safe excretion.
Step 2: Identify the organ. The complete set of urea cycle enzymes is expressed only in the liver, where ammonia is detoxified to urea.
Step 3: Note the cellular compartments. The first two steps (carbamoyl

phosphate synthetase I and ornithine transcarbamoylase) occur in the hepatocyte mitochondria, and the remaining steps (argininosuccinate synthetase, argininosuccinate lyase, arginase) occur in the cytosol.
Step 4: Exclude the other organs. The intestine, brain, and kidney lack the full enzyme complement; the kidney handles ammonia largely via glutamine and direct excretion, not the complete urea cycle.
Conclusion: The urea cycle occurs in the liver, so the correct answer is option 1.

Quick Tip: Think of the only organ with all five enzymes that detoxify ammonia.

37. Which of the following changes in a vector is used to increase the yield of protein produced in recombinant protein synthesis?

(A) Inducible promoter

(B) Genes for protease inhibitors

(C) Translation initiation

(D) Translation and transcription termination

Correct Answer: (A) Inducible promoter

Solution:

Step 1: Understand the goal. In recombinant protein production, a high-level, controllable expression of the cloned gene is needed to maximize yield.
Step 2: Identify the key vector element. The promoter drives transcription of the inserted gene, so the amount of protein made depends heavily on promoter strength and control.
Step 3: Explain why an inducible promoter helps. An inducible promoter (for example the lac/tac promoter switched on by IPTG) lets the host grow first without burdening it with foreign protein, and then transcription is strongly turned on at high cell density, giving a large burst of product and reducing toxicity to the host.
Step 4: Exclude the others. Protease inhibitor genes only protect against degradation, translation initiation and termination signals are necessary but are

not the principal lever for increasing yield.
Conclusion: An inducible promoter is used to boost recombinant protein yield, so the correct answer is option 1.

Quick Tip: Yield depends on a controllable switch that turns transcription on at high cell density.

38. Two plants are grown. One is engineered to express green fluorescent protein and the other to express firefly luciferase. Which plant will glow in the dark?

(A) Both plants will glow

(B) Neither plant will glow

(C) Plant expressing green fluorescent protein will glow

(D) Plant expressing firefly luciferase will glow

Correct Answer: (D) Plant expressing firefly luciferase will glow

Solution:

Step 1: Distinguish fluorescence from bioluminescence. Green fluorescent protein (GFP) is fluorescent, meaning it must first absorb external excitation light (typically blue or UV) and then re-emit green light. It produces no light of its own.
Step 2: Apply this to GFP in darkness. With no excitation source in the dark, GFP cannot fluoresce, so the GFP plant will not glow.
Step 3: Analyze luciferase. Firefly luciferase is a bioluminescent enzyme that oxidizes its substrate luciferin (with ATP, oxygen, and $Mg2+$) and emits visible light as a chemical reaction product, requiring no incoming light.
Step 4: Apply this to darkness. Because the light comes from the reaction itself, the luciferase plant (when supplied with luciferin) emits light even in complete darkness.
Conclusion: Only the firefly luciferase plant glows in the dark, so the correct answer is option 4.

Quick Tip: One protein needs external light to be seen, the other makes its own light by a chemical reaction.

39. A patient who was given primaquine develops hemolysis. The probable cause may be:

(A) Glucose-6-phosphate dehydrogenase deficiency

(B) Glucose-6-phosphatase deficiency

(C) Alpha-ketoglutarate dehydrogenase deficiency

(D) Pyruvate kinase deficiency

Correct Answer: (A) Glucose-6-phosphate dehydrogenase deficiency

Solution:

Step 1: Link the drug to oxidative stress. Primaquine is a classic oxidant drug that generates reactive oxygen species inside red blood cells.
Step 2: Recall how RBCs defend against oxidants. Red cells rely on reduced glutathione (GSH) to neutralize oxidants, and regenerating GSH requires NADPH.
Step 3: Identify the source of NADPH. In the erythrocyte, NADPH is produced almost entirely by the hexose monophosphate (pentose phosphate) pathway, whose rate-limiting enzyme is glucose-6-phosphate dehydrogenase (G6PD).
Step 4: Connect deficiency to hemolysis. In G6PD deficiency, NADPH and therefore GSH cannot be maintained, so an oxidant like primaquine overwhelms the cell, causing hemoglobin denaturation (Heinz bodies) and acute hemolysis.
Step 5: Exclude the others. Glucose-6-phosphatase deficiency causes von Gierke disease, alpha-ketoglutarate dehydrogenase is a TCA enzyme, and pyruvate kinase deficiency causes chronic non-oxidant hemolysis, not the primaquine-triggered pattern.
Conclusion: The cause is G6PD deficiency, so the correct answer is option 1.

Quick Tip: Oxidant drug plus red-cell hemolysis points to the enzyme that supplies

NADPH.

40. Transfer of an amino group from an amino acid to an alpha-keto acid is done by which enzyme?

(A) Transaminases

(B) Aminases

(C) Transketolase

(D) Decarboxylase

Correct Answer: (A) Transaminases

Solution:

Step 1: Read the reaction described. An amino group is being moved from an amino acid onto an alpha-keto acid, converting the keto acid into a new amino acid.

Step 2: Name the reaction type. This swap of an amino group between an amino acid and a keto acid is called transamination.

Step 3: Identify the enzyme class. Transamination is catalyzed by transaminases (aminotransferases), such as ALT (alanine aminotransferase) and AST (aspartate aminotransferase).

Step 4: Note the cofactor. These enzymes require pyridoxal phosphate (vitamin B6) as the amino-group carrier.

Step 5: Exclude the others. Transketolase transfers two-carbon units in the pentose phosphate pathway, decarboxylases remove carboxyl groups as CO_2, and aminases is not a standard enzyme class for this reaction.

Conclusion: The enzyme is a transaminase, so the correct answer is option 1.

Quick Tip: Moving an amino group between an amino acid and a keto acid is transamination.

41. Which of the following statements about high-density lipoproteins (HDL) is FALSE?

(A) HDL increases oxidation of LDL

(B) HDL reduces foam cell production by LDL

(C) HDL is the best predictor of coronary artery disease

(D) HDL helps to clear lipids from atheroma

Correct Answer: (A) HDL increases oxidation of LDL

Solution:

Step 1: Recall the protective role of HDL. HDL is the antiatherogenic lipoprotein, often called good cholesterol.
Step 2: Evaluate option 1. HDL actually carries antioxidant enzymes (such as paraoxonase) that PREVENT oxidation of LDL. Saying HDL increases LDL oxidation is the opposite of the truth, so this statement is FALSE and is the answer to a question asking for the false statement.
Step 3: Verify option 2 is true. By promoting cholesterol efflux and limiting oxidized LDL uptake, HDL reduces macrophage foam cell formation.
Step 4: Verify option 3 is true. A low HDL level is one of the strongest lipid predictors of coronary artery disease risk.
Step 5: Verify option 4 is true. Through reverse cholesterol transport, HDL removes cholesterol from peripheral tissues and atheromatous plaques and returns it to the liver.
Conclusion: The false statement is that HDL increases oxidation of LDL, so the correct answer is option 1.

Quick Tip: HDL is protective; pick the statement that contradicts its antioxidant role.

42. Which of the following helps in generating the oxygen (respiratory) burst in neutrophils?

(A) Superoxide dismutase

(B) NADPH oxidase

(C) Peroxidase

(D) Glutathione reductase

Correct Answer: (B) NADPH oxidase

Solution:

Step 1: Define the respiratory burst. After a neutrophil engulfs a microbe, it rapidly consumes oxygen to make reactive oxygen species for killing, an event called the oxidative or respiratory burst.
Step 2: Identify the initiating enzyme. The burst is started by the membrane-bound enzyme NADPH oxidase, which transfers electrons from NADPH to molecular oxygen, producing superoxide anion (O2-).
Step 3: Trace the downstream products. Superoxide is then converted to hydrogen peroxide, and myeloperoxidase uses peroxide and chloride to form hypochlorous acid, the potent microbicidal agent.
Step 4: Exclude the other enzymes. Superoxide dismutase and glutathione reductase are antioxidant/detoxifying enzymes, and peroxidase acts downstream on already-formed peroxide, none of them initiate the burst.
Step 5: Note the clinical link. A defect in NADPH oxidase causes chronic granulomatous disease, confirming its central role.
Conclusion: NADPH oxidase generates the oxygen burst, so the correct answer is option 2.

Quick Tip: Think of the enzyme that makes superoxide and whose defect causes chronic granulomatous disease.

43. Which of the following is NOT an autoimmune disease?

(A) Systemic lupus erythematosus (SLE)

(B) Grave's disease

(C) Myasthenia gravis

(D) Sickle cell disease

Correct Answer: (D) Sickle cell disease

Solution:

Step 1: An autoimmune disease results when the immune system loses self-tolerance and produces autoantibodies or autoreactive T cells directed against the body's own antigens.
Step 2: SLE is a classic systemic autoimmune disease driven by antinuclear and anti-dsDNA antibodies forming immune complexes.
Step 3: Grave's disease is an organ-specific autoimmune disorder in which stimulating autoantibodies bind the TSH receptor, causing hyperthyroidism.
Step 4: Myasthenia gravis is autoimmune, caused by antibodies against the nicotinic acetylcholine receptor at the neuromuscular junction.
Step 5: Sickle cell disease is an autosomal recessive genetic disorder caused by a point mutation in the beta-globin gene (HbS), with no autoimmune mechanism.
Conclusion: Sickle cell disease is the odd one out, so the answer is option 4.

Quick Tip: Three are antibody-mediated self-attacks; one is a single-gene haemoglobin defect.

44. An 8 year old boy completed 8 out of a 10 day course of cefaclor. He now develops a generalized erythematous rash that is mildly pruritic along with lymphadenopathy. The diagnosis is?

(A) Kawasaki disease

(B) Type III hypersensitivity

(C) Anaphylaxis

(D) Infectious mononucleosis

Correct Answer: (B) Type III hypersensitivity

Solution:

Step 1: Note the timing. Symptoms appear about a week into a cefaclor course, not within minutes. A delayed onset of roughly 7 to 14 days after drug exposure points to a serum-sickness-like reaction.
Step 2: Cefaclor is the classic cause of serum-sickness-like reactions in children, presenting with rash, pruritus, fever, arthralgia and lymphadenopathy.
Step 3: Serum sickness is mediated by circulating antigen-antibody immune complexes that deposit in tissues and activate complement. This is the definition of a Type III hypersensitivity reaction.
Step 4: Rule out the others. Anaphylaxis is Type I, occurring within minutes with bronchospasm and hypotension, not a delayed rash. Kawasaki disease requires prolonged fever with mucocutaneous and conjunctival changes, not a drug trigger. Infectious mononucleosis is an EBV infection; its rash typically follows ampicillin or amoxicillin, not cefaclor, and it is not the underlying immune mechanism asked here.
Conclusion: The reaction is a Type III (immune complex) hypersensitivity, so the answer is option 2.

Quick Tip: A delayed itchy rash with lymphadenopathy after cefaclor is a serum-sickness-like, immune-complex reaction.

45. Which among the following is the hallmark of acute inflammation?

(A) Vasoconstriction

(B) Stasis

(C) Vasodilation and increase in permeability

(D) Leukocyte margination

Correct Answer: (C) Vasodilation and increase in permeability

Solution:

Step 1: Acute inflammation has two central vascular components: alterations in vascular calibre that increase blood flow, and changes in the microvasculature that allow plasma proteins and leukocytes to leave the circulation.
Step 2: After a brief, transient vasoconstriction, arteriolar vasodilation occurs (mediated by histamine and nitric oxide), increasing blood flow and causing heat and redness.
Step 3: Increased vascular permeability follows, mainly through endothelial gap formation in venules, allowing protein-rich fluid (exudate) to escape into tissue, producing swelling.
Step 4: These two events, vasodilation and increased permeability, together constitute the defining vascular hallmark of acute inflammation. Stasis and leukocyte margination are downstream consequences, and vasoconstriction is only a fleeting initial event.
Conclusion: The hallmark is vasodilation with increased permeability, so the answer is option 3.

Quick Tip: The defining vascular change brings more blood in and lets exudate leak out.

46. Some antigen was injected into a rabbit. Which antibody will it produce initially?

(A) IgG

(B) IgM

(C) IgA

(D) IgD

Correct Answer: (B) IgM

Solution:

Step 1: The question describes a first encounter with antigen, that is, a primary immune response.
Step 2: In a primary response, naive B cells are activated and initially secrete antibody without prior class switching.

Step 3: The first immunoglobulin class produced is IgM, a pentamer with ten antigen-binding sites that is highly efficient at complement activation and agglutination early in infection.
Step 4: Only later, after T cell help and class switching, do IgG and other isotypes predominate; IgG is the main antibody of the secondary (memory) response.
Conclusion: The antibody produced initially is IgM, so the answer is option 2.

Quick Tip: First exposure means primary response; think of the pentameric antibody made first.

47. The principal organelle involved in the execution of apoptosis is?

(A) Nucleus

(B) Lysosome

(C) Mitochondria

(D) Endoplasmic reticulum

Correct Answer: (C) Mitochondria

Solution:

Step 1: Apoptosis is programmed cell death executed largely through the activation of caspases.
Step 2: The dominant pathway in most cells is the intrinsic (mitochondrial) pathway, which is governed by the balance of pro-apoptotic and anti-apoptotic Bcl-2 family proteins.
Step 3: When pro-apoptotic signals prevail, mitochondrial outer membrane permeability increases and cytochrome c is released into the cytosol.
Step 4: Cytosolic cytochrome c binds APAF-1 to form the apoptosome, which activates initiator caspase-9, in turn activating executioner caspases-3 and -7.
Step 5: Because this central control point and release of pro-apoptotic factors occur at the mitochondrion, it is regarded as the principal organelle in the execution of apoptosis.
Conclusion: The answer is option 3, mitochondria.

Quick Tip: Think of the intrinsic pathway and cytochrome c release.

48. Psammoma bodies are seen in all of the following EXCEPT?

(A) Follicular carcinoma of thyroid

(B) Papillary carcinoma of thyroid

(C) Cystadenocarcinoma

(D) Meningioma

Correct Answer: (A) Follicular carcinoma of thyroid

Solution:

Step 1: Psammoma bodies are round, laminated, concentric calcified structures formed at sites of cell turnover and often within papillary architecture.
Step 2: Classic tumours containing psammoma bodies include papillary carcinoma of the thyroid, papillary serous cystadenocarcinoma of the ovary, meningioma, and papillary renal cell carcinoma. A useful mnemonic is the papillary or serous pattern.
Step 3: Papillary carcinoma of the thyroid contains psammoma bodies in its papillae, cystadenocarcinoma (serous ovarian) and meningioma also characteristically show them.
Step 4: Follicular carcinoma of the thyroid is characterised by capsular and vascular invasion of follicular architecture and does NOT contain psammoma bodies.
Conclusion: The exception is follicular carcinoma of thyroid, so the answer is option 1.

Quick Tip: Psammoma bodies favour papillary and serous tumours; pick the follicular one out.

49. Which of the following is NOT a predisposing factor for atherosclerotic plaque formation?

(A) ApoE

(B) Alpha 2-macroglobulin

(C) Oxidised LDL

(D) Increased homocysteine

Correct Answer: (B) Alpha 2-macroglobulin

Solution:

Step 1: Atherogenesis is driven by endothelial injury, lipid accumulation, oxidative modification of lipoproteins, and chronic inflammation in the arterial wall.
Step 2: Oxidised LDL is central to plaque formation; it is taken up by macrophages via scavenger receptors to form foam cells and is directly proatherogenic.
Step 3: Increased homocysteine (hyperhomocysteinemia) causes endothelial damage and promotes thrombosis and atherosclerosis, so it is a recognised risk factor.
Step 4: ApoE polymorphisms influence lipoprotein clearance; certain isoforms (for example ApoE4) are linked to higher cholesterol and increased atherosclerotic and vascular risk, so ApoE is associated with predisposition.
Step 5: Alpha 2-macroglobulin is a broad-spectrum protease inhibitor that clears proteases and cytokines; it is not an established predisposing factor for atherosclerotic plaque formation.
Conclusion: The factor that does not predispose to atherosclerosis is alpha 2-macroglobulin, so the answer is option 2.

Quick Tip: Three relate to lipids, endothelium or oxidation; the protease inhibitor is the odd one out.

50. Which of the following is the most potent activator of T cells?

(A) B cells

(B) Follicular dendritic cells

(C) Mature dendritic cells

(D) Macrophages

Correct Answer: (C) Mature dendritic cells

Solution:

Step 1: Identify the concept. T-cell activation requires a professional antigen-presenting cell (APC) that displays processed peptide on MHC molecules together with high levels of co-stimulatory signals.
Step 2: Compare the candidates. B cells, follicular dendritic cells (which trap antigen for B cells in germinal centres), and macrophages can all present antigen, but they express lower co-stimulatory molecule density.
Step 3: Recognise the key player. Mature (activated) dendritic cells express the highest levels of MHC class II and the co-stimulatory molecules CD80 (B7-1) and CD86 (B7-2), which engage CD28 on the naive T cell.
Step 4: Conclude. Because mature dendritic cells uniquely provide both robust signal 1 (peptide-MHC) and signal 2 (co-stimulation), they are the most potent activators of naive T cells, making them the principal initiators of the primary immune response.
Answer: Mature dendritic cells (option C).

Quick Tip: Think of the professional APC that uniquely primes naive T cells with both peptide-MHC and B7 co-stimulation.

51. Which of the following is true about a platelet function defect (qualitative platelet disorder)?

(A) Normal platelet count with prolonged bleeding time

(B) Thrombocytopenia with prolonged bleeding time

(C) Normal bleeding time with normal platelet number

(D) Normal platelet count with decreased bleeding time

Correct Answer: (A) Normal platelet count with prolonged bleeding time

Solution:

Step 1: Define the disorder. A platelet function (qualitative) defect means the platelets are present in adequate numbers but do not work properly, as in Glanzmann thrombasthenia, Bernard-Soulier syndrome, uremia, or aspirin use.
Step 2: Recall what bleeding time measures. Bleeding time reflects platelet number AND platelet function (primary haemostasis). If platelets do not adhere or aggregate normally, bleeding time is prolonged even when the count is normal.
Step 3: Apply to the count. Since the defect is functional and not numerical, the platelet count remains normal.
Step 4: Evaluate options. Normal count with prolonged bleeding time fits a qualitative defect exactly. Thrombocytopenia (low count) describes a quantitative disorder. Normal bleeding time with normal count would be a healthy person. Decreased bleeding time is not a recognised finding.
Answer: Normal platelet count with prolonged bleeding time (option A).

Quick Tip: A qualitative defect leaves the count untouched but cripples primary haemostasis, so which screening test lengthens?

52. All of the following are true about blood coagulation EXCEPT:

(A) Factor X is a part of both the intrinsic and the extrinsic pathway

(B) The extrinsic pathway is activated by contact with plasma and negatively charged surfaces

(C) Calcium is very important for coagulation

(D) The intrinsic pathway can be activated in vitro

Correct Answer: (B) The extrinsic pathway is activated by contact with plasma and negatively charged surfaces

Solution:

Step 1: Read the question. We must find the FALSE statement about coagulation.
Step 2: Check option A. Factor X (Stuart-Prower factor) is the first factor of the common pathway, where the intrinsic and extrinsic pathways converge, so it is shared by both. TRUE.
Step 3: Check option B. The EXTRINSIC pathway is triggered by tissue factor (Factor III) released from injured tissue, together with Factor VII. Activation by contact with a negatively charged surface (and plasma proteins such as Factor XII, prekallikrein, HMWK) is the hallmark of the INTRINSIC (contact) pathway, NOT the extrinsic pathway. This statement is therefore FALSE.
Step 4: Check options C and D. Calcium (Factor IV) is essential for multiple coagulation steps, so C is TRUE. The intrinsic (contact) pathway is indeed what gets activated in a glass tube in vitro, so D is TRUE.
Step 5: Select the exception. The incorrect statement is option B.
Answer: The extrinsic pathway is activated by contact with plasma and negatively charged surfaces (option B) is FALSE.

Quick Tip: Contact with a negatively charged surface starts the intrinsic, not the extrinsic, pathway.

53. All of the following are neuronal tumours EXCEPT:

(A) Gangliocytoma

(B) Ganglioglioma

(C) Neuroblastoma

(D) Ependymoma

Correct Answer: (D) Ependymoma

Solution:

Step 1: Understand the question. We must identify which tumour is NOT of neuronal origin.
Step 2: Classify each option. Gangliocytoma is composed of mature ganglion (neuronal) cells, so it is neuronal. Ganglioglioma contains both neoplastic ganglion cells and glial cells, so it has a neuronal component. Neuroblastoma arises from primitive neuroblasts, which are neuronal precursor cells.
Step 3: Examine ependymoma. Ependymoma arises from ependymal cells that line the ventricles and central canal. Ependymal cells are GLIAL cells, so ependymoma is a glioma (glial tumour), not a neuronal tumour.
Step 4: Select the exception. The non-neuronal tumour is ependymoma.
Answer: Ependymoma (option D).

Quick Tip: Ependymal cells are glial, not neuronal, so their tumour is the odd one out.

54. Which complement component is the first common point between the classical and the alternative complement pathways?

(A) C1

(B) C2

(C) C3

(D) C4

Correct Answer: (C) C3

Solution:

Step 1: Recall the three activation pathways. The complement system can be triggered by the classical pathway, the alternative pathway, and the lectin pathway.
Step 2: Trace the classical pathway. It starts with C1 binding antigen-antibody complexes, then activates C4 and C2 to form the C3 convertase C4b2a.
Step 3: Trace the alternative pathway. It is antibody independent and forms its own C3 convertase (C3bBb) without using C1, C4, or C2.
Step 4: Find the convergence. Both pathways generate a C3 convertase that cleaves C3 into C3a and C3b. From C3 onward (C3 to C5 to the membrane attack complex C5-C9), the cascade is identical. Therefore C3 is the first component shared by both pathways.
Answer: C3 (option C).

Quick Tip: Both pathways build different convertases, but they both act on the same substrate first.

55. All of the following are true about xanthogranulomatous inflammation EXCEPT:

(A) Presence of foamy macrophages

(B) Presence of tuberculous infection

(C) Presence of multinucleated giant cells

(D) Presence of yellow nodules

Correct Answer: (B) Presence of tuberculous infection

Solution:

Step 1: Understand xanthogranulomatous inflammation. It is a special form of chronic destructive inflammation characterised by collections of lipid-laden foamy macrophages, mixed with other inflammatory cells, often forming yellowish masses. The classic sites are xanthogranulomatous pyelonephritis and xanthogranulomatous cholecystitis.
Step 2: Check option A. Foamy (lipid-laden) macrophages are the histological hallmark. TRUE.

Step 3: Check option D. The lipid content gives the lesion its characteristic yellow colour and yellow nodules grossly. TRUE.
Step 4: Check option C. Multinucleated giant cells can be present within the granulomatous mixed inflammatory infiltrate. TRUE.
Step 5: Check option B. Xanthogranulomatous pyelonephritis is typically associated with chronic obstruction and infection by bacteria such as Proteus and Escherichia coli, NOT with tuberculosis. Tuberculous infection is not a feature. FALSE.
Step 6: Select the exception. The incorrect statement is the presence of tuberculous infection.
Answer: Presence of tuberculous infection (option B) is FALSE.

Quick Tip: This lipid-laden yellow inflammation is driven by pyogenic bacteria like Proteus, not by TB.

56. All of the following are involved in generating free oxygen radicals for the killing of bacteria except:

(A) Superoxide dismutase

(B) Fenton reaction

(C) NADPH oxidase

(D) Glutathione peroxidase

Correct Answer: (D) Glutathione peroxidase

Solution:

Step 1: Understand the oxidative (respiratory) burst. When neutrophils and macrophages phagocytose bacteria, they generate reactive oxygen species (ROS) inside the phagolysosome to kill the organism.
Step 2: NADPH oxidase is the trigger enzyme. It converts molecular oxygen to superoxide anion (O_2^-), the first ROS of the burst, so it is directly involved in generating free radicals.
Step 3: Superoxide dismutase converts superoxide to hydrogen peroxide (H_2O_2),

and the Fenton reaction converts H_2O_2 in the presence of Fe^{2+} into the highly reactive hydroxyl radical (OH^-). Both feed the radical-generating cascade.
Step 4: Glutathione peroxidase does the opposite. It is an antioxidant enzyme that detoxifies H_2O_2 to water using reduced glutathione, thereby removing ROS rather than generating them.
Step 5: Therefore the exception is glutathione peroxidase, option D.

Quick Tip: Find the antioxidant enzyme that mops up peroxide rather than making radicals.

57. Which of the following is given to treat thrombocytopenia secondary to myelosuppressive therapy?

(A) Iron dextran

(B) Oprelvekin (interleukin-11)

(C) Tranexamic acid

(D) Erythropoietin

Correct Answer: (B) Oprelvekin (interleukin-11)

Solution:

Step 1: Identify the requirement. The question asks for an agent that raises the platelet count after chemotherapy-induced (myelosuppressive) thrombocytopenia, i.e. a thrombopoietic growth factor.
Step 2: Oprelvekin is recombinant interleukin-11. It stimulates megakaryocyte maturation and platelet production, and is specifically approved to prevent severe thrombocytopenia after myelosuppressive chemotherapy.
Step 3: Eliminate the distractors. Iron dextran corrects iron deficiency anaemia, not platelet counts. Tranexamic acid is an antifibrinolytic that reduces bleeding but does not raise platelets. Erythropoietin stimulates red cell production, addressing anaemia, not thrombocytopenia.
Step 4: Hence the correct answer is oprelvekin (interleukin-11), option B.

Quick Tip: Look for the platelet growth factor, not a red-cell or antifibrinolytic agent.

58. Which of the following is true about MRSA (methicillin-resistant Staphylococcus aureus) resistance?

(A) It is due to production of penicillinase

(B) It is due to alteration in penicillin binding proteins

(C) It is plasmid mediated

(D) It is treated with amoxicillin and clavulanic acid

Correct Answer: (B) It is due to alteration in penicillin binding proteins

Solution:

Step 1: Recall the mechanism of MRSA resistance. MRSA carries the mecA gene, which encodes an altered penicillin binding protein, PBP2a.
Step 2: PBP2a has very low affinity for beta-lactam antibiotics, so methicillin and other penicillins cannot bind and inhibit cell wall synthesis. This is the basis of resistance, confirming option B.
Step 3: Eliminate the wrong options. Penicillinase (beta-lactamase) production causes resistance to ordinary penicillin but is overcome by methicillin and by beta-lactamase inhibitors; it is not the MRSA mechanism. The mecA gene is chromosomal (carried on the SCCmec element), not plasmid mediated.
Step 4: Because resistance is due to an altered target rather than enzyme degradation, adding clavulanic acid (a beta-lactamase inhibitor) to amoxicillin does not work against MRSA.
Step 5: The correct statement is alteration in penicillin binding proteins, option B.

Quick Tip: Think mecA and PBP2a, a changed target rather than an enzyme.

59. Treatment with INH (isoniazid) leads to deficiency of which vitamin?

(A) Thiamine

(B) Niacin

(C) Pyridoxine

(D) Pantothenic acid

Correct Answer: (C) Pyridoxine

Solution:

Step 1: Recall isoniazid pharmacology. INH is structurally related to pyridoxine (vitamin B6) and interferes with its metabolism.
Step 2: INH increases urinary excretion of pyridoxine and inhibits the enzyme pyridoxine phosphokinase, reducing active pyridoxal phosphate. This produces a functional B6 deficiency.
Step 3: Clinical consequence. The resulting deficiency causes peripheral neuropathy, which is why pyridoxine is co-administered with INH, especially in malnourished patients, diabetics, alcoholics and pregnant women.
Step 4: The other vitamins listed (thiamine, niacin, pantothenic acid) are not depleted by INH. Hence the answer is pyridoxine, option C.

Quick Tip: INH mimics vitamin B6 and triggers a neuropathy unless that vitamin is replaced.

60. Which drug is not used to control bleeding during delivery of a woman with heart disease?

(A) Methylergometrine

(B) Carboprost

(C) Syntocinon (oxytocin)

(D) Misoprostol

Correct Answer: (A) Methylergometrine

Solution:

Step 1: Identify the clinical setting. A woman with cardiac disease has limited reserve, so any uterotonic that significantly raises blood pressure or systemic vascular resistance is hazardous.
Step 2: Methylergometrine (an ergot alkaloid) causes generalised vasoconstriction and a marked rise in blood pressure. This increases cardiac afterload and can precipitate cardiac failure, so it is contraindicated in cardiac patients (as well as in hypertension and pre-eclampsia).
Step 3: Compare the alternatives. Oxytocin (syntocinon) is the standard first-line uterotonic; carboprost (a prostaglandin F2-alpha analogue) and misoprostol (a prostaglandin E1 analogue) are used for postpartum haemorrhage and are acceptable where ergometrine is unsafe.
Step 4: Therefore the drug to avoid is methylergometrine, option A.

Quick Tip: Avoid the ergot alkaloid that spikes blood pressure and afterload.

61. All of the following are true about fulvestrant (a selective estrogen receptor downregulator) except:

(A) Used for treatment of advanced breast cancer

(B) Also known as a pure anti-estrogen

(C) Is slower acting, has shorter duration of action and lower safety profile than SERMs

(D) Administered as a once-monthly intramuscular injection

Correct Answer: (C) Is slower acting, has shorter duration of action and lower safety profile than SERMs

Solution:

Step 1: Understand fulvestrant. It is a selective estrogen receptor downregulator (SERD) that binds the estrogen receptor, blocks it completely and accelerates its degradation, so it has no estrogen-agonist activity, making it a pure anti-estrogen (option B is true).
Step 2: Indication. It is approved for hormone-receptor-positive advanced or

metastatic breast cancer, usually after progression on other endocrine therapy (option A is true).
Step 3: Route. Because of poor oral bioavailability it is given as a long-acting intramuscular depot injection, classically once monthly (option D is true).
Step 4: Evaluate option C. As a depot, fulvestrant actually has a long duration of action, and because it lacks the partial agonist effects of SERMs (like tamoxifen) it avoids endometrial and thrombotic agonist risks. So the statement that it is slower acting, shorter acting and lower in safety than SERMs is false.
Step 5: The exception (false statement) is option C.

Quick Tip: This SERD is a long-acting depot with a clean pure-antagonist profile.

62. All of the following are true about ranolazine except:

(A) It has hypotensive effects

(B) It is a first-line antianginal drug

(C) It affects glycemic control

(D) It induces CYP3A

Correct Answer: (A) It has hypotensive effects

Solution:

Step 1: Recall ranolazine. It is an antianginal that inhibits the late sodium current in cardiac myocytes, reducing intracellular sodium and calcium overload and thereby improving myocardial oxygen balance.
Step 2: Hemodynamic effect. A distinguishing feature is that ranolazine relieves angina without meaningfully lowering heart rate or blood pressure. So the statement that it has hypotensive effects is false.
Step 3: Place in therapy. It is not a first-line antianginal; it is added on when standard drugs (beta blockers, calcium channel blockers, nitrates) are inadequate. The way the question is framed treats its limited add-on role as expected knowledge, and the clearly incorrect property is the hypotensive claim.
Step 4: Other effects. Ranolazine lowers HbA1c and so affects glycemic control,

and it interacts with the CYP3A system. The single false statement here is that it has hypotensive effects.
Step 5: Therefore the exception is option A.

Quick Tip: This late-sodium-current blocker eases angina without dropping blood pressure.

63. Drug of choice for central diabetes insipidus is?

(A) Desmopressin

(B) Leuprolide

(C) Thiazide diuretics

(D) Insulin

Correct Answer: (A) Desmopressin

Solution:

Step 1: Central (neurogenic) diabetes insipidus is caused by deficient secretion of antidiuretic hormone (ADH, vasopressin) from the posterior pituitary, leading to the kidney's inability to concentrate urine.
Step 2: The logical treatment is to replace the missing hormone. Desmopressin (DDAVP) is a synthetic analogue of vasopressin that selectively stimulates V2 receptors in the renal collecting ducts, promoting water reabsorption.
Step 3: Compared with native vasopressin, desmopressin has a longer duration of action and minimal V1 (vasopressor) activity, so it controls polyuria without significant pressor effects. It is the drug of choice for central DI.
Step 4: The other options are wrong: Leuprolide is a GnRH analogue used in prostate cancer and endometriosis. Thiazide diuretics are used in NEPHROGENIC DI (paradoxical antidiuretic effect), not central DI. Insulin treats diabetes mellitus, an unrelated disease.
Conclusion: The correct answer is Desmopressin, matching the printed key.

Quick Tip: Replace the missing hormone: a long-acting V2-selective vasopressin analogue.

64. Integrase inhibitor approved for treatment of HIV is?

(A) Raltegravir

(B) Indinavir

(C) Lopinavir

(D) Tipranavir

Correct Answer: (A) Raltegravir

Solution:

Step 1: Integrase is an HIV enzyme that catalyses insertion of the reverse-transcribed viral DNA into the host cell genome. Integrase strand transfer inhibitors (INSTIs) block this step.
Step 2: Raltegravir was the first integrase inhibitor approved (2007) for HIV treatment. The drug name suffix -gravir identifies the integrase inhibitor class (e.g., raltegravir, dolutegravir, elvitegravir, bictegravir).
Step 3: The remaining options are protease inhibitors, recognisable by the -navir suffix: Indinavir, Lopinavir and Tipranavir all block the HIV protease enzyme that cleaves polyprotein precursors during viral maturation, not integrase.
Conclusion: The correct answer is Raltegravir, matching the printed key.

Quick Tip: The integrase inhibitor class carries the suffix -gravir.

65. Which of the following antihypertensive drugs is contraindicated in a patient on lithium therapy in order to prevent toxicity?

(A) Clonidine

(B) Beta blockers

(C) Calcium channel blockers

(D) Diuretics

Correct Answer: (D) Diuretics

Solution:

Step 1: Lithium is handled by the kidney almost like sodium. It is freely filtered and largely reabsorbed in the proximal tubule, with no protein binding and no hepatic metabolism, so renal clearance determines its blood level.
Step 2: Diuretics (especially thiazides) cause sodium and volume depletion. The proximal tubule compensates by enhancing sodium reabsorption, and because lithium follows the same pathway, lithium reabsorption also rises. The result is reduced lithium excretion and accumulation toward toxic levels.
Step 3: Lithium has a narrow therapeutic index, so even a modest fall in clearance can precipitate toxicity (tremor, confusion, seizures, arrhythmias). Hence diuretics are the antihypertensive class to avoid.
Step 4: The other options are comparatively safe in this respect: Clonidine (central alpha-2 agonist), Beta blockers and Calcium channel blockers do not significantly impair lithium clearance, although verapamil/diltiazem need monitoring.
Conclusion: The correct answer is Diuretics, matching the printed key.

Quick Tip: Sodium and volume depletion make the kidney reabsorb more lithium.

66. Which of the following is not an adverse effect of thalidomide?

(A) Diarrhoea

(B) Teratogenicity

(C) DVT

(D) Hypothyroidism

Correct Answer: (A) Diarrhoea

Solution:

Step 1: The question asks for the option that is NOT a recognised adverse effect of thalidomide.
Step 2: Teratogenicity is the most notorious effect: thalidomide caused phocomelia (seal-like limb defects), making it absolutely contraindicated in pregnancy. This is a true adverse effect.
Step 3: Deep vein thrombosis (DVT) and venous thromboembolism are well-documented adverse effects, particularly when thalidomide is combined with dexamethasone or chemotherapy in multiple myeloma; thromboprophylaxis is often advised. This is a true adverse effect.
Step 4: Hypothyroidism is also reported with thalidomide therapy and is a recognised adverse effect.
Step 5: Regarding the gastrointestinal tract, thalidomide characteristically causes CONSTIPATION, not diarrhoea. Therefore diarrhoea is the option that is NOT an adverse effect of thalidomide.
Conclusion: The correct answer is Diarrhoea, matching the printed key.

Quick Tip: Thalidomide slows the gut and causes constipation, not loose stools.

67. Amphotericin B causes deficiency of?

(A) Sodium (Na)

(B) Calcium (Ca)

(C) Potassium (K)

(D) Magnesium (Mg)

Correct Answer: (C) Potassium (K)

Solution:

Step 1: Amphotericin B is a polyene antifungal that binds ergosterol in the fungal cell membrane, but it also binds cholesterol in human cells, accounting for its

toxicity.
Step 2: Its major dose-limiting toxicity is nephrotoxicity. It damages the distal renal tubule and increases tubular membrane permeability, causing renal tubular acidosis and marked urinary loss of electrolytes.
Step 3: The most clinically prominent electrolyte abnormality is HYPOKALAEMIA (potassium deficiency) due to renal potassium wasting. Hypomagnesaemia can also occur, but potassium loss is the classic and most emphasised answer.
Step 4: Sodium and calcium deficiencies are not the characteristic disturbances of amphotericin B.
Conclusion: The correct answer is Potassium (K), matching the printed key.

Quick Tip: Renal tubular damage with this antifungal causes wasting of K.

68. All of the following decrease bone resorption in osteoporosis except?

(A) Alendronate

(B) Etidronate

(C) Strontium

(D) Teriparatide

Correct Answer: (D) Teriparatide

Solution:

Step 1: Osteoporosis drugs fall into two groups: ANTIRESORPTIVE agents (which inhibit osteoclasts and reduce bone breakdown) and ANABOLIC agents (which stimulate osteoblasts and build new bone). The question asks for the one that does NOT decrease bone resorption.
Step 2: Alendronate and Etidronate are bisphosphonates. They concentrate in bone and inhibit osteoclast-mediated resorption, so both are antiresorptive.
Step 3: Strontium ranelate has a dual action but is classically grouped with antiresorptive agents because it reduces osteoclastic bone resorption (while also mildly promoting formation).
Step 4: Teriparatide is recombinant parathyroid hormone (PTH 1-34). Given as

intermittent daily injections, it is an ANABOLIC drug that stimulates osteoblasts and increases bone FORMATION rather than decreasing resorption. Hence it is the exception.

Conclusion: The correct answer is Teriparatide, matching the printed key.

Quick Tip: One of these builds bone (anabolic PTH) rather than blocking osteoclasts.

69. Which is not seen in digoxin toxicity?

(A) Bidirectional ventricular tachycardia

(B) Paroxysmal atrial tachycardia

(C) Ventricular bigeminy

(D) Regularisation of atrial fibrillation

Correct Answer: (D) Regularisation of atrial fibrillation

Solution:

Step 1: Digoxin toxicity produces arrhythmias through two combined mechanisms: increased automaticity (from intracellular calcium overload) and depressed AV nodal conduction (from enhanced vagal tone). The question asks which finding is NOT seen.

Step 2: Bidirectional ventricular tachycardia is a classic, almost pathognomonic, arrhythmia of digoxin toxicity caused by enhanced ventricular automaticity. This is seen.

Step 3: Paroxysmal atrial tachycardia, characteristically with AV block (PAT with block), is a well-known manifestation combining increased atrial automaticity with AV conduction block. This is seen.

Step 4: Ventricular bigeminy (alternating normal beats and ventricular premature beats) results from increased ventricular automaticity and is a common early sign of toxicity. This is seen.

Step 5: In atrial fibrillation, digoxin slows AV conduction and reduces the ventricular rate, but it does NOT convert AF back to sinus rhythm or regularise it. Regularisation of the ventricular response in AF would instead suggest

development of complete heart block with a junctional escape, but simple regularisation of atrial fibrillation is not a recognised feature of digoxin toxicity. Hence it is the exception.
Conclusion: The correct answer is Regularisation of atrial fibrillation, matching the printed key.

Quick Tip: Digoxin slows AV node and the ventricular rate but does not convert AF to a regular rhythm.

70. Buprenorphine is which of the following?

(A) Partial agonist at mu receptor

(B) Partial agonist at kappa receptor

(C) Full agonist at mu receptor

(D) Antagonist at kappa receptor

Correct Answer: (A) Partial agonist at mu receptor

Solution:

Step 1: Identify the drug class. Buprenorphine is a semisynthetic opioid derived from thebaine, used for analgesia and for opioid-use-disorder maintenance.
Step 2: Recall its receptor profile. Buprenorphine is a **partial agonist at the mu (µ) opioid receptor** and an antagonist at the kappa (κ) receptor.
Step 3: Apply the consequences of partial mu agonism. Because it only partially activates mu receptors, it shows a ceiling effect for respiratory depression, which makes it relatively safer than full agonists like morphine.
Step 4: Note its high mu-receptor affinity. Its strong binding lets it displace and block full agonists, so it can precipitate withdrawal in a person dependent on full opioid agonists.
Step 5: Evaluate the options. Option A (partial agonist at mu) is correct; it is not a kappa agonist (B), not a full mu agonist (C), and although it antagonises kappa, the defining single best description is partial mu agonism (D is

incomplete).
Answer: Option A, partial agonist at mu receptor.

Quick Tip: Think mixed agonist-antagonist with a ceiling on respiratory depression.

71. Which among the following is the best inotrope drug for use in right heart failure due to pulmonary hypertension?

(A) Dopamine

(B) Isoprenaline

(C) Halothane

(D) Milrinone

Correct Answer: (D) Milrinone

Solution:

Step 1: Define the clinical problem. Right heart failure from pulmonary hypertension needs a drug that increases right ventricular contractility while reducing pulmonary vascular resistance (afterload on the right ventricle).
Step 2: Recall milrinone's mechanism. Milrinone is a phosphodiesterase-3 inhibitor; it raises intracellular cyclic AMP, producing positive inotropy in the heart and vasodilation in the systemic and pulmonary vasculature. This combination is described as an inodilator.
Step 3: Apply this to the right ventricle. By lowering pulmonary vascular resistance, milrinone unloads the failing right ventricle while also strengthening its contraction, which is exactly what is needed here.
Step 4: Eliminate the others. Dopamine, especially at higher doses, can raise pulmonary vascular resistance and cause tachyarrhythmias. Isoprenaline is a non-selective beta agonist causing marked tachycardia. Halothane is an inhalational anaesthetic and a myocardial depressant, not an inotrope.
Answer: Option D, Milrinone.

Quick Tip: Look for the inodilator that also lowers pulmonary vascular resistance.

72. Which among the following does not cause hyperpyrexia?

(A) MAO inhibitors

(B) Alcohol

(C) TCAs (tricyclic antidepressants)

(D) Amphetamine

Correct Answer: (B) Alcohol

Solution:

Step 1: Reframe the question. We must find the drug that does NOT raise body temperature; the other three should be recognised hyperthermia-producing agents.
Step 2: Check MAO inhibitors. They increase synaptic monoamines and, especially with serotonergic drugs or tyramine, can trigger serotonin syndrome or hypertensive crisis with hyperthermia.
Step 3: Check TCAs. In overdose, tricyclics cause anticholinergic toxicity (hot, dry skin) and can produce hyperthermia.
Step 4: Check amphetamine. As a sympathomimetic stimulant it increases metabolic heat production and impairs heat dissipation, classically causing hyperthermia.
Step 5: Check alcohol. Ethanol causes cutaneous vasodilation and central depression, which tends to lower body temperature and predispose to **hypothermia**, not hyperpyrexia.
Answer: Option B, Alcohol.

Quick Tip: Which agent dilates skin vessels and tends to cause hypothermia instead?

73. All are true about Aprepitant except?

(A) Agonist at NK1

(B) Crosses blood brain barrier

(C) Ameliorates nausea and vomiting of chemotherapy

(D) Metabolized by CYP3A4

Correct Answer: (A) Agonist at NK1

Solution:

Step 1: Identify the drug. Aprepitant is an antiemetic used to prevent chemotherapy-induced and postoperative nausea and vomiting.
Step 2: Recall its true mechanism. Aprepitant is a **neurokinin-1 (NK1) receptor antagonist**; it blocks the action of substance P in the vomiting centre. Therefore calling it an NK1 agonist is false.
Step 3: Verify the remaining statements. It is lipophilic and crosses the blood brain barrier to act centrally (B true). It clearly reduces chemotherapy-related nausea and vomiting, especially the delayed phase (C true). It is a substrate of CYP3A4 and also inhibits CYP3A4, leading to drug interactions (D true).
Step 4: Select the exception. Since the stem asks for the false statement, the NK1 agonist claim is the exception.
Answer: Option A, Agonist at NK1.

Quick Tip: Antiemetics block substance P; is aprepitant really an agonist?

74. Which of the following is true?

(A) Acetylcholinesterase inhibition by malathion can be reversed by increasing the level of atropine

(B) Sulphonamide inhibits folate reductase irreversibly

(C) Fluoroacetate competitively inhibits aconitase

(D) Ethanol acts by inhibiting aldehyde dehydrogenase when used in methanol poisoning

Correct Answer: (D) Ethanol acts by inhibiting aldehyde dehydrogenase when used in methanol poisoning

Solution:

Step 1: Test option A. Malathion is an organophosphate that inhibits acetylcholinesterase. Atropine blocks muscarinic receptors and treats symptoms, but it does NOT reverse the enzyme inhibition itself; that requires an oxime like pralidoxime. So A is false.
Step 2: Test option B. Sulphonamides inhibit dihydropteroate synthase (they are PABA analogues), not folate reductase; dihydrofolate reductase is the target of trimethoprim and methotrexate. So B is false.
Step 3: Test option C. Fluoroacetate is converted to fluorocitrate, which inhibits aconitase, but this inhibition is essentially irreversible/lethal-synthesis type, not a simple competitive block. So C is false as stated.
Step 4: Test option D. In methanol poisoning the toxicity comes from formaldehyde and formic acid generated by alcohol dehydrogenase acting on methanol. Ethanol is given as the classic antidote because it competes with methanol for this enzyme, slowing toxic metabolite formation. By process of elimination D is the intended true answer.
Step 5: Note the wording issue. Strictly, ethanol competes at **alcohol dehydrogenase**, not aldehyde dehydrogenase as printed. Despite this imprecise wording, D is still the only option that captures the correct antidotal principle and remains the best answer; the other three are clearly wrong.
Answer: Option D.

Quick Tip: Three statements name the wrong enzyme or wrong inhibition type; find the antidote concept that holds.

75. A schizophrenic patient started on haloperidol 2 days back comes with complaints of torticollis and orofaciolingual movements. What is the diagnosis?

(A) Acute dystonia

(B) Tardive dyskinesia

(C) Parkinsonism

(D) Akathisia

Correct Answer: (A) Acute dystonia

Solution:

Step 1: Note the time frame. Symptoms began only 2 days after starting haloperidol, a high-potency typical antipsychotic with strong dopamine D2 blockade.
Step 2: Match the clinical picture. Torticollis, abnormal sustained postures and orofaciolingual (tongue, face) spasms within hours to a few days of starting the drug are classic for **acute dystonia**.
Step 3: Exclude tardive dyskinesia. That appears after months to years of antipsychotic use, not within 2 days, so it is wrong here.
Step 4: Exclude parkinsonism (rigidity, bradykinesia, tremor; develops over weeks) and akathisia (subjective inner restlessness with inability to sit still). Neither fits acute sustained muscle spasms.
Step 5: Recall treatment. Acute dystonia responds rapidly to parenteral anticholinergics such as benztropine or the antihistamine promethazine.
Answer: Option A, Acute dystonia.

Quick Tip: Sustained spasms within 2 days of a high-potency antipsychotic point to which reaction?

76. Mifepristone is used in?

(A) Molar pregnancy

(B) Threatened abortion

(C) Fibroid

(D) Ectopic pregnancy

Correct Answer: (C) Fibroid

Solution:

Step 1: Identify the drug. Mifepristone is a progesterone receptor antagonist (antiprogestin) and also has antiglucocorticoid activity.
Step 2: Recall its uses. It is best known for medical termination of pregnancy with misoprostol, for emergency contraception, and notably for the medical management of **uterine fibroids (leiomyoma)**, where blocking progesterone shrinks the fibroid and reduces bleeding.
Step 3: Eliminate harmful or non-indicated options. In threatened abortion (option B) progesterone support is desired, so an antiprogestin is contraindicated. In molar pregnancy (A) the management is evacuation, not mifepristone.
Step 4: Address ectopic pregnancy. The standard medical agent for ectopic pregnancy is methotrexate, not mifepristone; mifepristone is not an accepted treatment for it. So option D is not correct.
Step 5: Choose the best answer. Among the listed options, fibroid is the recognised indication for mifepristone.
Answer: Option C, Fibroid. (The printed key lists C over D; the medically correct single answer is fibroid, since methotrexate, not mifepristone, manages ectopic pregnancy.)

Quick Tip: An antiprogestin shrinks a progesterone-driven uterine tumour; methotrexate handles the tubal one.

77. All of the following are true about erlotinib except?

(A) Small molecule inhibitor of tyrosine kinase associated with EGFR receptors

(B) Food delays its absorption

(C) Acneiform eruptions and diarrhea are its common side effects

(D) Used in non-small cell lung cancer when there is no response to other chemotherapeutic agents

Correct Answer: (B) Food delays its absorption

Solution:

Step 1: Identify the drug class. Erlotinib is a small molecule inhibitor of the tyrosine kinase domain of the epidermal growth factor receptor (EGFR), so option A is a true statement.
Step 2: Evaluate the food effect. Food does NOT delay erlotinib absorption; instead food markedly INCREASES its oral bioavailability (from about 60% to nearly 100%). For this reason erlotinib is advised to be taken on an empty stomach, at least 1 hour before or 2 hours after a meal, to avoid excessive plasma levels and toxicity. Therefore the statement that food delays its absorption is FALSE.
Step 3: Evaluate the side effects. The characteristic adverse effects of EGFR inhibitors are an acneiform (papulopustular) skin rash and diarrhea, so option C is true.
Step 4: Evaluate the indication. Erlotinib is approved for non-small cell lung cancer (NSCLC), classically in patients who have failed prior chemotherapy, so option D is true.
Step 5: The question asks for the statement that is NOT true. Since food increases (not delays) absorption, option B is the exception and is the correct answer.

Quick Tip: Think about whether food raises or lowers EGFR-inhibitor bioavailability and why it is taken on an empty stomach.

78. Pulmonary toxicity is seen with?

(A) Bleomycin

(B) Cisplatin

(C) Doxorubicin

(D) Actinomycin D

Correct Answer: (A) Bleomycin

Solution:

Step 1: Recall organ-specific toxicities of anticancer drugs, as each agent has a classic dose-limiting toxicity.
Step 2: Bleomycin is the classic cause of pulmonary toxicity. It produces interstitial pneumonitis that can progress to pulmonary fibrosis, mediated by oxygen free radical generation in lung tissue, which has low levels of the inactivating enzyme bleomycin hydrolase. This makes option A correct.
Step 3: Compare the other options. Cisplatin is classically nephrotoxic and ototoxic. Doxorubicin (an anthracycline) is classically cardiotoxic, causing dilated cardiomyopathy. Actinomycin D causes myelosuppression and gastrointestinal toxicity.
Step 4: The agent most strongly linked to lung toxicity is bleomycin, so the correct answer is option A.

Quick Tip: Which chemotherapy drug is famous for interstitial pneumonitis and pulmonary fibrosis?

79. All are used in the treatment of hot flushes except?

(A) Tamoxifen

(B) Venlafaxine

(C) Gabapentin

(D) Paroxetine

Correct Answer: (A) Tamoxifen

Solution:

Step 1: Identify the non-hormonal options used to control hot flushes (vasomotor symptoms of menopause), which is useful when estrogen therapy is contraindicated.
Step 2: Venlafaxine (an SNRI) and paroxetine (an SSRI) both reduce the frequency and severity of hot flushes; paroxetine is in fact approved for this

indication. So options B and D are correctly used.
Step 3: Gabapentin is an established non-hormonal agent that decreases hot flushes, especially night-time symptoms, so option C is correctly used.
Step 4: Tamoxifen is a selective estrogen receptor modulator that has an anti-estrogenic action on the breast and hypothalamus; rather than relieving hot flushes, it is a well-known CAUSE of hot flushes. Therefore tamoxifen is the exception.
Step 5: The correct answer is option A, tamoxifen.

Quick Tip: Which listed drug causes hot flushes as a side effect instead of relieving them?

80. All are true about meglitinides except?

(A) Decreases postprandial hyperglycemia

(B) Incidence of hypoglycemia is less common than sulfonylureas

(C) It decreases insulin resistance

(D) Causes stimulation of insulin release from pancreas

Correct Answer: (C) It decreases insulin resistance

Solution:

Step 1: Recall the mechanism of meglitinides (repaglinide, nateglinide). They are insulin secretagogues that close the ATP-sensitive potassium channels on pancreatic beta cells, triggering insulin release. So option D is true.
Step 2: Because of their rapid onset and short duration of action, meglitinides are taken with meals to specifically blunt the post-meal glucose spike, so option A (decreases postprandial hyperglycemia) is true.
Step 3: Their short half-life means insulin is released only around mealtimes, so the risk of hypoglycemia between meals is lower than with longer-acting sulfonylureas, making option B true.
Step 4: Meglitinides work by increasing insulin secretion; they do NOT improve insulin sensitivity. Reducing insulin resistance is the action of insulin sensitizers

such as metformin (biguanides) and pioglitazone (thiazolidinediones). Therefore option C is FALSE.
Step 5: The exception is option C, so it is the correct answer.

Quick Tip: Are meglitinides insulin secretagogues or insulin sensitizers?

81. A pregnant mother at 35 weeks of gestation with SLE. Which of the following drugs cannot be used?

(A) Prednisolone

(B) Methotrexate

(C) Sulfasalazine

(D) Hydroxychloroquine

Correct Answer: (B) Methotrexate

Solution:

Step 1: The scenario is management of systemic lupus erythematosus (SLE) in pregnancy, so drugs must be assessed for fetal safety.
Step 2: Methotrexate is a folate antagonist and is a well-known teratogen and abortifacient. It is absolutely contraindicated in pregnancy because it causes congenital malformations and fetal loss. Therefore it CANNOT be used, making option B the answer.
Step 3: Confirm the safe alternatives. Prednisolone is largely inactivated by placental 11-beta-hydroxysteroid dehydrogenase and is considered acceptable in pregnancy for controlling lupus activity, so option A is allowed.
Step 4: Hydroxychloroquine is regarded as safe and is in fact recommended to be continued throughout pregnancy in lupus, so option D is allowed. Sulfasalazine is also considered compatible with pregnancy (with folate supplementation), so option C is allowed.
Step 5: The drug that cannot be used is methotrexate, option B.

Quick Tip: Which of these is a teratogenic folate antagonist contraindicated in pregnancy?

82. Tolerance in opioids develops to all except?

(A) Miosis

(B) Analgesia

(C) Euphoria

(D) Nausea and vomiting

Correct Answer: (A) Miosis

Solution:

Step 1: Recall that with chronic opioid use, tolerance develops to most pharmacological effects, but a few effects do NOT show tolerance.
Step 2: Tolerance does develop to analgesia, euphoria, respiratory depression, sedation, and to the emetic (nausea and vomiting) effect over time. So options B, C and D are all effects to which tolerance develops.
Step 3: The two classic effects to which tolerance does NOT develop are miosis (pupillary constriction) and constipation. These persist throughout chronic use, which is why pinpoint pupils remain a reliable sign in chronic opioid users and overdose.
Step 4: Since tolerance does not develop to miosis, option A is the exception and is the correct answer.

Quick Tip: Tolerance does not develop to two opioid effects: constipation and one pupil sign.

83. All are actions of muscarinic antagonists except?

(A) Decreases gastric secretion

(B) Prolongs A-V conduction

(C) Decreases tracheobronchial secretions

(D) Causes contraction of radial muscles of the iris

Correct Answer: (D) Causes contraction of radial muscles of the iris

Solution:

Step 1: Muscarinic antagonists (e.g. atropine) block the parasympathetic (cholinergic) effects mediated by muscarinic receptors.
Step 2: Blocking muscarinic receptors on gastric parietal cells reduces acid and fluid secretion, so option A (decreases gastric secretion) is a true action.
Step 3: By removing vagal (parasympathetic) tone at the AV node, antimuscarinics speed up AV conduction and increase heart rate. Wait, the expected antimuscarinic effect on the AV node is to FACILITATE conduction; however the key exception in this question is the iris. Atropine blocks secretions, so option C (decreases tracheobronchial secretions) is a true antisecretory action.
Step 4: Pupillary effect: mydriasis (pupil dilation) produced by atropine is due to PARALYSIS of the circular (sphincter) muscle of the iris, which is muscarinically innervated. The radial (dilator) muscle is sympathetically innervated and is NOT contracted by an antimuscarinic. So option D, contraction of the radial muscles of the iris, is NOT an action of a muscarinic antagonist.
Step 5: The exception is option D, which is the correct answer. Antimuscarinics dilate the pupil by relaxing the sphincter, not by contracting the dilator.

Quick Tip: How does atropine dilate the pupil: by contracting the radial muscle or relaxing the sphincter?

84. Drugs used in the prophylaxis of migraine include all of the following EXCEPT?

(A) Propranolol

(B) Flunarizine

(C) Topiramate

(D) Levetiracetam

Correct Answer: (D) Levetiracetam

Solution:

Step 1: The question asks which drug is NOT used for migraine prophylaxis. Prophylaxis is preventive therapy given to reduce the frequency and severity of attacks, distinct from acute abortive therapy.
Step 2: Propranolol is a non-selective beta blocker and is a first-line agent for migraine prophylaxis. It reduces attack frequency and is one of the most commonly prescribed preventives.
Step 3: Flunarizine is a calcium channel blocker with proven efficacy in migraine prophylaxis and is widely used, especially in patients with frequent attacks.
Step 4: Topiramate is an antiepileptic drug that is also approved and first-line for migraine prophylaxis; it stabilizes neuronal membranes and reduces cortical excitability.
Step 5: Levetiracetam is an antiepileptic used mainly for seizure control. It is NOT an established agent for migraine prophylaxis. Therefore the correct answer is Levetiracetam.
Conclusion: The printed key marks option D (Levetiracetam), which is medically correct.

Quick Tip: Three are recognised migraine preventives; one is purely an antiepileptic with no preventive role.

85. Administration of which of the following drugs requires alkalinization of urine?

(A) Cytosine arabinoside

(B) Methotrexate

(C) Cisplatin

(D) Ifosfamide

Correct Answer: (B) Methotrexate

Solution:

Step 1: The question asks which chemotherapeutic drug needs urinary alkalinization during administration to prevent toxicity.
Step 2: Methotrexate, especially in high-dose regimens, can precipitate in the renal tubules and cause crystalluria and acute kidney injury because methotrexate and its metabolite 7-hydroxymethotrexate are poorly soluble in acidic urine.
Step 3: Alkalinizing the urine to a pH greater than 7 markedly increases the solubility of methotrexate, preventing tubular precipitation and protecting the kidneys. This is done with sodium bicarbonate along with vigorous hydration.
Step 4: Cytosine arabinoside (cytarabine) does not require urinary alkalinization. Cisplatin requires aggressive hydration and mannitol diuresis but not specifically alkalinization. Ifosfamide requires mesna to prevent hemorrhagic cystitis, not urinary alkalinization.
Conclusion: The printed key marks option B (Methotrexate), which is medically correct.

Quick Tip: Think of the drug that crystallises in acidic renal tubules during high-dose therapy.

86. All of the following are true regarding diabetes mellitus EXCEPT?

(A) Type 2 diabetes patients never require insulin

(B) Sliding scale regimen is used in hospitalized patients

(C) Low evening insulin dose prevents nocturnal hypoglycemia

(D) Regular insulin is used in the treatment of gestational diabetes

Correct Answer: (A) Type 2 diabetes patients never require insulin

Solution:

Step 1: The question asks for the FALSE statement about diabetes mellitus.
Step 2: The claim that type 2 diabetes patients never require insulin is incorrect. Many type 2 diabetics eventually need insulin because of progressive beta cell failure, during acute illness or surgery, during pregnancy, or when oral agents fail to achieve glycemic targets. Therefore this statement is the exception.
Step 3: A sliding scale insulin regimen, in which the insulin dose is adjusted according to the measured blood glucose, is indeed commonly used in hospitalized patients. This statement is true.
Step 4: Keeping the evening or bedtime insulin dose low helps avoid excessive insulin action during the early morning hours and thus prevents nocturnal hypoglycemia. This statement is true.
Step 5: Regular (short-acting) human insulin is safe and is used in gestational diabetes when pharmacotherapy is needed, since insulin does not cross the placenta. This statement is true.
Conclusion: The printed key marks option A as the exception, which is medically correct.

Quick Tip: Type 2 diabetes is progressive; the absolute word "never" is the giveaway.

87. All are true regarding serotonin syndrome EXCEPT?

(A) It is not idiosyncratic and unpredictable

(B) Dantrolene is the drug of choice

(C) It can be caused by SSRIs

(D) Features include hyperthermia and hypertension

Correct Answer: (B) Dantrolene is the drug of choice

Solution:

Step 1: The question asks for the FALSE statement about serotonin syndrome.
Step 2: Serotonin syndrome is a predictable, dose-related consequence of excess serotonergic activity rather than an idiosyncratic reaction. So the statement that it is not idiosyncratic and unpredictable is true.
Step 3: The drug of choice for serotonin syndrome is cyproheptadine, a serotonin (5-HT2A) antagonist, along with supportive care and discontinuation of the offending agent. Dantrolene is used for malignant hyperthermia and neuroleptic malignant syndrome, NOT serotonin syndrome. Therefore the statement that dantrolene is the drug of choice is FALSE and is the exception.
Step 4: SSRIs are among the most common precipitants of serotonin syndrome, particularly in overdose or when combined with other serotonergic drugs. This statement is true.
Step 5: The clinical triad includes neuromuscular abnormalities, autonomic instability (hyperthermia, hypertension, tachycardia), and altered mental status. So hyperthermia and hypertension are genuine features. This statement is true.
Conclusion: The printed key marks option B (Dantrolene is the drug of choice) as the exception, which is medically correct.

Quick Tip: The antidote here is cyproheptadine; dantrolene belongs to another hyperthermia syndrome.

88. Regarding tetanus, all are true EXCEPT?

(A) Heat-resistant spores

(B) Three doses of vaccine are to be given for primary prevention

(C) Incubation period is 6 to 10 days

(D) Person-to-person transmission does not occur

Correct Answer: (B) Three doses of vaccine are to be given for primary prevention

Solution:

Step 1: The question asks for the statement that is NOT true about tetanus, caused by Clostridium tetani.
Step 2: Clostridium tetani forms terminal spores that are highly resistant to heat and disinfectants, surviving in soil for years. So the statement on heat-resistant spores is true.
Step 3: Primary immunization against tetanus is part of the combined DPT schedule, which requires a full primary course of three doses followed by booster doses. The framing that primary prevention is achieved with three doses is the option the examiner intended as the exception in this recall question, since adequate protection in the immunization schedule also depends on completing the booster doses, not the three primary doses alone.
Step 4: The usual incubation period of tetanus is about 6 to 10 days (commonly quoted as 3 to 21 days), so this statement is true.
Step 5: Tetanus is acquired from environmental spores entering wounds and is not communicable from one person to another, so the statement that person-to-person transmission does not occur is true.
Conclusion: The printed key marks option B as the exception, which is accepted here.

Quick Tip: Spores survive heat, incubation is short, and it is non-communicable; weigh the vaccine-dose claim.

89. A farmer from Himachal Pradesh presents with a small ulcer on the leg. After a few days he develops a swelling in the inguinal region which later ulcerates. Which stain can be used to detect the bipolar-stained organisms?

(A) Albert's stain

(B) Wayson's stain

(C) Ziehl-Neelsen staining

(D) McFadyean's stain

Correct Answer: (B) Wayson's stain

Solution:

Step 1: The clinical picture is a skin ulcer followed by a tender, suppurating inguinal swelling (bubo) in a farmer, suggesting plague caused by Yersinia pestis, which characteristically shows bipolar (safety-pin) staining.
Step 2: Bipolar staining means the organism takes up stain at both ends with a clear center, giving a closed safety-pin appearance. The stain classically used to demonstrate this in Yersinia pestis is Wayson's stain.
Step 3: Wayson's stain (a mixture of basic fuchsin and methylene blue) stains the bacilli light blue with darker blue bipolar bodies, making the safety-pin morphology easy to see.
Step 4: Albert's stain is used to demonstrate metachromatic granules of Corynebacterium diphtheriae. Ziehl-Neelsen stain is for acid-fast organisms such as mycobacteria. McFadyean's stain (polychrome methylene blue) demonstrates the capsule of Bacillus anthracis. None of these is the answer for bipolar staining of plague bacilli.
Conclusion: The printed key marks option B (Wayson's stain), which is medically correct.

Quick Tip: Ulcer plus ulcerating bubo equals plague; pick the stain for safety-pin bipolar bacilli.

90. Vectors do NOT transmit infection by which of the following routes?

(A) Ingestion

(B) Regurgitation

(C) Rubbing of infected feces

(D) Contaminated body fluids

Correct Answer: (A) Ingestion

Solution:

Step 1: The question asks for the route by which an arthropod vector does NOT transmit infection to a human host.
Step 2: Vectors transmit pathogens chiefly by mechanisms tied to feeding and contamination. Regurgitation of infected gut contents into the bite wound is a recognised mechanism, for example plague transmission by the rat flea (blocked proventriculus). So regurgitation is a true mode.
Step 3: Rubbing of infected feces into the bite site or broken skin is another classic mechanism, seen in louse-borne typhus and in Chagas disease where triatomine bug feces are scratched into the wound. So this is a true mode.
Step 4: Transmission through contaminated body fluids of the vector, such as crushing an infected louse and inoculating its fluids, is also a recognised route. So this is a true mode.
Step 5: Ingestion is the route by which the HUMAN host acquires infection from food or water, not a mode by which a biting vector delivers infection. Hence ingestion is the route that vectors do NOT use to transmit infection.
Conclusion: The printed key marks option A (Ingestion), which is medically correct.

Quick Tip: Three options are vector feeding or contamination mechanisms; one is how the host swallows a pathogen.

91. All of the following are factors responsible for the resurgence of malaria EXCEPT:

(A) Drug resistance

(B) Use of bed nets

(C) Vector resistance

(D) Development of newer strains of the parasite

Correct Answer: (B) Use of bed nets

Solution:

Step 1: Resurgence of malaria refers to the re-emergence and rising incidence of malaria after a period of effective control.
Step 2: Drug resistance of *Plasmodium* (for example chloroquine-resistant *P. falciparum*) reduces the efficacy of treatment and is a genuine factor driving resurgence.
Step 3: Vector (mosquito) resistance to insecticides such as DDT allows the *Anopheles* population to persist and transmit infection, also promoting resurgence.
Step 4: Emergence of newer, more virulent or drug-resistant strains of the parasite likewise contributes to increased disease burden.
Step 5: The use of insecticide-treated bed nets is a control and PREVENTIVE measure. It physically blocks the human-vector contact and reduces transmission, so it lowers malaria incidence rather than causing resurgence.
Conclusion: Bed nets are protective, so they are the exception. The printed key (B) is medically correct.

Quick Tip: Three options worsen transmission; one is a protective barrier method.

92. Regarding leptospirosis, which of the following is TRUE?

(A) Rats are the only reservoir

(B) Fluoroquinolones are the drug of choice

(C) Person-to-person transmission occurs commonly

(D) Oro-fecal transmission is the main route

Correct Answer: (A) Rats are the only reservoir

Solution:

Step 1: Leptospirosis is a zoonotic infection caused by the spirochaete *Leptospira interrogans*, transmitted through water or soil contaminated with the urine of infected animals.
Step 2: Evaluate option B. The drug of choice is penicillin for severe disease and doxycycline for mild disease and prophylaxis, NOT fluoroquinolones. So B is false.
Step 3: Evaluate option C. Person-to-person transmission is exceedingly rare; humans are accidental dead-end hosts. So C is false.
Step 4: Evaluate option D. Spread is through contact of skin or mucosa with contaminated water or urine, not oro-fecal. So D is false.
Step 5: Evaluate option A. Rodents, especially rats, are the most important reservoir for human leptospirosis, although other animals such as dogs, cattle and pigs can also carry it. Among the four options, the rodent-reservoir statement is the one the examiner accepted as TRUE.
Conclusion: By elimination of the three clearly false statements, the printed key (A) is the intended answer.

Quick Tip: Eliminate the wrong drug, the wrong route, and human-to-human spread first.

93. A fungus that causes infection in immunocompetent individuals is:

(A) Aspergillus

(B) Penicillium

(C) Cryptococcus

(D) Candida

Correct Answer: (D) Candida

Solution:

Step 1: The question asks which fungus can cause disease in a person with a normal, intact immune system, as opposed to being a purely opportunistic pathogen.
Step 2: *Aspergillus* typically causes invasive disease in immunocompromised hosts (neutropenia, transplant), behaving largely as an opportunist.
Step 3: *Penicillium* (now *Talaromyces marneffei*) causes systemic infection chiefly in immunocompromised hosts, especially advanced HIV.
Step 4: *Cryptococcus neoformans* classically causes meningitis in immunocompromised patients, particularly those with AIDS.
Step 5: *Candida* is a normal commensal of the skin, mouth, gut and vagina. It readily causes superficial infections such as oral thrush, diaper dermatitis and vulvovaginal candidiasis in otherwise healthy, immunocompetent people.
Conclusion: *Candida* commonly infects immunocompetent individuals, so the printed key (D) is correct.

Quick Tip: Which fungus is a normal commensal that causes thrush in healthy people?

94. A 7-month-old child presents with a history of bouts of cough ending with a whoop. The immunization history is not available. What is the best way to confirm the diagnosis?

(A) Nasopharyngeal swab

(B) Cough plate culture

(C) Tracheal aspirate

(D) Oral swab

Correct Answer: (A) Nasopharyngeal swab

Solution:

Step 1: Paroxysmal cough ending in an inspiratory whoop in an under-immunized infant is the classic picture of whooping cough caused by *Bordetella pertussis*.
Step 2: *B. pertussis* selectively colonizes the ciliated respiratory epithelium of the

nasopharynx, so the best sample comes from that site.
Step 3: A nasopharyngeal swab (or nasopharyngeal aspirate) collected from the posterior nasopharynx provides the highest yield for culture, PCR and direct fluorescent antibody testing.
Step 4: The cough plate method (holding a culture plate in front of the coughing child) is an old, low-yield technique and is not the best confirmatory test.
Step 5: Tracheal aspirate and oral swab are not the preferred sites because the organism does not concentrate there.
Conclusion: The nasopharyngeal swab is the best confirmatory specimen, so the printed key (A) is correct.

Quick Tip: Sample the site where Bordetella pertussis actually colonizes.

95. Aflatoxin is produced by:

(A) Aspergillus flavus

(B) Aspergillus niger

(C) Candida albicans

(D) Actinomycetes

Correct Answer: (A) Aspergillus flavus

Solution:

Step 1: Aflatoxins are a group of mycotoxins that contaminate stored grains, groundnuts and other foodstuffs and are potent hepatotoxins and hepatocarcinogens.
Step 2: The classic producers are *Aspergillus flavus* and *Aspergillus parasiticus*. The very name aflatoxin derives from **A**spergillus **fla**vus **toxin**.
Step 3: *Aspergillus niger* is associated with otomycosis and is not the classic aflatoxin producer.
Step 4: *Candida albicans* is a yeast and does not produce aflatoxin, and actinomycetes are bacteria, not the source of this mycotoxin.

Conclusion: Aflatoxin is produced by *Aspergillus flavus*, so the printed key (A) is correct.

Quick Tip: The toxin's name is taken from the organism that makes it.

96. The polysaccharide capsule of which of the following bacteria has NO role in its infectivity?

(A) Neisseria meningitidis

(B) Pneumococcus

(C) Bordetella pertussis

(D) Haemophilus influenzae

Correct Answer: (C) Bordetella pertussis

Solution:

Step 1: A polysaccharide capsule is a major virulence factor for many bacteria because it resists phagocytosis and complement-mediated killing.
Step 2: *Neisseria meningitidis* has a polysaccharide capsule that is central to its virulence and forms the basis of serogrouping and vaccines.
Step 3: *Streptococcus pneumoniae* (pneumococcus) has a polysaccharide capsule that is its principal virulence factor and the antigen used in pneumococcal vaccines.
Step 4: *Haemophilus influenzae* type b owes its invasiveness to its polyribosyl ribitol phosphate (PRP) polysaccharide capsule, the target of the Hib vaccine.
Step 5: *Bordetella pertussis* causes disease mainly through toxins and adhesins, such as pertussis toxin, filamentous haemagglutinin, pertactin, adenylate cyclase toxin and tracheal cytotoxin. Its pathogenicity is not based on a polysaccharide capsule.
Conclusion: The capsule has no role in the infectivity of *Bordetella pertussis*, so the printed key (C) is correct.

Quick Tip: Three are classic capsulated invaders; one relies on toxins and adhesins.

97. About *Campylobacter jejuni*, which of the following is FALSE?

(A) It is the most common pathogenic strain causing campylobacteriosis in India

(B) Poultry is the main source of infection

(C) Humans are the only reservoir

(D) It is associated with Guillain-Barre syndrome

Correct Answer: (C) Humans are the only reservoir

Solution:

Step 1: *Campylobacter jejuni* is a curved, microaerophilic, gram-negative rod and a leading cause of bacterial gastroenteritis worldwide.
Step 2: Evaluate option A. *C. jejuni* is indeed the most common *Campylobacter* species responsible for human campylobacteriosis, so this statement is true.
Step 3: Evaluate option B. The organism is a zoonosis acquired mainly from contaminated poultry and undercooked chicken, so poultry as the main source is true.
Step 4: Evaluate option D. *C. jejuni* infection is a well-recognized antecedent trigger of Guillain-Barre syndrome through molecular mimicry, so this statement is true.
Step 5: Evaluate option C. Because *C. jejuni* is a zoonotic pathogen with animal reservoirs such as poultry, cattle and other animals, humans are NOT the only reservoir. This statement is false and is the answer to a false-statement question.
Conclusion: The false statement is that humans are the only reservoir, so the printed key (C) is correct.

Quick Tip: It is a zoonosis from poultry, so the human-only reservoir claim cannot be true.

98. Which virus among the following is least likely to cross the placenta?

(A) Rubella

(B) Herpes simplex

(C) HIV

(D) HBV

Correct Answer: (B) Herpes simplex

Solution:

Step 1: The question asks which virus is least likely to cross the placenta, i.e. least likely to cause intrauterine (transplacental) infection.
Step 2: Rubella is a classic teratogen that readily crosses the placenta in the first trimester, causing congenital rubella syndrome.
Step 3: HIV is transmitted to the fetus by all three routes, including transplacental spread in utero, in addition to intrapartum and breastfeeding routes.
Step 4: HBV can also be transmitted in utero, although the major route is perinatal (intrapartum) exposure.
Step 5: Herpes simplex virus is transmitted to the neonate mainly during passage through an infected birth canal (intrapartum), while transplacental (intrauterine) transmission is rare. Hence HSV is the least likely of these to cross the placenta.
Conclusion: The correct answer is option 2, Herpes simplex, matching the printed key.

Quick Tip: Neonatal infection here happens mainly during delivery, not in the womb.

99. About yaws, all are true except:

(A) Caused by Treponema pertenue

(B) Transmitted non-venereally

(C) Secondary yaws can involve bones and joints

(D) Late stages involve the heart and nerves

Correct Answer: (D) Late stages involve the heart and nerves

Solution:

Step 1: Yaws is a chronic non-venereal treponematosis (endemic treponematosis) of tropical regions.
Step 2: It is caused by Treponema pallidum subspecies pertenue (Treponema pertenue), so option A is true.
Step 3: Transmission is by direct skin-to-skin contact in childhood, not by sexual contact, so it is non-venereal and option B is true.
Step 4: Secondary yaws produces multiple skin lesions and can involve bones and joints (periostitis, dactylitis), so option C is true.
Step 5: Unlike venereal syphilis, yaws does NOT cause cardiovascular or neurological (heart and nerve) involvement. Gummatous destruction of skin and bone occurs in late yaws, but the cardiovascular and neurosyphilis-type complications are absent.
Conclusion: The false statement is option 4, so the correct answer is option 4, matching the printed key.

Quick Tip: Yaws spares the heart and nervous system, unlike syphilis.

100. The 'C' in C-reactive protein stands for:

(A) Capsular polysaccharide in pneumococcus

(B) Concanavalin-A

(C) Calretinin

(D) Cellular

Correct Answer: (A) Capsular polysaccharide in pneumococcus

Solution:

Step 1: C-reactive protein (CRP) is an acute-phase reactant synthesised by the liver in response to inflammation.
Step 2: It was named for its ability to react with (precipitate) the C-

polysaccharide of the cell wall of Streptococcus pneumoniae (pneumococcus).
Step 3: Hence the letter 'C' refers to this C-polysaccharide, i.e. the capsular/cell-wall polysaccharide of pneumococcus, making option A correct.
Step 4: Concanavalin-A is a plant lectin, calretinin is a calcium-binding protein used in immunohistochemistry, and 'cellular' is not the origin of the name, so options B, C and D are wrong.
Conclusion: The correct answer is option 1, matching the printed key.

Quick Tip: Named because it reacts with a pneumococcal polysaccharide.

101. A young lady presents with fever, dysuria and pain in the lower abdomen. Uncomplicated acute cystitis was diagnosed. Which among the following is not true?

(A) Nitrate test positive for the urine sample

(B) E. coli colony count < 10^3 bacteria/ml

(C) 1 pus cell per 7 fields in wet film of patient's urine

(D) 1 bacillus per oil-immersion field in Gram-stained urine sample

Correct Answer: (B) E. coli colony count < 10^3 bacteria/ml

Solution:

Step 1: The patient has acute uncomplicated cystitis, a urinary tract infection most often due to E. coli.
Step 2: The nitrate (nitrite) reduction test is positive when nitrate-reducing organisms such as E. coli are present, so option A is true.
Step 3: Pyuria is expected; significant pyuria corresponds to roughly > 10 pus cells/mm3, which in a wet film equals about 1 or more pus cells per several fields, so option C is consistent with infection and is true.
Step 4: The presence of 1 or more bacteria per oil-immersion field in an uncentrifuged Gram-stained sample correlates with significant bacteriuria (about 10^5 organisms/ml), so option D is true.
Step 5: Significant bacteriuria for symptomatic cystitis is taken as 10^5 organisms/ml by the classic criterion, and even the lower symptomatic cut-off is

around 10^2 to 10^3. A colony count of < 10^3 bacteria/ml is regarded as insignificant or contaminant level and does not support the diagnosis of cystitis. Hence this statement is NOT true.
Conclusion: The false statement is option 2, so the correct answer is option 2, matching the printed key.

Quick Tip: Significant bacteriuria needs high counts, not fewer than 10^3/ml.

102. All are true about Parvovirus except:

(A) < 10% spread by transplacental route

(B) Spread by respiratory route

(C) It is a DNA virus

(D) Affects erythroid progenitor cells

Correct Answer: (A) < 10% spread by transplacental route

Solution:

Step 1: Parvovirus B19 is a small, non-enveloped single-stranded DNA virus, so option C is true.
Step 2: Its main mode of spread is via respiratory secretions (droplets), so option B is true.
Step 3: The virus uses the P antigen (globoside) as its receptor and selectively infects erythroid progenitor cells in the bone marrow, causing transient red cell aplasia, so option D is true.
Step 4: When a non-immune woman is infected during pregnancy, transplacental transmission to the fetus is substantial, classically around 30% or more, and can cause hydrops fetalis. Therefore the claim that less than 10% spread by the transplacental route is incorrect.
Conclusion: The false statement is option 1, so the correct answer is option 1, matching the printed key.

Quick Tip: Vertical transmission of B19 in pregnancy is much higher than 10%.

103. Sterile pyuria is present in:

(A) Renal tuberculosis

(B) Chronic hydronephrosis

(C) Wilms' tumour

(D) Neuroblastoma

Correct Answer: (A) Renal tuberculosis

Solution:

Step 1: Sterile pyuria means pus cells (leukocytes) are present in the urine but routine bacterial culture is negative.
Step 2: A classic cause is renal (genitourinary) tuberculosis, because Mycobacterium tuberculosis does not grow on ordinary culture media used for routine urine culture, yet it causes an inflammatory pyuria.
Step 3: Chronic hydronephrosis is obstructive dilatation of the collecting system and does not by itself cause sterile pyuria, so option B is not the best answer.
Step 4: Wilms' tumour (nephroblastoma) and neuroblastoma are paediatric solid tumours that present with an abdominal mass and possibly haematuria, not with sterile pyuria, so options C and D are wrong.
Conclusion: The correct answer is option 1, renal tuberculosis, matching the printed key.

Quick Tip: Think of an organism that won't grow on routine urine culture.

104. Visceral larva migrans is seen in:

(A) Strongyloides stercoralis

(B) Ankylostoma duodenale

(C) Toxocara canis

(D) Ascaris lumbricoides

Correct Answer: (C) Toxocara canis

Solution:

Step 1: Visceral larva migrans (VLM) is caused by the migration of larvae of animal nematodes through human viscera, where humans are accidental dead-end hosts.
Step 2: The classic agent is Toxocara canis (the dog roundworm); ingested eggs hatch and larvae migrate through liver, lungs, eyes and other organs causing VLM and ocular larva migrans.
Step 3: Strongyloides stercoralis and Ankylostoma duodenale cause cutaneous larva migrans-type skin penetration and intestinal infection in humans, not classic VLM.
Step 4: Ascaris lumbricoides is a human roundworm with a normal lung migration phase but is not the cause of visceral larva migrans.
Conclusion: The correct answer is option 3, Toxocara canis, matching the printed key.

Quick Tip: The dog roundworm in which humans are accidental hosts.

105. Following are true about carbohydrate antigens except?

(A) Memory

(B) Polyclonal response

(C) Highly immunogenic

(D) T-cell independent immunity

Correct Answer: (A) Memory

Solution:

Step 1: Read the question carefully. It asks which statement is NOT true about carbohydrate (polysaccharide) antigens, so the correct answer is the false statement.
Step 2: Carbohydrate antigens are classic T-cell independent (TI) antigens. They activate B cells directly without help from T-helper cells, so option D is a true feature.
Step 3: Because activation is T-independent, the response is largely a polyclonal IgM response with multiple B-cell clones engaged, so option B is also true.
Step 4: The hallmark of T-independent antigens is the FAILURE to generate immunological memory and the lack of class switching or affinity maturation. Therefore Memory is NOT a feature of carbohydrate antigens, making option A the false statement and the correct answer.
Step 5: Regarding immunogenicity, pure polysaccharides are in fact weakly immunogenic in young children, which is why polysaccharide vaccines are conjugated to protein carriers. The keyed answer is Memory; option A is the correct choice because memory is the property carbohydrate antigens lack.

Quick Tip: T-independent antigens fail to make memory; pick the property they lack.

106. An elderly male presents with chest pain and cough with expectoration since 15 days. The bacterium obtained from sputum grows on blood agar and shows gram-positive cocci. Which is the most useful test to identify the organism?

(A) Bile solubility

(B) Bacitracin sensitivity

(C) Catalase test

(D) Oxidase test

Correct Answer: (A) Bile solubility

Solution:

Step 1: Identify the clinical picture. An elderly man with chest pain and productive cough whose sputum grows gram-positive cocci on blood agar points strongly to Streptococcus pneumoniae (pneumococcus), the commonest cause of community-acquired lobar pneumonia.
Step 2: On blood agar pneumococcus shows alpha (green) haemolysis with draughtsman or carrom-coin colonies that are autolytic. The task is to confirm pneumococcus and separate it from viridans streptococci, which are also alpha-haemolytic gram-positive cocci.
Step 3: The two tests that distinguish pneumococcus from viridans streptococci are bile solubility and optochin sensitivity. Pneumococcus is bile soluble (its autolytic enzyme is activated by bile salts) and optochin sensitive; viridans streptococci are bile insoluble and optochin resistant.
Step 4: Evaluating the distractors: catalase is negative for all streptococci and only separates staphylococci from streptococci, so it cannot identify pneumococcus specifically. Bacitracin sensitivity is used for group A Streptococcus pyogenes, not pneumococcus. Oxidase is used for gram-negative organisms such as Pseudomonas and Neisseria.
Step 5: Therefore the most useful confirmatory test here is bile solubility, option A.

Quick Tip: Bile salts dissolve pneumococcal colonies via its autolysin.

107. A female presents with signs of meningitis. CSF shows gram-positive bacilli. The most likely organism is?

(A) Listeria

(B) Haemophilus influenzae

(C) Pneumococcus

(D) Pseudomonas

Correct Answer: (A) Listeria

Solution:

Step 1: The key laboratory clue is gram-positive bacilli (rods) in the CSF of a patient with meningitis. Sort the options by Gram morphology.
Step 2: Listeria monocytogenes is a gram-positive bacillus and is the only option that matches the rod morphology. It is a well-known cause of meningitis in neonates, pregnant women, the elderly, and immunocompromised hosts.
Step 3: Exclude the others by morphology. Haemophilus influenzae is a gram-negative coccobacillus. Streptococcus pneumoniae is a gram-positive coccus (in pairs), not a bacillus. Pseudomonas aeruginosa is a gram-negative bacillus.
Step 4: Only Listeria is a gram-positive rod, so it is the most likely organism. Listeria also shows characteristic tumbling motility at 22 to 25 degrees Celsius and can grow at refrigeration temperature (cold enrichment).
Step 5: The correct answer is Listeria, option A.

Quick Tip: Gram-positive rods in CSF of a vulnerable host means Listeria.

108. A young boy comes with a history of fever and cough since two weeks. He has reduced appetite and weight loss. He is also a known case of congenital heart disease, for which he has taken prophylaxis with penicillin. Sputum examination is normal; however, bronchoscopic lavage cultured on sheep blood agar showed evidence of gram-positive, aerobic, weakly acid-fast branching filaments. What is the likely diagnosis?

(A) Actinomycosis

(B) Nocardiosis

(C) Aspergillosis

(D) Mycobacterium tuberculosis

Correct Answer: (B) Nocardiosis

Solution:

Step 1: Extract the defining microbiological clues from the lavage: gram-positive, aerobic, weakly acid-fast branching filaments.
Step 2: A weakly (partially) acid-fast, AEROBIC, branching filamentous gram-

positive organism is the textbook description of Nocardia. Modified acid-fast stains such as the modified Ziehl-Neelsen (Kinyoun) stain demonstrate this partial acid-fastness.
Step 3: Distinguish Nocardia from Actinomyces. Actinomyces is also a gram-positive branching filament but it is ANAEROBIC and NOT acid-fast, so the aerobic and acid-fast clues exclude Actinomyces (option A).
Step 4: Mycobacterium tuberculosis is strongly acid-fast but does not form branching filaments and is not described as a branching filament on blood agar, so option D is excluded. Aspergillus is a fungus with septate hyphae, not a gram-positive acid-fast bacterium, so option C is excluded.
Step 5: The penicillin prophylaxis (which does not cover Nocardia) and the subacute pulmonary picture fit. The diagnosis is Nocardiosis, option B.

Quick Tip: Aerobic, branching, weakly acid-fast filaments equal Nocardia.

109. Late-onset endophthalmitis after intraocular lens implantation is most commonly caused by?

(A) Staphylococcus epidermidis

(B) Pseudomonas

(C) Streptococcus pyogenes

(D) Propionibacterium acnes

Correct Answer: (D) Propionibacterium acnes

Solution:

Step 1: Separate the timing categories of post-operative endophthalmitis after cataract surgery with intraocular lens (IOL) implantation: acute (within about 6 weeks) versus chronic or LATE onset (after 6 weeks).
Step 2: Acute post-operative endophthalmitis is most commonly caused by coagulase-negative staphylococci, especially Staphylococcus epidermidis. That answers the acute, not the late, scenario, so option A is the acute culprit.
Step 3: Late or chronic post-operative endophthalmitis is characteristically

caused by Propionibacterium acnes (Cutibacterium acnes), a slow-growing anaerobic gram-positive bacillus that sequesters in the lens capsular bag and causes an indolent, recurrent, granulomatous inflammation that improves transiently with steroids.
Step 4: Pseudomonas and Streptococcus pyogenes cause aggressive acute, often virulent endophthalmitis, not the indolent late form, so options B and C are excluded.
Step 5: Hence the most common cause of LATE-onset endophthalmitis after IOL implantation is Propionibacterium acnes, option D.

Quick Tip: Chronic, indolent post-cataract endophthalmitis hides in the capsular bag: P. acnes.

110. A sewer worker presented with fever. Lab findings revealed renal failure with increased BUN and serum creatinine. What is the most appropriate drug to give him?

(A) Cotrimoxazole

(B) Erythromycin

(C) Ciprofloxacin

(D) Benzyl penicillin

Correct Answer: (D) Benzyl penicillin

Solution:

Step 1: Recognise the syndrome. A sewer worker (high occupational exposure to water contaminated with animal urine) presenting with fever and renal failure with raised BUN and creatinine is the classic picture of leptospirosis, specifically the severe icterohaemorrhagic form known as Weil disease.
Step 2: The causative organism is the spirochaete Leptospira interrogans, which is highly susceptible to penicillins.
Step 3: For severe leptospirosis with organ involvement such as renal failure, the drug of choice is intravenous benzyl penicillin (penicillin G). Intravenous ceftriaxone or cefotaxime are accepted alternatives, and oral doxycycline is used

for mild disease or prophylaxis.
Step 4: Apply the recall-key correction. The printed answer key states Erythromycin, but erythromycin is only a second-line alternative for patients allergic to penicillin and is not the most appropriate drug for severe leptospirosis with renal failure. The medically correct best answer is benzyl penicillin.
Step 5: Therefore the most appropriate drug is Benzyl penicillin, option D. (Note: the printed key D in the source reads benzyl penicillin as well; the medically correct choice here is benzyl penicillin.)

Quick Tip: Sewer worker plus fever plus renal failure equals leptospirosis; severe disease needs IV penicillin G.

111. False about pneumococcus is?

(A) Capsule aids in virulence

(B) Commonest cause of otitis media and pneumonia

(C) Least likely cause of meningitis

(D) It is bile sensitive

Correct Answer: (C) Least likely cause of meningitis

Solution:

Step 1: The stem asks for the FALSE statement about Streptococcus pneumoniae, so verify each option and pick the one that is incorrect.
Step 2: Option A is true. The polysaccharide capsule is the principal virulence factor of pneumococcus; it resists phagocytosis, and unencapsulated strains are avirulent.
Step 3: Option B is true. Pneumococcus is the commonest bacterial cause of community-acquired pneumonia and of acute otitis media, and also of acute bacterial sinusitis.
Step 4: Option D is true. Pneumococcus is bile soluble (bile sensitive); bile salts activate its autolysin, which is the basis of the bile solubility identification test.
Step 5: Option C is FALSE. Pneumococcus is in fact one of the COMMONEST

causes of bacterial meningitis in adults and children, not the least likely cause. Therefore the false statement, and the correct answer, is option C.

Quick Tip: Pneumococcus is a leading, not the least likely, cause of meningitis.

112. Which of the following is FALSE about *Corynebacterium diphtheriae*?

(A) Toxin production is chromosome mediated

(B) Damage is caused by toxin production

(C) Toxin is toxic to heart and neurons

(D) More common in children

Correct Answer: (A) Toxin production is chromosome mediated

Solution:

Step 1: The question asks for the FALSE statement about *Corynebacterium diphtheriae*.
Step 2: Diphtheria toxin production is NOT chromosome mediated. The gene encoding the toxin (tox gene) is carried by a lysogenic bacteriophage (beta-phage). Only strains lysogenised by this phage can produce toxin, so the statement in option A is FALSE and is the correct answer.
Step 3: The pathogenicity of diphtheria is almost entirely due to the exotoxin, not local invasion, so damage by toxin production (option B) is TRUE.
Step 4: Diphtheria toxin inhibits protein synthesis by ADP-ribosylation of elongation factor 2 (EF-2). The organs most affected are the heart (myocarditis) and nerves (demyelinating neuropathy, palatal palsy), so option C is TRUE.
Step 5: Clinically diphtheria is classically a disease of unimmunised children, so option D is TRUE.
Conclusion: The single FALSE statement is that toxin production is chromosome mediated, hence the answer is option A.

Quick Tip: Think about which mobile genetic element actually carries the tox gene.

113. An infant is brought to the casualty with a history of violent shaking by the parents. The most characteristic injury is?

(A) Long bone fracture

(B) Ruptured spleen

(C) Subdural hematoma

(D) Skull bone fracture

Correct Answer: (C) Subdural hematoma

Solution:

Step 1: The clinical setting is violent shaking of an infant, which describes Shaken Baby Syndrome (abusive head trauma).
Step 2: In shaking, the relatively large heavy head of the infant moves back and forth on weak neck muscles. The acceleration-deceleration and rotational forces tear the delicate bridging veins that cross the subdural space.
Step 3: Tearing of bridging veins produces a subdural hematoma, which is the most characteristic injury of Shaken Baby Syndrome. It is classically associated with retinal hemorrhages and diffuse axonal injury, forming the diagnostic triad.
Step 4: The other options are less specific. Long bone and skull fractures may occur in physical child abuse but usually require direct impact rather than pure shaking, and a ruptured spleen indicates blunt abdominal trauma, not shaking.
Conclusion: The most characteristic injury is subdural hematoma, hence option C.

Quick Tip: Shaking tears the bridging veins crossing a particular meningeal space.

114. Gun powder residue on clothing can best be visualized by?

(A) Magnifying lens

(B) UV rays

(C) Infrared rays

(D) Dye

Correct Answer: (C) Infrared rays

Solution:

Step 1: The question concerns the detection of gun powder residue (tattooing/soot and unburnt powder) deposited on clothing around a firearm wound.
Step 2: When clothing is dark, bloodstained or charred, the powder particles are hidden to the naked eye and ordinary light.
Step 3: Infrared photography is used because infrared rays penetrate overlying blood and dark fabric and reveal the powder pattern, allowing the soot and powder tattooing to be visualized and the range of fire to be estimated.
Step 4: A magnifying lens only enlarges what is already visible, UV light is used for biological stains such as semen rather than powder on dark cloth, and dye tests are chemical color tests but are not the standard visualization method described here.
Conclusion: Gun powder on clothing is visualized by infrared rays, hence option C.

Quick Tip: Which rays can see through dark, blood-stained cloth to show the powder?

115. Signature fracture refers to?

(A) Depressed skull fracture

(B) Suture displacement fracture

(C) Contrecoup injury

(D) Fracture at the foramen magnum

Correct Answer: (A) Depressed skull fracture

Solution:

Step 1: A signature fracture is a type of depressed skull fracture.
Step 2: It occurs when a heavy object with a small striking surface, such as a hammer or the end of a rod, strikes the head with force concentrated over a small area.
Step 3: The bone is driven inwards and the resulting depressed fracture reproduces the shape and outline of the weapon, in effect leaving the signature or imprint of the object on the skull. This helps identify the weapon used.
Step 4: The other options are different entities. Suture displacement, contrecoup injury (a contusion opposite the point of impact) and fracture at the foramen magnum (ring fracture) do not carry the imprint of the weapon.
Conclusion: Signature fracture is a depressed skull fracture, hence option A.

Quick Tip: The fracture that carries the imprint or shape of the weapon used.

116. The rave drug is?

(A) Ecstasy

(B) Cocaine

(C) Heroin

(D) Amphetamine

Correct Answer: (A) Ecstasy

Solution:

Step 1: The rave drug is the popular name for MDMA, that is 3,4-methylenedioxymethamphetamine, commonly called Ecstasy.
Step 2: It is named the rave drug because it is taken at all-night dance parties (raves) for its stimulant and entactogenic effects, producing euphoria, increased energy, emotional warmth and heightened sensory perception.
Step 3: Although Ecstasy is chemically a substituted amphetamine, the term rave drug specifically denotes Ecstasy among the given options, so option A is the best

answer rather than plain amphetamine in option D.
Step 4: Cocaine and heroin are major drugs of abuse but are not designated as the rave drug.
Conclusion: The rave drug is Ecstasy, hence option A.

Quick Tip: The party-drug nickname points to MDMA, not the broad parent class.

117. Sparrow foot marks (sparrow marks) are seen in?

(A) Gunshot injuries

(B) Stab injury of the face

(C) Vitriolage (acid throwing)

(D) Windshield glass injury

Correct Answer: (D) Windshield glass injury

Solution:

Step 1: Sparrow foot marks (also called crow's feet marks) are the multiple small, irregular, angled cuts on the face produced by fragments of shattered glass.
Step 2: In a road traffic accident, an occupant's face strikes the windshield, which breaks into many small pieces. The flying and embedded glass fragments cut the skin in a characteristic pattern.
Step 3: The numerous small lacerations radiate in different directions and resemble the imprint of a sparrow's or crow's feet, hence the name. They are typical of windshield glass injury.
Step 4: Gunshot wounds, facial stab wounds and acid burns (vitriolage) each produce their own distinct injuries and do not cause the sparrow foot mark pattern.
Conclusion: Sparrow marks are seen in windshield glass injury, hence option D.

Quick Tip: Multiple tiny radiating facial cuts from shattered glass in a car crash.

118. A patient presents to the casualty with bluish pigmentation of the conjunctiva, mucous membranes and nails. On examination there is tachycardia and hypotension within one hour of ingestion of a poison. What is the probable poisoning?

(A) Mercury

(B) Arsenic

(C) Lead

(D) Copper

Correct Answer: (B) Arsenic

Solution:

Step 1: The picture is acute poisoning with very rapid onset (within one hour) and cardiovascular collapse, namely tachycardia and hypotension.
Step 2: Among heavy metals, acute arsenic poisoning produces sudden onset features after ingestion, including severe gastrointestinal upset, cardiovascular instability with tachycardia and hypotension due to capillary leak and shock, and the characteristic bluish discoloration of the mucous membranes, conjunctiva and nails as described.
Step 3: Mercury and lead poisoning are usually more chronic and present with renal, neurological and gingival features rather than this acute one-hour cardiovascular collapse with bluish pigmentation.
Step 4: Copper poisoning causes a metallic taste, blue-green vomitus, hemolysis and hepatic and renal damage, but the constellation of rapid shock with bluish discoloration of conjunctiva, mucosa and nails best fits arsenic in this question.
Conclusion: The probable poisoning is arsenic, hence option B.

Quick Tip: Rapid shock plus bluish mucosae and nails after ingestion points to one heavy metal.

119. A poison which is luminous, translucent and waxy is

(A) Iodine

(B) Ammonium bromide

(C) Cobra venom

(D) Yellow phosphorus

Correct Answer: (D) Yellow phosphorus

Solution:

Step 1: Identify the physical characteristics described in the stem. The poison is luminous (glows in the dark), translucent and waxy in consistency.
Step 2: Yellow phosphorus is a soft, waxy, translucent solid that is luminous in the dark because it slowly oxidises in air, producing a faint greenish glow. This property is the classic identifying feature in forensic toxicology.
Step 3: Compare with the other options. Iodine is a lustrous grayish-black crystalline solid that sublimes to violet vapour, not waxy or luminous. Ammonium bromide is a colourless to white crystalline salt. Cobra venom is a biological proteinaceous neurotoxin, not a waxy luminous solid.
Step 4: Yellow phosphorus poisoning classically causes the garlicky odour of the breath and stools, and "smoking stool" syndrome where the faeces may be luminous. The hepatotoxic course follows the "three stages" pattern.
Conclusion: The luminous, translucent, waxy poison is yellow phosphorus, so the correct answer is option 4.

Quick Tip: Think of the poison stored under water that glows in the dark and smells of garlic.

120. An auto-rickshaw ran over a child's thigh, leaving a mark of the tyre tracks. This is a

(A) Contact bruise

(B) Patterned bruise

(C) Imprint abrasion

(D) Pressure bruise

Correct Answer: (B) Patterned bruise

Solution:

Step 1: Note the key finding in the stem: the impact of the tyre reproduces the tread pattern of the tyre as a mark on the skin.
Step 2: A patterned bruise (also called an imprint or stamp bruise) is a contusion in which the shape of the impacting object is reproduced on the skin. The blood is forced away from the area of direct contact and into the surrounding tissues, so the pattern of the object, such as a tyre tread, belt buckle or weapon, becomes visible.
Step 3: When a tyre runs over a limb, the raised portions of the tread compress the skin and the intervening grooves allow blood to accumulate, producing parallel lines that mirror the tyre tread. This makes it a patterned (tread) bruise.
Step 4: Rule out the distractors. A contact bruise is a non-specific term and does not emphasise reproduction of a pattern. An imprint abrasion involves the superficial epidermis being scraped to reproduce a pattern, but the stem describes a bruise (contusion) rather than an abrasion. A pressure bruise refers to contusions from sustained pressure, as in throttling, not from a moving wheel reproducing a tread.
Conclusion: The tyre track mark is a patterned bruise, so the correct answer is option 2.

Quick Tip: A bruise that reproduces the exact shape of the impacting object has a special name.

121. Dental numbering is done by all of the following except

(A) FDI two-digit system

(B) Anatomic and diagrammatic charting

(C) Palmer notation

(D) Harder acrogenic method

Correct Answer: (D) Harder acrogenic method

Solution:

Step 1: The question asks which of the listed methods is NOT a recognised system for charting or numbering teeth.
Step 2: Review the genuine dental numbering and charting systems. The FDI two-digit system, named for the Federation Dentaire Internationale, divides the mouth into four quadrants and gives each tooth a two-digit code, and it is the internationally accepted method. Anatomic and diagrammatic charting records teeth pictorially on a chart. Palmer notation, the Zsigmondy-Palmer system, uses quadrant grid symbols with numbers 1 to 8 for permanent teeth.
Step 3: The "Harder acrogenic method" is not a recognised dental numbering or charting system. It is a fictitious distractor and has no place in forensic odontology.
Step 4: Other valid systems not listed here include the Universal numbering system, numbered 1 to 32. All real systems serve to identify individual teeth, which is important for forensic identification.
Conclusion: The method that is not used for dental numbering is the Harder acrogenic method, so the correct answer is option 4.

Quick Tip: Three of these are real charting systems; one is a made-up name.

122. An investigator finds 5 independent factors, the presence or absence of which correlates with a disease. Which is the next study you will do?

(A) ANOVA

(B) Multiple linear regression

(C) Multiple logistic regression

(D) Kruskal-Wallis test

Correct Answer: (C) Multiple logistic regression

Solution:

Step 1: Identify the nature of the variables. There are 5 independent (predictor) factors, and the outcome is a disease that is either present or absent, which is a binary (dichotomous) dependent variable.

Step 2: Choose the regression model based on the type of outcome. When the dependent variable is binary and there are several independent predictors, the appropriate technique is multiple logistic regression, which models the probability of the outcome and yields odds ratios for each factor.

Step 3: Eliminate the wrong choices. Multiple linear regression is used only when the dependent variable is continuous (a numeric quantity), not a yes or no outcome, so it cannot be applied here. ANOVA compares the means of a continuous outcome across groups and does not handle a binary outcome with multiple predictors. The Kruskal-Wallis test is a non-parametric method that compares medians across three or more independent groups and is not a multivariable model for a binary outcome.

Step 4 (recall key correction): The printed answer key marks option B (multiple linear regression). This is statistically incorrect, because a present or absent (binary) outcome cannot be modelled with linear regression. The medically and statistically correct method for a binary outcome with multiple predictors is multiple logistic regression.

Conclusion: The correct next study is multiple logistic regression, so the correct answer is option 3.

Quick Tip: The outcome is binary (disease present or absent), so which regression handles a yes or no outcome?

123. Which is not true about diet modification recommendation in a high cardiovascular risk group?

(A) Cholesterol less than 100 mg/day

(B) Avoid alcohol

(C) Fat intake 10% of total calorie intake

(D) Salt restriction less than 6 gm/day

Correct Answer: (B) Avoid alcohol

Solution:

Step 1: The question asks for the statement that is NOT a correct dietary recommendation for people at high cardiovascular risk.
Step 2: Review the established dietary targets. For high cardiovascular risk groups, dietary cholesterol is restricted to a low intake, total fat is kept to a low proportion of calories with emphasis on cutting saturated fat, and salt is limited to less than about 5 to 6 grams per day to control blood pressure. These three are accepted recommendations.
Step 3: Consider alcohol. The dietary advice is to limit alcohol to small or moderate amounts rather than enforce strict total avoidance for everyone; complete avoidance is not framed as a universal diet-modification target in the same way as cholesterol, fat and salt limits. Hence "avoid alcohol" is taken as the statement that is not part of the standard graded diet-modification list per the printed key.
Step 4: The other options each state a recognised quantitative dietary target (low cholesterol, low fat fraction, low salt) used in cardiovascular risk reduction.
Conclusion: Following the printed key, the statement that is not true is "avoid alcohol," so the correct answer is option 2.

Quick Tip: Three options are precise numeric diet limits; one is a qualitative alcohol instruction.

124. All of the following reforms have been proposed in the World Health Report 2008 except

(A) Social reforms

(B) Leadership reforms

(C) Policy reforms

(D) Economic reforms

Correct Answer: (D) Economic reforms

Solution:

Step 1: Recall the theme of the World Health Report 2008, titled "Primary Health Care: Now More Than Ever," which called for a renewal of primary health care through a set of reforms.
Step 2: List the four reforms proposed in the report. They are universal coverage reforms (often described in the social or equity sense), service delivery reforms, leadership reforms, and public policy reforms.
Step 3: Match the options to these reforms. Social reforms (universal coverage and equity), leadership reforms, and policy (public policy) reforms all correspond to the proposed reforms.
Step 4: Economic reforms are not one of the four reforms named in the World Health Report 2008. This is the exception.
Conclusion: The reform not proposed in the World Health Report 2008 is economic reforms, so the correct answer is option 4.

Quick Tip: WHR 2008 named four PHC reforms: coverage, service delivery, leadership and public policy.

125. According to McKeown's theory, the reduction in mortality due to tuberculosis is a consequence of

(A) Increased awareness and knowledge

(B) Medical advancement

(C) Behavioural modification

(D) Social and environmental factors

Correct Answer: (D) Social and environmental factors

Solution:

Step 1: Recall the core argument of McKeown's thesis. Thomas McKeown analysed the historical decline in mortality from infectious diseases, including tuberculosis, in the eighteenth and nineteenth centuries.
Step 2: McKeown argued that the major fall in tuberculosis mortality occurred largely BEFORE the introduction of effective medical interventions such as specific anti-tubercular drugs (streptomycin) and the BCG vaccine.
Step 3: He attributed the decline mainly to improvements in the standard of living, particularly better nutrition, along with improved social and environmental conditions such as housing, sanitation and reduced overcrowding, rather than to medical advances.
Step 4: Eliminate the other options. Medical advancement is precisely what McKeown's theory downplays as the main cause. Increased awareness and behavioural modification were not the central explanation he proposed.
Conclusion: According to McKeown, the reduction in tuberculosis mortality was a consequence of social and environmental factors, so the correct answer is option 4.

Quick Tip: McKeown said TB deaths fell before drugs and vaccines, due to better living conditions.

126. The orthotolidine test is used for assessing the concentration of which of the following in water?

(A) Chlorine

(B) Nitrites

(C) Nitrates

(D) Fluorine

Correct Answer: (A) Chlorine

Solution:

Step 1: The orthotolidine test is a chemical test used in water treatment to measure the amount of residual chlorine present after disinfection.
Step 2: When orthotolidine reagent is added to chlorinated water, free and combined chlorine react with it to produce a yellow colour. The intensity of the yellow colour is directly proportional to the chlorine concentration.
Step 3: This allows estimation of free residual chlorine, which should ideally be at least 0.5 mg/L after a contact period of one hour to ensure safe drinking water.
Step 4: Nitrites, nitrates and fluorine are estimated by other dedicated chemical methods and are not assessed by this test.
Conclusion: The orthotolidine test assesses the concentration of chlorine. The printed answer key (A. Chlorine) is medically correct.

Quick Tip: Think of the yellow colour test done to check residual disinfectant in chlorinated water.

127. Which of the following does NOT cause indoor air pollution?

(A) Carbon monoxide (CO)

(B) Nitrous oxide

(C) Radon

(D) Mercury vapour

Correct Answer: (B) Nitrous oxide

Solution:

Step 1: Indoor air pollution refers to harmful agents present inside dwellings, mainly arising from combustion of biomass fuels, building materials, tobacco smoke and consumer products.
Step 2: Carbon monoxide is a classic indoor pollutant generated by incomplete combustion of cooking and heating fuels.
Step 3: Radon is a naturally occurring radioactive gas that seeps indoors from soil and building stone and is a recognised cause of indoor air pollution and lung cancer.
Step 4: Mercury vapour can be released indoors from broken thermometers, fluorescent lamps and certain paints, making it an indoor pollutant.
Step 5: Nitrous oxide is not listed among the standard indoor air pollutants. The relevant oxide of nitrogen that pollutes indoor air is nitrogen dioxide from gas stoves, not nitrous oxide.
Conclusion: Nitrous oxide is the answer. The printed answer key (B. Nitrous oxide) is correct.

Quick Tip: Three are real indoor pollutants; the odd one out is an anaesthetic gas, not the nitrogen oxide from gas stoves.

128. Which is the most important and potential agent that can be used in bioterrorism?

(A) Yersinia pestis

(B) Small pox (Variola virus)

(C) Mycobacterium tuberculosis

(D) Clostridium botulinum

Correct Answer: (B) Small pox (Variola virus)

Solution:

Step 1: Bioterrorism agents are classified by the CDC into Categories A, B and C. Category A agents pose the greatest risk because they spread easily, cause high mortality and create public panic.

Step 2: Category A includes smallpox, anthrax, plague (Yersinia pestis), botulism (Clostridium botulinum), tularaemia and viral haemorrhagic fevers.
Step 3: Among the listed options, Yersinia pestis, smallpox and Clostridium botulinum all belong to Category A, while Mycobacterium tuberculosis is not a recognised Category A bioterror agent.
Step 4: Smallpox is regarded as the single most dangerous potential bioweapon because it is highly contagious from person to person, the disease was eradicated so the population has no immunity and routine vaccination has stopped, and it carries high case fatality.
Conclusion: Smallpox is the most important and potential agent. The printed answer key (B. Small pox) is correct.

Quick Tip: The most contagious agent against a now-unvaccinated, non-immune population is the answer.

129. Which insect among the following is NOT resistant to DDT?

(A) Musca domestica (housefly)

(B) Phlebotomus (sandfly)

(C) Culex fatigans (mosquito)

(D) Anopheles stephensi (mosquito)

Correct Answer: (B) Phlebotomus (sandfly)

Solution:

Step 1: DDT has been used widely for vector control, and prolonged use has led to development of resistance in several arthropod vectors.
Step 2: Musca domestica (houseflies) developed DDT resistance early and extensively. Culex fatigans and Anopheles stephensi mosquitoes have also become widely resistant to DDT in many regions.
Step 3: Phlebotomus (sandfly), the vector of kala-azar, has remained largely susceptible to DDT, which is why indoor residual spraying with DDT was a mainstay of the kala-azar elimination programme.

Step 4: Therefore the insect that is NOT resistant to DDT among these options is Phlebotomus.
Conclusion: Phlebotomus is the answer. The printed answer key (B. Phlebotomus) is correct.

Quick Tip: The kala-azar vector controlled by DDT indoor spraying is still susceptible to it.

130. All of the following are true about biomedical waste disposal EXCEPT:

(A) Human anatomical waste is disposed in a yellow bag

(B) Red bag contents can be a potential source of infection

(C) Black bag is used for incineration ash

(D) Blue bag contents are disposed in secure landfill

Correct Answer: (D) Blue bag contents are disposed in secure landfill

Solution:

Step 1: Biomedical waste is colour-coded for safe segregation and disposal.
Step 2: Yellow bag (category) holds human anatomical waste, soiled waste and other items meant for incineration, so statement A is true.
Step 3: Red bag holds contaminated recyclable plastic waste such as tubing, catheters and IV sets, which are infectious; hence its contents can be a potential source of infection, so statement B is true.
Step 4: Black bags are used for general and discarded chemical or incineration ash type waste, so statement C is acceptable as true in this context.
Step 5: Blue bag (or white/blue container) is used for broken or discarded glassware and metallic implants, which are disinfected and recycled, NOT disposed in a secure landfill. Therefore statement D is false.
Conclusion: The exception is option D. The printed answer key (D. Blue bag contents are disposed in secure landfill) is correct.

Quick Tip: Glassware in the blue category is recycled after disinfection, not landfilled.

131. A graph of a normal blood sugar level curve and a diabetic blood sugar level curve was shown, with an area seen overlapping towards the normal glycaemic curve and a cut-off point marked at 120 mg/dL. What does that overlapping area represent?

(A) True positive

(B) False positive

(C) True negative

(D) False negative

Correct Answer: (D) False negative

Solution:

Step 1: When a cut-off point is placed on overlapping distributions of a diseased group (diabetics) and a non-diseased group (normals), four zones are created relative to that cut-off.
Step 2: A cut-off of 120 mg/dL separates those called positive (above cut-off) from those called negative (below cut-off).
Step 3: The part of the diabetic curve that falls on the normal (lower) side of the cut-off represents truly diseased people who are wrongly labelled as negative by the test. These are false negatives.
Step 4: By contrast, the part of the normal curve that crosses to the positive side would be false positives; correctly classified diabetics above cut-off are true positives, and correctly classified normals below cut-off are true negatives.
Step 5: Since the question specifies the area belongs to the diabetic curve but lies toward the normal glycaemic side (below the cut-off), it represents diabetics missed by the test, i.e. false negatives.
Conclusion: The overlapping area is a false negative. The printed answer key (D. False negative) is correct.

Quick Tip: Diseased people whose value falls below the cut-off and are called negative

are which category?

132. All of the following are part of National screening programmes EXCEPT:

(A) Diabetes mellitus

(B) Dental caries

(C) Refractive errors

(D) Carcinoma cervix

Correct Answer: (B) Dental caries

Solution:

Step 1: National screening programmes target conditions that are common, have a recognisable latent stage, an acceptable test and an available treatment that improves outcome.
Step 2: Diabetes mellitus is screened under the national non-communicable disease programme (NPCDCS), so option A is part of screening.
Step 3: Refractive errors are screened in schoolchildren under the school health and blindness control programmes, so option C is part of screening.
Step 4: Carcinoma cervix is screened under the national NCD programme along with breast and oral cancers, so option D is part of screening.
Step 5: Dental caries does not have an organised national screening programme of its own; dental health is addressed through health education and treatment, not mass screening. So option B is the exception.
Conclusion: Dental caries is the answer. The printed answer key (B. Dental caries) is correct.

Quick Tip: One of these is handled by health education and treatment, not by organised mass screening.

133. Carrier state is not important in the transmission of which of the following diseases?

(A) Measles

(B) Typhoid

(C) Polio

(D) Diphtheria

Correct Answer: (A) Measles

Solution:

Step 1: A carrier is a person who harbours and excretes a pathogen without showing clinical disease, and so acts as a hidden source of infection in the community.
Step 2: Carriers are epidemiologically important only for diseases where the organism can persist in or on the host after recovery or without illness. Typhoid has chronic faecal/gallbladder carriers, diphtheria has nasopharyngeal carriers, and polio is spread largely by inapparent (sub-clinical) infections that act as carriers.
Step 3: Measles is an acute viral infection with no carrier state. Transmission occurs only from acute clinical cases via respiratory droplets during the catarrhal and early rash period; once recovered the person clears the virus completely and is not infectious.
Step 4: Therefore the carrier state plays no role in measles transmission, making it the exception. The correct answer is option 1 (Measles).

Quick Tip: Which listed disease has no chronic or sub-clinical carrier and spreads only from acute cases?

134. What is the denominator used in calculating the maternal mortality rate (ratio)?

(A) Total number of live births

(B) Total number of married women

(C) Total number of births

(D) Midyear population

Correct Answer: (A) Total number of live births

Solution:

Step 1: The maternal mortality ratio measures deaths of women due to pregnancy, childbirth, or the puerperium (up to 42 days after termination of pregnancy).
Step 2: The formula is the number of maternal deaths in a year divided by the total number of live births in the same year, expressed per 1,00,000 live births.
Step 3:

$$\text{MMR} = \frac{\text{Total maternal deaths}}{\text{Total live births}} \times 1{,}00{,}000$$

Step 4: Live births are used as the denominator because they are a reliable and routinely recorded proxy for the number of pregnancies that progress to delivery. Total births, married women, and midyear population are not the standard denominators. The correct answer is option 1 (Total number of live births).

Quick Tip: The denominator is per 1,00,000 of what reliably registered birth event?

135. A population is divided into relevant subgroups and samples are selected randomly from each of these subgroups. What type of sampling is this?

(A) Simple random sampling

(B) Stratified sampling

(C) Cluster sampling

(D) Systematic sampling

Correct Answer: (B) Stratified sampling

Solution:

Step 1: The key feature described is dividing the population into meaningful, homogeneous subgroups before sampling.
Step 2: These subgroups are called strata (for example by age, sex, or income). When the population is split into strata and a random sample is drawn from within each stratum, the method is stratified random sampling.
Step 3: Compare the alternatives: simple random sampling draws directly from the whole population without subdivision; cluster sampling divides the population into clusters and then selects whole clusters (not units from every cluster); systematic sampling picks every k-th unit from a list.
Step 4: Because units are drawn randomly from each subgroup (stratum), this is stratified sampling. The correct answer is option 2 (Stratified sampling).

Quick Tip: Random selection from within every homogeneous subgroup points to which method?

136. Pearson's coefficient of skewness is given by which of the following formulae?

(A) (Mean - Mode) / SD

(B) (Mode - Mean) / SD

(C) SD / (Mean - Mode)

(D) SD / (Median - Mode)

Correct Answer: (A) (Mean - Mode) / SD

Solution:

Step 1: Skewness measures the asymmetry of a frequency distribution. In a perfectly symmetric distribution the mean, median, and mode coincide.
Step 2: Karl Pearson's coefficient of skewness uses the gap between the mean and the mode, scaled by the standard deviation:

$$S_k = \frac{\text{Mean} - \text{Mode}}{\text{SD}}$$

Step 3: Dividing by the standard deviation makes the coefficient unitless so distributions can be compared. A positive value indicates positive (right) skew, a negative value indicates negative (left) skew, and zero indicates symmetry.
Step 4: Only option 1 matches this definition. The correct answer is option 1 ((Mean - Mode) / SD).

Quick Tip: It is the difference between mean and mode standardised by the spread.

137. Regarding the Human Development Index (HDI), all of the following are components EXCEPT:

(A) Life expectancy at birth

(B) Life expectancy at 1 year of age

(C) Education

(D) GDP

Correct Answer: (B) Life expectancy at 1 year of age

Solution:

Step 1: The Human Development Index, developed by UNDP, is a composite of three dimensions of human development.
Step 2: The three components are: (a) a long and healthy life, measured by life expectancy at birth; (b) knowledge, measured by education (mean and expected years of schooling); and (c) a decent standard of living, measured by gross national/domestic income per capita (GDP/GNI per capita).
Step 3: The health dimension uses life expectancy at birth, not life expectancy at 1 year of age. There is no HDI component based on life expectancy at 1 year.
Step 4: Hence the statement that is NOT true is option 2 (Life expectancy at 1 year of age). The correct answer is option 2.

Quick Tip: HDI uses life expectancy at birth, not at any later age.

138. The efficiency of pasteurisation of milk is assessed by which of the following tests?

(A) Phosphatase test

(B) Methylene blue test

(C) Catalase test

(D) Oxidase test

Correct Answer: (A) Phosphatase test

Solution:

Step 1: Pasteurisation heats milk to destroy pathogens (such as the agents of tuberculosis, brucellosis, and Q fever) while preserving nutritive value.
Step 2: Raw milk contains the enzyme alkaline phosphatase. The heat used in correct pasteurisation also inactivates this enzyme, so adequate heating and adequate pathogen kill go together.
Step 3: The phosphatase test detects residual alkaline phosphatase. A negative test (no active enzyme) confirms that pasteurisation reached the required temperature and time and was therefore efficient.
Step 4: The methylene blue reduction test assesses bacterial load/keeping quality, not pasteurisation efficiency; catalase and oxidase tests are bacterial identification tests. The correct answer is option 1 (Phosphatase test).

Quick Tip: Look for the heat-labile enzyme that disappears with proper heating.

139. Which among the following is a cardioprotective fatty acid?

(A) Palmitic acid

(B) Stearic acid

(C) Oleic acid

(D) Omega-3 fatty acids

Correct Answer: (D) Omega-3 fatty acids

Solution:

Step 1: Fatty acids differ in their effect on the cardiovascular system depending on their saturation and structure.
Step 2: Palmitic acid and stearic acid are saturated fatty acids; high intake of saturated fat tends to raise LDL cholesterol and is not cardioprotective. Oleic acid is a monounsaturated fatty acid that is broadly neutral to beneficial but is not the classic cardioprotective answer.
Step 3: Omega-3 polyunsaturated fatty acids (such as EPA and DHA from fish and alpha-linolenic acid from plant sources) lower triglycerides, have anti-arrhythmic and anti-thrombotic effects, and reduce the risk of coronary heart disease.
Step 4: Hence the recognised cardioprotective fatty acids are the omega-3 fatty acids. The correct answer is option 4 (Omega-3 fatty acids).

Quick Tip: Think of the polyunsaturated fats from fish oil that lower triglycerides.

140. Which is a non-deliberate measure for control of mosquitoes?

(A) Use of alkalinity-causing soaps

(B) Efforts by the community to prevent development of an environment suitable for mosquitoes

(C) Use of larvicides

(D) Use of bed nets against mosquitoes

Correct Answer: (B) Efforts by the community to prevent development of an environment suitable for mosquitoes

Solution:

Step 1: Understand the terminology.
Mosquito control measures are classified by intent. Deliberate (active, planned) measures are specific anti-mosquito interventions deployed knowingly against the vector. Non-deliberate (incidental, passive) measures reduce mosquito breeding as a by-product of general environmental improvement or community behaviour, without being aimed primarily at killing mosquitoes.

Step 2: Classify each option.
Alkalinity-causing soaps actively alter the breeding water and are a deliberate chemical measure.
Larvicides are deliberate chemical agents applied specifically to kill larvae.
Bed nets are a deliberate personal-protection measure against mosquito bites.
Community efforts that simply prevent an environment suitable for mosquitoes (clearing stagnant water, improving drainage, sanitation) reduce breeding as an indirect, non-deliberate effect.

Step 3: Note on the answer key.
The printed recall key marks option A (alkalinity soaps). This is medically incorrect, because soaps and larvicides are deliberate measures. Applying the recall-key override, the medically correct answer is the community effort to deny a suitable environment.

Step 4: Conclusion.
The non-deliberate measure is the community effort to prevent a mosquito-friendly environment (option B).

Quick Tip: Which one fights mosquitoes only as a side effect, not on purpose?

141. Which of the following is FALSE regarding Japanese encephalitis?

(A) During epidemics, 2 to 3 cases are seen in a village

(B) A bite from an infected mosquito is always associated with disease

(C) About 70% of patients are children below 5 years of age

(D) The overt disease to inapparent infection ratio is 1:100

Correct Answer: (B) A bite from an infected mosquito is always associated with disease

Solution:

Step 1: Recall the epidemiology of Japanese encephalitis (JE).
JE is a zoonotic arboviral disease caused by the JE virus (a flavivirus), transmitted by Culex mosquitoes, with pigs and ardeid birds as amplifying hosts.

Step 2: Evaluate each statement.
During epidemics JE typically presents as scattered cases, with only a few cases (around 2 to 3) per village, so this statement is true.
JE predominantly affects children, with a large proportion of cases below 15 years and many below 5 years, so a high paediatric proportion is true.
The ratio of overt clinical disease to inapparent (subclinical) infection is very low, classically quoted around 1:300 to 1:1000, but options such as 1:100 are accepted as reflecting that most infections are subclinical, so this is broadly true.

Step 3: Identify the false statement.
The claim that a bite from an infected mosquito is always associated with disease is false. The overwhelming majority of infections are inapparent; only a tiny fraction of infected persons develop overt encephalitis. So a bite does not always cause disease.

Step 4: Conclusion.
The false statement is option B. This matches the printed key.

Quick Tip: Most JE infections are silent, so which absolute claim breaks down?

142. Which arthropod-transmitted disease is NOT found in India?

(A) West Nile fever

(B) Dengue

(C) Yellow fever

(D) Sandfly fever

Correct Answer: (C) Yellow fever

Solution:

Step 1: Recall the geographic distribution of these arboviral diseases.
All four are arthropod-borne, but their endemic ranges differ.

Step 2: Evaluate each option.
West Nile fever is reported in India and is transmitted by Culex mosquitoes. Dengue is highly endemic across India and is transmitted by Aedes aegypti. Sandfly fever is present in India and is transmitted by Phlebotomus sandflies. Yellow fever is confined to tropical Africa and South America. It has never been recorded in India or Asia, despite the presence of the competent Aedes aegypti vector, which is why India enforces strict yellow fever vaccination requirements for travellers from endemic zones.

Step 3: Conclusion.
Yellow fever is the arthropod-borne disease absent from India (option C). This matches the printed key.

Quick Tip: One of these is confined to Africa and South America despite India having its vector.

143. The most useful indicator for an acute illness is:

(A) Case fatality rate

(B) Standardized mortality ratio

(C) Cause-specific death rate

(D) Five-year survival rate

Correct Answer: (A) Case fatality rate

Solution:

Step 1: Define case fatality rate (CFR).
CFR is the proportion of diagnosed cases of a disease that die from it within a given period: $CFR = \frac{\text{deaths from the disease}}{\text{number of diagnosed cases}} \times 100$. It measures the killing power or virulence of a disease over a short period.

Step 2: Match the indicator to acute illness.
Acute illnesses run a short course, so a measure that captures deaths among cases over a brief interval is most appropriate. CFR is therefore best suited to acute conditions and outbreaks (for example, an acute infection or food poisoning episode).

Step 3: Eliminate the others.
Standardized mortality ratio adjusts mortality for age and is a population-level comparison tool, not specific to acute disease severity.
Cause-specific death rate uses the whole population as the denominator and reflects population mortality burden, not the lethality among cases.
Five-year survival rate is designed for chronic diseases such as cancer, where prognosis is followed over years.

Step 4: Conclusion.
Case fatality rate is the most useful indicator for acute illness (option A). This matches the printed key.

Quick Tip: Which rate uses the number of cases (not the whole population) as its denominator over a short period?

144. Direct standardisation is used to compare the mortality rates between two countries. This is done because of the difference in:

(A) Causes of death

(B) Numerators

(C) Age distribution

(D) Denominators

Correct Answer: (C) Age distribution

Solution:

Step 1: Understand crude mortality rates.
A crude death rate lumps together all ages. When two populations differ in their age structure, comparing crude rates is misleading, because mortality rises sharply with age and a population with more elderly people will appear to have higher mortality regardless of actual risk.

Step 2: Role of standardisation.
Standardisation removes the confounding effect of age. In direct standardisation, the age-specific death rates of each study population are applied to a single common (standard) population age structure, producing age-standardised rates that can be compared fairly.

Step 3: Identify the difference being corrected.
The whole purpose is to adjust for the difference in age distribution between the two countries. It does not correct for differences in causes of death, numerators, or denominators per se.

Step 4: Conclusion.
Direct standardisation accounts for differences in age distribution (option C). This matches the printed key.

Quick Tip: Standardisation removes the confounding effect of one demographic variable between populations.

145. Onodi cells and Haller cells are associated with the following structures, respectively:

(A) Optic nerve and orbital floor

(B) Optic nerve and internal carotid artery

(C) Optic nerve and ethmoidal air cells

(D) Orbital floor and internal carotid artery

Correct Answer: (A) Optic nerve and orbital floor

Solution:

Step 1: Define Onodi (Odoni) cells.
Onodi cells are the most posterior ethmoid air cells that pneumatise laterally and superiorly to lie in close relation to the optic nerve (and often the internal carotid artery) within the sphenoid region. Their clinical importance is the intimate relationship with the optic nerve, which is at risk during endoscopic sinus surgery.

Step 2: Define Haller cells.
Haller cells (infraorbital ethmoid cells) are ethmoid air cells that extend along the floor of the orbit, around the region of the infraorbital canal and the maxillary sinus ostium. They are associated with the orbital floor and can narrow the maxillary sinus drainage pathway.

Step 3: Match to the options.
Onodi cell relates to the optic nerve; Haller cell relates to the orbital floor. The correct pairing is therefore optic nerve and orbital floor.

Step 4: Conclusion.

The answer is optic nerve and orbital floor (option A). This matches the printed key.

Quick Tip: Onodi sits posteriorly near the optic nerve; Haller sits low in the orbital floor.

146. Pain sensation from the ethmoid sinus is carried by:

(A) Frontal nerve

(B) Lacrimal nerve

(C) Nasociliary nerve

(D) Infraorbital nerve

Correct Answer: (C) Nasociliary nerve

Solution:

Step 1: Recall the innervation of the ethmoid sinuses.
The ethmoidal air cells are supplied by the anterior and posterior ethmoidal nerves. These are branches of the nasociliary nerve, which itself arises from the ophthalmic division (V1) of the trigeminal nerve.

Step 2: Trace the pathway.
The nasociliary nerve gives off the anterior ethmoidal nerve (supplying the anterior and middle ethmoidal cells) and the posterior ethmoidal nerve (supplying the posterior ethmoidal cells and sphenoid sinus). Pain from the ethmoid sinus thus travels via these ethmoidal nerves back to the nasociliary nerve.

Step 3: Eliminate the others.
The frontal nerve supplies the forehead, scalp and frontal sinus area.
The lacrimal nerve supplies the lacrimal gland and lateral upper eyelid.
The infraorbital nerve (from V2) supplies the maxillary sinus, lower eyelid, cheek and upper lip.

Step 4: Conclusion.
Pain from the ethmoid sinus is carried by the nasociliary nerve (option C). This matches the printed key.

Quick Tip: Trace the anterior and posterior ethmoidal nerves back to their parent branch of V1.

147. A 5 year old boy, while having dinner, suddenly becomes aphonic and is brought to the casualty with respiratory distress. What should be the next step in management?

(A) Cricothyroidotomy

(B) Emergency tracheostomy

(C) Humidified oxygen

(D) Heimlich maneuver

Correct Answer: (D) Heimlich maneuver

Solution:

Step 1: Identify the scenario. A child eating dinner who suddenly becomes aphonic (unable to phonate) with respiratory distress is the classic picture of acute foreign body aspiration causing laryngeal or upper airway obstruction.
Step 2: Recognise the urgency. Sudden aphonia plus distress means the airway is mechanically blocked by a food bolus, not an inflammatory or infective process. The immediate goal is to physically expel the obstructing object.
Step 3: Choose the first manoeuvre. The Heimlich maneuver (abdominal thrusts) generates a sudden rise in intrathoracic and intra-abdominal pressure that forces air upward, dislodging the bolus from the airway. It is the recommended first response in a conscious choking patient.
Step 4: Reject the invasive options first line. Cricothyroidotomy and emergency tracheostomy are surgical airways reserved for when simpler measures fail and the obstruction cannot be relieved. Humidified oxygen does nothing for a

mechanically obstructed airway.
Step 5: Conclusion. The next management step is the Heimlich maneuver, making option 4 correct.

Quick Tip: Sudden aphonia while eating plus distress equals choking on a food bolus; expel it first.

148. Acoustic neuroma most commonly involves which structure?

(A) Superior vestibular division of the 8th cranial nerve

(B) Auditory (cochlear) part of the 8th cranial nerve

(C) 7th cranial nerve

(D) Inferior vestibular division of the 8th cranial nerve

Correct Answer: (D) Inferior vestibular division of the 8th cranial nerve

Solution:

Step 1: Define the tumour. Acoustic neuroma (vestibular schwannoma) is a benign tumour arising from the Schwann cells of the vestibulocochlear nerve (8th cranial nerve).
Step 2: Locate the origin precisely. Despite the name acoustic, the tumour does not usually start on the cochlear (auditory) division. It most commonly arises from the vestibular portion, and classically from the inferior vestibular division at the level of the Scarpa (vestibular) ganglion near the internal acoustic meatus.
Step 3: Explain the symptoms. As it grows it compresses the adjacent cochlear fibres, producing progressive sensorineural hearing loss and tinnitus; later it can involve the 7th nerve and cerebellopontine angle structures.
Step 4: Eliminate the distractors. The cochlear (auditory) division and the superior vestibular division are not the usual site of origin, and the 7th cranial nerve is only secondarily affected by compression, not the site of the tumour.
Step 5: Conclusion. The tumour involves the inferior vestibular division of the 8th cranial nerve, so option 4 is correct.

Quick Tip: Vestibular schwannoma, not cochlear; think Scarpa ganglion on the inferior vestibular division.

149. What is the usual time of occurrence of secondary hemorrhage after tonsillectomy?

(A) 24 hours

(B) 12 hours

(C) 6 days

(D) 12 days

Correct Answer: (C) 6 days

Solution:

Step 1: Classify post tonsillectomy bleeding. There are two types. Primary (reactionary) hemorrhage occurs within the first 24 hours, usually due to slipped ligature or inadequate haemostasis. Secondary hemorrhage occurs later.
Step 2: Time the secondary bleed. Secondary hemorrhage typically occurs between the 5th and 10th post operative day, most commonly around the 6th day.
Step 3: Explain the mechanism. It results from sloughing of the membrane (white slough) over the tonsillar fossa, often precipitated by local infection that erodes a vessel.
Step 4: Match to the options. Among the choices, 6 days falls squarely within the 5th to 10th day window, whereas 24 hours and 12 hours describe primary or reactionary bleeding, and 12 days is later than the typical secondary window.
Step 5: Conclusion. The correct answer is 6 days, option 3.

Quick Tip: Secondary bleed equals slough separation plus infection, classically around the 6th day.

150. Which of the following is true regarding a ranula?

(A) It is also known as epulis

(B) It is a cystic swelling in the floor of the mouth

(C) It is a type of thyroglossal cyst

(D) It is a type of mucus retention cyst

Correct Answer: (B) It is a cystic swelling in the floor of the mouth

Solution:

Step 1: Define a ranula. A ranula is a cystic swelling in the floor of the mouth arising from the sublingual or submandibular salivary gland, named for its resemblance to a frog belly (rana = frog).
Step 2: Assess option B. It is a cystic swelling in the floor of the mouth, which is the defining and most directly true description of a ranula. This is the intended answer.
Step 3: Clarify option D. A ranula is indeed a mucus extravasation or retention type cyst, so option D is also conceptually true, but option B is the single best and most specific defining statement asked for here.
Step 4: Eliminate the false options. Epulis is a gum (gingival) swelling, not a ranula, so option A is wrong. A thyroglossal cyst is a midline neck swelling along the thyroglossal tract, unrelated to the floor of mouth, so option C is wrong.
Step 5: Conclusion. The best answer is that a ranula is a cystic swelling in the floor of the mouth, option 2.

Quick Tip: Rana equals frog; a translucent cyst sitting in the floor of the mouth.

151. All of the following are true statements regarding the use of sodium fluoride in the treatment of otosclerosis EXCEPT:

(A) It inhibits osteoblastic activity

(B) It is used in the active phase of otosclerosis when the Schwartze sign is positive

(C) It has an antienzymatic action on proteolytic enzymes toxic to the cochlea

(D) It is contraindicated in renal failure patients

Correct Answer: (A) It inhibits osteoblastic activity

Solution:

Step 1: Understand the drug action. Sodium fluoride is given in active otosclerosis to promote maturation and recalcification of the spongy otosclerotic bone. It encourages the formation of denser, mature bone.
Step 2: Evaluate option A. The statement that it inhibits osteoblastic activity is false. Sodium fluoride actually favours osteoblastic, bone forming activity and inhibits the osteoclastic, bone resorbing process, helping convert active spongy bone to inactive sclerotic bone. Since the question asks for the exception, this false statement is the answer.
Step 3: Confirm option B. It is indeed indicated in the active phase, signalled by a positive Schwartze sign (reddish hue over the promontory due to vascular active otospongiosis), so this is a true statement.
Step 4: Confirm option C. Sodium fluoride has an antienzymatic effect on the proteolytic (hydrolytic) enzymes released by active foci that are toxic to the cochlea, which is true.
Step 5: Confirm option D. It is relatively contraindicated in renal failure because fluoride is excreted renally and can accumulate, which is true.
Step 6: Conclusion. The false statement, and therefore the answer to this except question, is that it inhibits osteoblastic activity, option 1.

Quick Tip: Fluoride hardens spongy bone by favouring osteoblasts; the osteoblast inhibition claim is the false one.

152. Endolymphatic hydrops is seen in which condition?

(A) Meniere's disease

(B) Otosclerosis

(C) Acoustic neuroma

(D) Cholesteatoma

Correct Answer: (A) Meniere's disease

Solution:

Step 1: Define endolymphatic hydrops. It is a distension of the endolymphatic system of the inner ear caused by an excess of endolymph or impaired absorption.
Step 2: Link it to disease. Endolymphatic hydrops is the characteristic pathology of Meniere's disease, which clinically presents with the triad of episodic vertigo, fluctuating sensorineural hearing loss, and tinnitus, often with aural fullness.
Step 3: Eliminate the distractors. Otosclerosis is abnormal bone remodelling around the stapes footplate causing conductive hearing loss. Acoustic neuroma is a vestibular schwannoma. Cholesteatoma is keratinising squamous epithelium in the middle ear. None of these is defined by endolymphatic hydrops.
Step 4: Conclusion. Endolymphatic hydrops is seen in Meniere's disease, so option 1 is correct.

Quick Tip: Fluid distension of the labyrinth equals the classic pathology of Meniere's disease.

153. All of the following are seen in Argyll Robertson pupil EXCEPT:

(A) Near reflex normal

(B) Direct light reflex absent

(C) Consensual light reflex normal

(D) Visual acuity normal

Correct Answer: (C) Consensual light reflex normal

Solution:

Step 1: Define the sign. The Argyll Robertson pupil is a small, irregular pupil classically associated with neurosyphilis that shows light near dissociation: it does not react to light but constricts normally on accommodation (near effort).
Step 2: Apply to the light reflex. Because the light pathway is interrupted, BOTH the direct and the consensual light reflexes are absent or markedly impaired. So a statement that the consensual light reflex is normal is false.
Step 3: Answer the except. Since option C claims the consensual light reflex is normal, which is incorrect, it is the exception and the answer.
Step 4: Confirm the true statements. The near (accommodation) reflex is preserved, so option A is true. The direct light reflex is absent, so option B is true. Visual acuity is typically normal because the afferent visual pathway and retina are intact, so option D is true.
Step 5: Conclusion. The false statement is that the consensual light reflex is normal, so option 3 is correct.

Quick Tip: Light near dissociation kills both light reflexes; the consensual normal claim is the odd one out.

154. A young patient presents to the ophthalmology clinic with loss of central vision. There is no obvious family history. The electroretinogram (ERG) was observed to be normal. Which is the most probable diagnosis?

(A) Best's disease

(B) Stargardt's disease

(C) Retinitis pigmentosa

(D) Macular hole

Correct Answer: (B) Stargardt's disease

Solution:

Step 1: Identify the clinical picture. A young patient with progressive loss of central vision and a normal full-field ERG points to a disorder confined to the macula rather than to the entire retina.
Step 2: Apply the ERG rule. The full-field ERG measures the summed response of the whole retina. A purely macular disease affects too few cells to alter the full-field ERG, so it stays normal early on. A widespread photoreceptor disease lowers the ERG.
Step 3: Evaluate the options. Stargardt's disease (juvenile macular dystrophy) is the most common inherited macular dystrophy in the young; it causes bilateral central vision loss, often appears sporadic because it is autosomal recessive, and the full-field ERG is characteristically normal early. This fits all three clues: young age, no obvious family history, and normal ERG.
Step 4: Exclude the rest. Best's disease (vitelliform dystrophy) classically shows an abnormal electro-oculogram (EOG) with a low Arden ratio and is autosomal dominant, so family history is usually present. Retinitis pigmentosa is a diffuse rod-cone dystrophy that markedly reduces or extinguishes the ERG. A macular hole is a structural defect usually seen in older patients, not a young one without trauma.
Conclusion: The young age, sporadic presentation, and a normal ERG make Stargardt's disease the most probable diagnosis.

Quick Tip: Macula-only disease leaves the full-field ERG normal; think of the commonest juvenile macular dystrophy.

155. Damage to the nerve supplying the superior oblique muscle causes diplopia in which direction?

(A) Horizontal and downwards

(B) Vertical and downwards

(C) Horizontal and upwards

(D) Vertical and upwards

Correct Answer: (B) Vertical and downwards

Solution:

Step 1: Identify the nerve and muscle. The superior oblique muscle is supplied by the trochlear nerve (cranial nerve IV). Its palsy is the question's subject.
Step 2: Recall the action of the superior oblique. The superior oblique is mainly a depressor of the eye when the eye is adducted, and it also intorts and abducts. Its dominant clinically tested action is depression in adduction (looking down and in, as when reading or going down stairs).
Step 3: Work out the type of diplopia. Because the muscle depresses the eye, its weakness leaves the eye relatively elevated, so the two images are separated in the vertical plane. This produces vertical diplopia.
Step 4: Determine when the diplopia is worst. Diplopia from a paretic muscle is maximal in that muscle's field of action. The superior oblique acts on downgaze (and adduction), so the image separation is greatest on looking downward. Hence the diplopia is vertical and worst on downgaze (downwards).
Conclusion: Trochlear nerve damage produces vertical diplopia that is maximal on downward gaze, matching option B.

Quick Tip: The superior oblique (CN IV) depresses the adducted eye, so its palsy gives vertical diplopia worst on downgaze.

156. A patient had a running nose and pain over the medial aspect of the eye and was being treated with decongestants for many days. He later developed chemosis, proptosis and diplopia on abduction of the right eye with congestion of the optic disc. What is the probable diagnosis?

(A) Acute ethmoidal sinusitis

(B) Orbital cellulitis

(C) Cavernous sinus thrombosis

(D) Orbital apex syndrome

Correct Answer: (C) Cavernous sinus thrombosis

Solution:

Step 1: Trace the source of infection. The patient started with a running nose and medial periorbital pain (ethmoid/nasal region) treated only with decongestants. Untreated paranasal sinus and facial infection can spread backward through the valveless facial and ophthalmic veins into the cavernous sinus.
Step 2: List the new signs. He developed chemosis, proptosis, diplopia and a congested (swollen) optic disc. These reflect impaired venous drainage from the orbit plus involvement of the nerves running through the cavernous sinus.
Step 3: Interpret the cranial nerve clue. The cavernous sinus carries CN III, IV, V1, V2 and VI, and the lateral rectus is run by CN VI. Diplopia on abduction means a sixth nerve (lateral rectus) deficit, and CN VI lies most medially within the sinus, so it is often affected. This localizes the lesion to the cavernous sinus.
Step 4: Explain the orbital and disc signs. Thrombosis of the cavernous sinus blocks orbital venous outflow, producing chemosis, proptosis and venous congestion of the optic disc, often becoming bilateral because the two cavernous sinuses communicate.
Step 5: Exclude alternatives. Simple ethmoidal sinusitis would not give cranial nerve palsies or disc congestion. Orbital cellulitis causes proptosis and restricted movements but the painful ophthalmoplegia with disc congestion following spread from the face fits cavernous sinus involvement better, and orbital apex syndrome lacks the prominent venous congestion and the antecedent septic facial source.
Conclusion: The septic source, multidirectional venous congestion, CN VI palsy and congested disc point to cavernous sinus thrombosis.

Quick Tip: Facial/nasal sepsis spreading back, plus chemosis, proptosis, CN VI palsy and a congested disc, means the cavernous sinus.

157. A 5-year-old boy presented with leukocoria in the right eyeball, which is diagnosed as diffuse retinoblastoma involving the entire globe, while the other eye had 2 to 3 small lesions in the periphery. What will be the ideal management for this patient?

(A) Enucleation of both eyes

(B) Enucleation of the right eye and conservative management for the other eye

(C) Enucleation of the right eye and focal therapy for the other eye

(D) 6 cycles of chemotherapy

Correct Answer: (C) Enucleation of the right eye and focal therapy for the other eye

Solution:

Step 1: Classify each eye separately. This is bilateral retinoblastoma, so each eye is staged on its own. The right eye has diffuse tumour filling the whole globe (advanced, Group E), while the left eye has only 2 to 3 small peripheral lesions (early, salvageable).

Step 2: Decide for the advanced eye. An eye with diffuse tumour involving the entire globe has no useful vision and cannot be salvaged; enucleation of that (right) eye removes the bulk of tumour and gives the best chance of controlling disease.

Step 3: Decide for the better eye. The fellow eye has only small peripheral tumours and potentially useful vision, so it should be preserved. Small, well-localized lesions are ideally treated with focal (local) therapy such as laser photocoagulation, cryotherapy or transpupillary thermotherapy, usually combined with chemoreduction as needed.

Step 4: Reject the wrong choices. Bilateral enucleation needlessly blinds the child when the second eye is salvageable. Conservative management of the diffusely involved right eye risks tumour spread and death. Chemotherapy alone will not eradicate a globe-filling tumour and is not a stand-alone cure.

Conclusion: Enucleate the right (diffusely involved) eye and use focal therapy to save the lightly involved left eye.

Quick Tip: Stage each eye separately: remove the globe-filling eye, save the lightly involved eye with focal treatment.

158. A tennis player gets hit by a ball on the eye, following which he complains of decreased vision. Which of the following suggests that the injury is due to trauma?

(A) Optic neuritis

(B) Pars planitis

(C) Vitreous base detachment

(D) Equatorial edema

Correct Answer: (C) Vitreous base detachment

Solution:

Step 1: Define the setting. A ball strikes the eye, producing blunt (closed-globe) ocular trauma. The question asks which finding is a marker of trauma.
Step 2: Understand the mechanism of blunt injury. A sudden blow compresses the globe antero-posteriorly and expands it equatorially. This shearing acts strongly at the firm attachment of the vitreous to the retina at the vitreous base (ora serrata region).
Step 3: Identify the traumatic marker. Avulsion or detachment of the vitreous base is essentially pathognomonic of trauma, because only a sudden mechanical force can tear this strong adhesion. Therefore vitreous base detachment indicates a traumatic cause.
Step 4: Exclude the non-traumatic options. Optic neuritis is an inflammatory or demyelinating optic nerve disorder, not a mechanical injury. Pars planitis is a form of intermediate uveitis (inflammation), unrelated to trauma. Equatorial edema is non-specific and not a defining sign of blunt injury.
Conclusion: Vitreous base detachment is the finding that specifically points to ocular trauma.

Quick Tip: Blunt impact tears the strongest vitreoretinal adhesion, so a detached vitreous base signals trauma.

159. The most common malignant cause for bilateral proptosis in children is?

(A) Lymphoblastic lymphoma

(B) Rhabdomyosarcoma

(C) Acute lymphoblastic leukaemia (ALL)

(D) Acute myeloid leukaemia (AML)

Correct Answer: (D) Acute myeloid leukaemia (AML)

Solution:

Step 1: Focus on two qualifiers. The cause must be both malignant and a cause of bilateral proptosis in children.
Step 2: Link bilateral proptosis to leukaemic deposits. The classic malignant cause of bilateral orbital proptosis in a child is a chloroma (granulocytic sarcoma), which is a solid orbital deposit of myeloid leukaemic cells. Chloromas are a feature of acute myeloid leukaemia (AML).
Step 3: Connect chloroma to AML. Because the chloroma is composed of immature myeloid (granulocytic) cells, its presence implies AML; bilateral orbital chloromas are a well-known presentation of childhood AML.
Step 4: Exclude the others. Rhabdomyosarcoma is the commonest primary orbital malignancy of childhood but is usually unilateral. ALL is the commonest childhood leukaemia overall, yet orbital chloromas (and hence bilateral proptosis) are characteristic of the myeloid type. Lymphoblastic lymphoma is far less common as a cause of bilateral childhood proptosis.
Conclusion: Bilateral proptosis from orbital chloroma is the marker of AML, making AML the answer.

Quick Tip: Bilateral orbital chloroma (granulocytic sarcoma) is the malignant marker, and it belongs to AML.

160. Which of the following most commonly presents with bilateral proptosis in children?

(A) Cavernous haemangioma

(B) Chloroma

(C) Fibrous histiocytoma

(D) Pleomorphic adenoma

Correct Answer: (B) Chloroma

Solution:

Step 1: Note the key word bilateral. Bilateral childhood orbital disease that is rapidly progressive suggests a process that seeds both orbits rather than a single localized tumour.

Step 2: Recognize the chloroma. A chloroma (granulocytic sarcoma) is an orbital deposit of myeloid leukaemic cells (associated with acute myeloid leukaemia). It characteristically affects children and commonly involves both orbits, causing bilateral proptosis.

Step 3: Exclude the localized adult-type tumours. Cavernous haemangioma is the commonest benign orbital tumour of adults and is typically unilateral and slow-growing. Pleomorphic adenoma is a lacrimal gland tumour of adults and is unilateral. Fibrous histiocytoma is also typically a unilateral, localized orbital lesion.

Conclusion: Among the listed lesions, the chloroma is the one that classically gives bilateral proptosis in children.

Quick Tip: Bilateral orbital involvement in a child points to a myeloid leukaemic deposit, the chloroma.

161. A patient presented with sudden onset of floaters and a sensation of a curtain falling in front of the eye. Which one of the following is the appropriate diagnosis?

(A) Retinal detachment

(B) Eales disease

(C) Vitreous haemorrhage

(D) Macular hole

Correct Answer: (A) Retinal detachment

Solution:

Step 1: Identify the hallmark symptoms. Sudden floaters and a curtain or veil descending across the field of vision are the classic warning symptoms of rhegmatogenous retinal detachment.
Step 2: Understand the mechanism. A retinal break allows liquefied vitreous to pass beneath the neurosensory retina, separating it from the underlying retinal pigment epithelium. As the detachment extends, the patient perceives a progressively advancing shadow or curtain.
Step 3: Note the prodrome. Photopsia (flashes of light) from vitreoretinal traction and a sudden shower of floaters from pigment or blood release typically precede the curtain effect.
Step 4: Exclude the other options. Eales disease causes recurrent vitreous haemorrhage in young males but presents mainly with sudden painless loss of vision, not a fixed curtain. Isolated vitreous haemorrhage gives floaters and haze but a diffuse blur rather than a sharp descending curtain. A macular hole causes central metamorphopsia and a central scotoma, not a peripheral curtain.
Step 5: Conclude. The triad of floaters, flashes, and a curtain over the vision points to **retinal detachment**.

Quick Tip: A descending curtain plus flashes and floaters means the sensory retina has peeled off.

162. Ophthalmoplegic migraine is defined by which one of the following?

(A) Headache with irreversible loss of ophthalmic nerve function

(B) Recurrent transient 3rd nerve palsy associated with headache

(C) Recurrent transient 3rd, 4th and 6th nerve palsy associated with headache

(D) Headache with optic neuritis

Correct Answer: (C) Recurrent transient 3rd, 4th and 6th nerve palsy associated with headache

Solution:

Step 1: Define the condition. Ophthalmoplegic migraine, now classified as recurrent painful ophthalmoplegic neuropathy, is repeated bouts of headache accompanied by paresis of one or more ocular motor cranial nerves.
Step 2: Identify the nerves involved. The ocular motor nerves are the third (oculomotor), fourth (trochlear) and sixth (abducens). Any of these can be transiently affected, producing diplopia and extraocular muscle weakness during or after the headache.
Step 3: Emphasise the reversibility. The ophthalmoplegia is recurrent and transient, recovering between attacks, which distinguishes it from a structural lesion.
Step 4: Reject the other options. Irreversible nerve loss is against the recurrent transient nature of the disease. Restricting it to the 3rd nerve alone is incomplete because the 4th and 6th can also be involved. Optic neuritis affects the optic (2nd) nerve and vision, not ocular motility.
Step 5: Conclude. The best definition is recurrent transient 3rd, 4th and 6th nerve palsy associated with headache.

Quick Tip: Think of every nerve that moves the eye: III, IV and VI, transiently and recurrently.

163. Which of the following drugs is NOT used for the medical treatment of diabetic retinopathy?

(A) Tamoxifen

(B) Benfotiamine

(C) Pyridazinones

(D) Ruboxistaurin

Correct Answer: (A) Tamoxifen

Solution:

Step 1: Recall the pharmacological strategies aimed at diabetic retinopathy. They target the biochemical pathways of hyperglycaemic damage, including the polyol pathway, advanced glycation end products, protein kinase C activation and oxidative stress.
Step 2: Place each correct option in its pathway. Benfotiamine, a lipid-soluble thiamine derivative, blocks several hyperglycaemia-driven pathways and reduces advanced glycation end products. Ruboxistaurin is a selective protein kinase C beta inhibitor studied to slow visual loss in diabetic retinopathy. Pyridazinones have been investigated as agents that improve retinal microvascular function.
Step 3: Examine the odd one out. Tamoxifen is a selective oestrogen receptor modulator used in breast cancer. It has no role in diabetic retinopathy and is in fact itself a recognised cause of drug-induced retinopathy with crystalline deposits.
Step 4: Conclude. The drug NOT used for diabetic retinopathy is tamoxifen.

Quick Tip: One of these is a breast-cancer anti-oestrogen, not a retinal protectant.

164. A girl presented with recurrent occipital headache associated with ataxia and vertigo. Her mother also has similar complaints. The most probable diagnosis is?

(A) Vestibular neuronitis

(B) Basilar migraine

(C) Tension headache

(D) Cluster headache

Correct Answer: (B) Basilar migraine

Solution:

Step 1: Pick out the discriminating features. Occipital headache combined with brainstem symptoms such as vertigo and ataxia points to involvement of the posterior (vertebrobasilar) circulation territory.
Step 2: Add the family history. A similar history in the mother indicates a strong hereditary, migrainous tendency rather than an acquired vestibular insult.
Step 3: Match to basilar migraine. Basilar-type migraine (migraine with brainstem aura) classically causes occipital headache with aura symptoms arising from the brainstem, including vertigo, ataxia, dysarthria, tinnitus and visual disturbance, and is more common in young females with a family history.
Step 4: Exclude the others. Vestibular neuronitis gives acute isolated vertigo without recurrent headache or family clustering. Tension headache is a bilateral pressing pain without vertigo or ataxia. Cluster headache produces severe unilateral periorbital pain with autonomic features, not occipital pain with ataxia.
Step 5: Conclude. The picture fits basilar migraine.

Quick Tip: Occipital headache with brainstem signs and a family history equals a posterior-circulation migraine.

165. A 32-year-old mountaineer has a haematocrit of 70%. What is the possible explanation?

(A) Polycythemia with relative dehydration

(B) High altitude cerebral oedema

(C) High altitude pulmonary oedema

(D) Haemodilution

Correct Answer: (A) Polycythemia with relative dehydration

Solution:

Step 1: Interpret the haematocrit. A haematocrit of 70% is markedly raised (normal roughly 40 to 50%), meaning the proportion of red cells in blood is very high.
Step 2: Apply the altitude physiology. Chronic exposure to the low oxygen of high altitude stimulates erythropoietin release, driving secondary polycythemia and a true rise in red cell mass.
Step 3: Add the fluid factor. At altitude, low humidity, increased respiratory water loss and reduced intake cause relative dehydration, which contracts plasma volume and concentrates the blood further, pushing the haematocrit even higher.
Step 4: Reject the others. High altitude cerebral oedema and high altitude pulmonary oedema are acute life-threatening syndromes defined by neurological signs or breathlessness, not by a high haematocrit. Haemodilution would lower, not raise, the haematocrit.
Step 5: Conclude. The combination of secondary polycythemia and relative dehydration best explains a haematocrit of 70%.

Quick Tip: Altitude raises red cell mass and dehydration concentrates the plasma, both lifting the haematocrit.

166. Tetracycline is used in the prophylaxis of which of the following diseases?

(A) Cholera

(B) Brucellosis

(C) Leptospirosis

(D) Meningitis

Correct Answer: (A) Cholera

Solution:

Step 1: Recall the question type. The key word is prophylaxis, meaning prevention in contacts or at-risk persons, not treatment of established disease.
Step 2: Match drug to disease. Tetracycline (or its analogue doxycycline) is the recommended chemoprophylactic agent for close contacts during a cholera

outbreak, reducing the carrier state and secondary spread of Vibrio cholerae.
Step 3: Distinguish treatment from prophylaxis in the distractors. In brucellosis tetracycline-class drugs are used to treat, not chiefly to prevent, and combined with other agents. In leptospirosis doxycycline is used both to treat and as prophylaxis, but among the listed options cholera is the classic taught answer for tetracycline prophylaxis. Meningococcal meningitis prophylaxis relies on rifampicin, ciprofloxacin or ceftriaxone, not tetracycline.
Step 4: Conclude. The best single answer is cholera.

Quick Tip: Think which epidemic uses a short tetracycline course for close contacts.

167. A Punnett square is used for which of the following?

(A) Finding the genotype of offspring

(B) Statistical analysis

(C) Anatomical surface area of the human body

(D) Diseased and non-diseased individuals

Correct Answer: (A) Finding the genotype of offspring

Solution:

Step 1: Recall what a Punnett square is. It is a grid devised by Reginald Punnett that lays out the gametes of two parents along the rows and columns.
Step 2: Understand its use. By combining the possible alleles in each box, it predicts every possible genotype of the offspring and the ratio in which each will occur.
Step 3: Apply it. For a monohybrid cross it predicts the classic genotypic and phenotypic ratios, making it the standard tool for forecasting inheritance patterns.
Step 4: Reject the others. It is not a statistical test, it has nothing to do with body surface area (which uses formulae such as the Du Bois or Mosteller equations), and it does not classify diseased versus non-diseased individuals.

Step 5: Conclude. A Punnett square is used to determine the genotype of offspring.

Quick Tip: It is the allele-combining grid from genetics, used to predict a cross.

168. Cavitation is seen in?

(A) Mycoplasma pneumonia

(B) Tuberculous pneumonia

(C) Streptococcal pneumonia

(D) Staphylococcus pneumonia

Correct Answer: (B) Tuberculous pneumonia

Solution:

Step 1: Cavitation means a gas-filled space within a zone of consolidation, mass or nodule, produced by expulsion of necrotic lung tissue through the bronchial tree.

Step 2: The classic cavitating infection of the lung is post-primary (reactivation) pulmonary tuberculosis, where caseous necrosis liquefies and drains through a draining bronchus, leaving an upper-lobe thick-walled cavity.

Step 3: Mycoplasma pneumonia causes an atypical (walking) pneumonia with interstitial and patchy infiltrates and essentially never cavitates.

Step 4: Streptococcus pneumoniae (the pneumococcus, the agent of typical streptococcal lobar pneumonia) characteristically produces lobar consolidation without cavitation; cavitation here would be exceptional.

Step 5: Although Staphylococcus aureus pneumonia can cavitate and form pneumatoceles or abscesses, among the four choices the single best, most classic cause of pulmonary cavitation is tuberculous pneumonia.

Step 6: Note on the key: the printed recall key marked option C (Streptococcal pneumonia), which is medically incorrect because pneumococcal lobar pneumonia does not cavitate. Applying the medically correct answer, the best

response is Tuberculous pneumonia.
Conclusion: The correct answer is Tuberculous pneumonia.

Quick Tip: Think of the upper-lobe thick-walled cavity of reactivation lung disease, not lobar pneumococcal consolidation.

169. In pseudohypoparathyroidism, which of the following is true?

(A) Gain of function mutation in Gsα

(B) Decreased conversion of GTP to GMP

(C) Decreased inositol triphosphate production

(D) Decreased formation of cAMP

Correct Answer: (D) Decreased formation of cAMP

Solution:

Step 1: Pseudohypoparathyroidism is end-organ resistance to parathyroid hormone (PTH). PTH levels are high, but target tissues (kidney, bone) fail to respond, producing hypocalcaemia and hyperphosphataemia with elevated PTH.
Step 2: PTH signals through a G-protein coupled receptor linked to the stimulatory G protein (Gs). The alpha subunit of Gs (Gsα, encoded by GNAS) normally activates adenylate cyclase.
Step 3: In pseudohypoparathyroidism type Ia (Albright hereditary osteodystrophy), there is a loss-of-function mutation in Gsα, so adenylate cyclase is not adequately activated.
Step 4: Because adenylate cyclase converts ATP to cyclic AMP (cAMP), the defect leads to decreased generation of cAMP in response to PTH (demonstrated clinically by a blunted urinary cAMP response in the Ellsworth-Howard test).
Step 5: Evaluating the options: a gain-of-function in Gsα (option A) is wrong because the defect is loss of function; GTP-to-GMP conversion (option B) is not the relevant pathway; inositol triphosphate (option C) is the IP3/Gq pathway, not the PTH-Gs-cAMP pathway.
Conclusion: The correct answer is decreased formation of cAMP.

Quick Tip: PTH resistance from a loss-of-function Gsα defect cripples adenylate cyclase output.

170. The difference between follicular carcinoma and follicular adenoma of the thyroid is?

(A) Vascular invasion

(B) Mitosis

(C) Nuclear pleomorphism

(D) Tubule formation

Correct Answer: (A) Vascular invasion

Solution:

Step 1: Both follicular adenoma and follicular carcinoma are well-differentiated follicular thyroid lesions; cytologically they can look identical, so cytology (FNAC) cannot distinguish them.
Step 2: The defining feature of follicular carcinoma is invasion, specifically capsular invasion (penetration through the full thickness of the tumour capsule) and/or vascular (angioinvasion) invasion of vessels in or beyond the capsule.
Step 3: A follicular adenoma is a fully encapsulated, non-invasive lesion; it does not breach its capsule and does not invade vessels.
Step 4: Because the diagnosis hinges on demonstrating invasion through the entire capsule and into vessels, the diagnosis can only be made on a complete excised specimen (histopathology), not on FNAC.
Step 5: Mitoses, nuclear pleomorphism and tubule (architecture) formation are not the discriminators here; nuclear features such as ground-glass nuclei and orphan-Annie eyes belong to papillary carcinoma, not the adenoma-versus-follicular-carcinoma distinction.
Conclusion: The correct answer is vascular invasion.

Quick Tip: Cytology cannot tell them apart; you need to see the tumour breach its

capsule and enter vessels.

171. Which among the following is used for the diagnosis of antiphospholipid antibody syndrome?

(A) Beta 2 microglobulin antibody

(B) Anti nuclear antibody

(C) Anti centromere antibody

(D) Anti beta 2 glycoprotein I antibody

Correct Answer: (D) Anti beta 2 glycoprotein I antibody

Solution:

Step 1: Antiphospholipid antibody syndrome (APS) is diagnosed by combining a clinical criterion (vascular thrombosis or pregnancy morbidity) with a laboratory criterion (a persistently positive antiphospholipid antibody).
Step 2: The three accepted laboratory tests (Sapporo/Sydney criteria) are lupus anticoagulant, anticardiolipin antibody, and anti-beta 2 glycoprotein I antibody, each confirmed on two occasions at least 12 weeks apart.
Step 3: Among the options offered, anti-beta 2 glycoprotein I antibody is one of these defining laboratory criteria for APS.
Step 4: Beta 2 microglobulin (option A) is unrelated; it is a marker used in renal and myeloma assessment, not APS, and must not be confused with beta 2 glycoprotein I.
Step 5: Antinuclear antibody (option B) is a screening test for systemic lupus erythematosus and other connective tissue diseases, and anti-centromere antibody (option C) is associated with limited cutaneous systemic sclerosis (CREST); neither defines APS.
Conclusion: The correct answer is anti beta 2 glycoprotein I antibody.

Quick Tip: Recall the three APS lab criteria; do not confuse beta 2 glycoprotein I with beta 2 microglobulin.

172. Which is the most reliable objective sign for identifying pulmonary plethora on a chest X-ray?

(A) Diameter of the main pulmonary artery >16 mm

(B) Diameter of the left pulmonary artery >16 mm

(C) Diameter of the descending right pulmonary artery >16 mm

(D) Diameter of the descending left pulmonary artery >16 mm

Correct Answer: (C) Diameter of the descending right pulmonary artery >16 mm

Solution:

Step 1: Pulmonary plethora means increased pulmonary blood flow, typically from a left-to-right shunt, producing enlarged, prominent pulmonary vessels on the chest radiograph.
Step 2: The most reproducible and measurable (objective) vessel on a plain frontal chest film is the descending (interlobar) branch of the right pulmonary artery, because it runs vertically alongside the right heart border against aerated lung and its margins are sharply seen.
Step 3: The accepted upper limit of normal for the diameter of the descending right pulmonary artery is about 16 mm; a value greater than 16 mm indicates enlargement and is taken as a reliable objective sign of increased pulmonary flow or pulmonary arterial enlargement.
Step 4: The main and left pulmonary arteries are partly obscured by the mediastinum and overlying structures, so they cannot be measured as cleanly and are less reliable for this purpose; the descending left pulmonary artery is also less consistently profiled than the right.
Conclusion: The correct answer is diameter of the descending right pulmonary artery greater than 16 mm.

Quick Tip: The vertically running interlobar vessel beside the right heart border is the one you can measure cleanly.

173. Necrotizing lymphadenitis is seen in?

(A) Kimura disease

(B) Kikuchi disease

(C) Hodgkin disease

(D) Castleman disease

Correct Answer: (B) Kikuchi disease

Solution:

Step 1: The question asks for the entity whose hallmark histology is necrotizing lymphadenitis.
Step 2: Kikuchi disease (Kikuchi-Fujimoto disease) is also called histiocytic necrotizing lymphadenitis; it characteristically presents in young women with tender cervical lymphadenopathy and fever, and the nodes show patchy paracortical necrosis with abundant histiocytes and karyorrhectic debris but a striking absence of neutrophils.
Step 3: Kimura disease is a chronic allergic/inflammatory condition with eosinophil-rich lymphoid hyperplasia and follicular hyperplasia, not necrotizing lymphadenitis.
Step 4: Hodgkin disease is characterised by Reed-Sternberg cells in an appropriate inflammatory background, not by histiocytic necrotizing lymphadenitis.
Step 5: Castleman disease (angiofollicular lymph node hyperplasia) shows regressed germinal centres with onion-skin mantles and hyalinised vessels, again not necrotizing lymphadenitis.
Conclusion: The correct answer is Kikuchi disease.

Quick Tip: One of these conditions is literally named histiocytic necrotizing lymphadenitis.

174. NARP syndrome is seen in which type of disorder?

(A) Mitochondrial function disorder

(B) Glycogen storage disorder

(C) Lysosomal storage disorder

(D) Lipid storage disorder

Correct Answer: (A) Mitochondrial function disorder

Solution:

Step 1: NARP stands for Neuropathy, Ataxia and Retinitis Pigmentosa.
Step 2: NARP is caused by a point mutation in mitochondrial DNA, classically the m.8993T>G mutation in the MT-ATP6 gene, which encodes a subunit of mitochondrial ATP synthase (complex V) of the oxidative phosphorylation chain.
Step 3: Because the defect lies in mitochondrial DNA and impairs ATP production, NARP is a mitochondrial (oxidative phosphorylation) disorder and shows maternal inheritance.
Step 4: A high mutant load of the same m.8993 mutation produces the more severe maternally inherited Leigh syndrome, underscoring its mitochondrial basis.
Step 5: The other categories are unrelated: glycogen storage disorders (for example Pompe, von Gierke), lysosomal storage disorders (for example Gaucher, Tay-Sachs) and lipid storage disorders involve enzyme deficiencies in different pathways and do not cause NARP.
Conclusion: The correct answer is mitochondrial function disorder.

Quick Tip: Neuropathy, Ataxia, Retinitis Pigmentosa from an MT-ATP6 mutation points to one organelle.

175. Superior vena cava syndrome is most commonly caused by?

(A) Lymphoma

(B) Small cell lung carcinoma

(C) Non small cell lung carcinoma

(D) Secondary tumours

Correct Answer: (B) Small cell lung carcinoma

Solution:

Step 1: Superior vena cava (SVC) syndrome results from obstruction of blood flow through the SVC, producing facial and upper limb swelling, distended neck veins, dyspnoea and a plethoric face.
Step 2: The overwhelming majority of cases are caused by malignancy, and bronchogenic carcinoma is the single largest group because the right paratracheal lymph nodes and the right upper lobe lie adjacent to the SVC.
Step 3: Among lung cancers, small cell lung carcinoma (SCLC) has a strong central, mediastinal location and rapid growth, so it is the most common specific cause of SVC syndrome.
Step 4: Non small cell lung carcinoma and lymphoma (especially non-Hodgkin lymphoma) are the next most frequent causes, while metastatic or secondary tumours and benign causes such as fibrosing mediastinitis are less common.
Conclusion: The most common cause of SVC syndrome is small cell lung carcinoma, so option 2 is correct.

Quick Tip: Think of the central, fast-growing, mediastinal lung cancer subtype.

176. Which of the following is not included in parenteral nutrition?

(A) Fat

(B) Carbohydrate

(C) Fibres

(D) Micronutrients

Correct Answer: (C) Fibres

Solution:

Step 1: Parenteral nutrition (PN) delivers nutrients directly into a vein, bypassing the gastrointestinal tract, so every component must be infusible in a dissolved or emulsified form.
Step 2: Standard PN provides carbohydrate as dextrose (the main calorie source), fat as intravenous lipid emulsions, amino acids for protein, plus electrolytes, vitamins and trace elements (micronutrients).
Step 3: Dietary fibre is an indigestible plant polysaccharide whose function depends on bulk and fermentation within the colon; it cannot be infused into the bloodstream and has no role when the gut is bypassed.
Step 4: Therefore fibre is the one item not included in parenteral nutrition, whereas fat, carbohydrate and micronutrients all are.
Conclusion: Option 3 (Fibres) is correct.

Quick Tip: Which component needs a working colon to act and cannot be infused into a vein?

177. All are true about pheochromocytoma except?

(A) 90% are malignant

(B) 95% occur in the abdomen

(C) They secrete catecholamines

(D) They arise from sympathetic ganglions

Correct Answer: (A) 90% are malignant

Solution:

Step 1: Pheochromocytoma is a catecholamine-secreting tumour of chromaffin cells, classically described by the “rule of 10s”.
Step 2: By the rule of 10s, about 10% are malignant, 10% are bilateral, 10% are extra-adrenal, 10% occur in children and 10% are familial. So roughly 90% are benign, NOT malignant.

Step 3: Evaluating the statements: about 95% are located within the abdomen (true), they secrete catecholamines such as adrenaline and noradrenaline producing paroxysmal hypertension (true), and they arise from chromaffin cells of the sympathetic nervous system including the adrenal medulla and sympathetic ganglia (true).
Step 4: The statement “90% are malignant” is false because the figure is reversed; only about 10% are malignant.
Conclusion: The incorrect (except) statement is option 1.

Quick Tip: Recall the rule of 10s and which percentage gets reversed here.

178. Intraoperative myocardial infarction is best diagnosed by:

(A) ECG

(B) Invasive arterial pressure

(C) Central venous pressure

(D) Transoesophageal echocardiography

Correct Answer: (D) Transoesophageal echocardiography

Solution:

Step 1: Intraoperative myocardial ischaemia or infarction must be detected early and reliably under anaesthesia, where the patient cannot report chest pain.
Step 2: The earliest event in acute myocardial ischaemia is a regional wall motion abnormality, which appears before ECG changes and well before haemodynamic deterioration.
Step 3: Transoesophageal echocardiography (TEE) places the probe directly behind the heart and visualises regional wall motion in real time, making it the most sensitive intraoperative monitor for new ischaemia.
Step 4: ECG detects ischaemia later and may miss territories such as the posterior wall; invasive arterial pressure and central venous pressure are non-specific and change only after significant myocardial dysfunction.

Conclusion: The best intraoperative diagnostic tool is transoesophageal echocardiography, so option 4 is correct.

Quick Tip: What detects a regional wall motion abnormality before the ECG does?

179. ECG is poor at detecting ischaemia in areas supplied by?

(A) Left anterior descending artery

(B) Left circumflex artery

(C) Left coronary artery

(D) Right coronary artery

Correct Answer: (B) Left circumflex artery

Solution:

Step 1: The standard 12-lead ECG views the heart mainly from the anterior, lateral and inferior directions, with no lead looking directly at the posterior (and to a large extent the lateral) wall of the left ventricle.
Step 2: The left circumflex (LCx) artery supplies the posterolateral wall of the left ventricle, a territory that is electrically “silent” on the routine 12-lead recording.
Step 3: Because no standard lead faces this region, ischaemia or infarction in the LCx territory often produces only subtle or absent ST-T changes and is the most frequently missed on ECG.
Step 4: In contrast, the left anterior descending artery shows up in the precordial/anterior leads, and the right coronary artery shows up in the inferior leads, so their territories are well represented.
Conclusion: The ECG is poorest at detecting ischaemia in the left circumflex territory, so option 2 is correct.

Quick Tip: Which wall of the left ventricle has no dedicated standard ECG lead?

180. A patient with a history of discharge from the right ear for the past 1 year presented with severe earache. The discharge was cultured and the organism was found to be gram positive cocci. CT scan shows ring enhancement. The least likely cause is?

(A) Pseudomonas

(B) Streptococcus pneumoniae

(C) Staphylococcus

(D) Haemophilus influenzae

Correct Answer: (B) Streptococcus pneumoniae

Solution:

Step 1: A year-long ear discharge with new severe earache and a CT showing ring enhancement indicates chronic suppurative otitis media (CSOM) that has developed an intracranial complication, namely a brain abscess.
Step 2: The discharge culture grew gram positive cocci, which points towards organisms such as Staphylococcus and Streptococcus rather than the typical acute otitis media flora.
Step 3: The classic and most frequent organisms in CSOM-related abscesses are Pseudomonas (a major CSOM pathogen) and Staphylococcus, both well-recognised causes here, so these are likely.
Step 4: Haemophilus influenzae and Streptococcus pneumoniae are organisms of ACUTE otitis media, not chronic disease; among the options, Streptococcus pneumoniae is the least likely organism to be cultured from this chronic case complicated by abscess.
Conclusion: The least likely cause is Streptococcus pneumoniae, so option 2 is correct, in keeping with the printed key.

Quick Tip: Chronic ear disease favours Pseudomonas and Staph; which option is an acute otitis media bug?

181. A 15 day old baby came with a history of seizures. Blood tests revealed Ca 5 mg/dl, PO4 9 mg/dl, PTH 30 pg/ml (normal 10 to 60). What is the most probable diagnosis?

(A) Pseudohypoparathyroidism

(B) Vitamin D deficiency

(C) Hyperparathyroidism

(D) Hypoxic ischaemic encephalopathy (HIE)

Correct Answer: (A) Pseudohypoparathyroidism

Solution:

Step 1: Interpret the biochemistry: serum calcium is low at 5 mg/dl (hypocalcaemia, which explains the seizures), serum phosphate is high at 9 mg/dl (hyperphosphataemia), and PTH is within the normal range at 30 pg/ml.
Step 2: The combination of low calcium with high phosphate points to a parathyroid-axis problem rather than vitamin D deficiency, in which phosphate is usually low or low-normal because PTH-driven phosphaturia is intact.
Step 3: In true hypoparathyroidism PTH would be low or inappropriately undetectable. Here PTH is not low; in fact for this degree of hypocalcaemia PTH should be markedly elevated, so a normal value is inappropriately normal, meaning end-organ resistance to PTH.
Step 4: This pattern of hypocalcaemia, hyperphosphataemia and normal or raised PTH defines pseudohypoparathyroidism, where the kidney and bone fail to respond to PTH.
Conclusion: The most probable diagnosis is pseudohypoparathyroidism, so option 1 is correct. Hyperparathyroidism would give high calcium, vitamin D deficiency gives low phosphate, and HIE does not produce this biochemical triad.

Quick Tip: Low calcium plus high phosphate plus a PTH that is not low equals resistance to PTH.

182. Which among the following is not used in the diagnosis of insulinoma?

(A) Fasting glucose test

(B) Xylulose test

(C) C-peptide levels

(D) Insulin / glucose ratio

Correct Answer: (B) Xylulose test

Solution:

Step 1: Insulinoma is an insulin-secreting tumour of the pancreatic beta cells that causes hyperinsulinaemic hypoglycaemia. Diagnosis rests on demonstrating inappropriately high endogenous insulin during a hypoglycaemic episode.
Step 2: The standard workup centres on a supervised 72-hour fast (fasting glucose test). When blood glucose falls, insulin remains inappropriately elevated, confirming autonomous secretion.
Step 3: C-peptide is co-secreted with endogenous insulin in equimolar amounts, so high C-peptide proves the insulin is endogenous (and excludes surreptitious insulin injection). It is a key confirmatory test.
Step 4: The insulin / glucose ratio (amended insulin-glucose ratio) is calculated during the fast; a ratio that stays high when glucose is low (typically insulin in mU/L > glucose in mg/dL relationship) supports insulinoma.
Step 5: The xylulose test has no role here. Xylulose is a sugar linked to pentosuria and carbohydrate metabolism studies, not to insulin secretion. Therefore the xylulose test is the option not used.
Conclusion: The answer is option 2 (Xylulose test).

Quick Tip: Three options test insulin biology; one is a pentose metabolism test.

183. All are true about nesidioblastosis except:

(A) Hypoglycemic episodes are seen

(B) Occurs in adults more than children

(C) Histopathology shows hyperplasia of islet cells

(D) Diazoxide is used for treatment

Correct Answer: (B) Occurs in adults more than children

Solution:

Step 1: Nesidioblastosis (congenital hyperinsulinism / persistent hyperinsulinaemic hypoglycaemia of infancy) is a diffuse abnormality of pancreatic beta cells leading to unregulated insulin release.
Step 2: Because insulin secretion is excessive and inappropriate, patients present with recurrent hypoglycaemic episodes, so option 1 is true.
Step 3: The classic histopathology is diffuse proliferation and hyperplasia of islet (beta) cells budding from ductal epithelium, so option 3 is true.
Step 4: First-line medical therapy is diazoxide, which opens beta-cell K-ATP channels and suppresses insulin release, so option 4 is true.
Step 5: The condition is predominantly a disorder of neonates and infants (children), not adults. The statement that it occurs in adults more than children is false and is therefore the exception.
Conclusion: The answer is option 2 (Occurs in adults more than children).

Quick Tip: Think of the leading cause of persistent neonatal hypoglycaemia.

184. Gold standard test for diagnosis of laryngopharyngeal reflux?

(A) 24-hour double-probe pH monitoring

(B) Flexible endoscopy

(C) Barium swallow

(D) Laryngoscopy

Correct Answer: (A) 24-hour double-probe pH monitoring

Solution:

Step 1: Laryngopharyngeal reflux (LPR) is retrograde flow of gastric contents up to the larynx and pharynx, producing hoarseness, throat clearing, globus and cough.
Step 2: Diagnosis requires objective documentation of acid reaching the upper aerodigestive tract. The most sensitive and specific method is dual-probe (double-probe) ambulatory pH monitoring, with one sensor in the distal oesophagus and one at the upper oesophageal sphincter / pharynx.
Step 3: The 24-hour recording quantifies the number and timing of pharyngeal acid events, which is why double-probe 24-hour pH monitoring is regarded as the gold standard. So option 1 is correct.
Step 4: Flexible endoscopy and laryngoscopy show only indirect signs (oedema, erythema, posterior commissure hypertrophy) that are non-specific. Barium swallow assesses anatomy and gross reflux but is insensitive for LPR.
Conclusion: The answer is option 1 (24-hour double-probe pH monitoring).

Quick Tip: Look for the test that objectively measures acid reaching the pharynx.

185. Least common cause of ambiguous genitalia in a female child?

(A) Placental steroid sulfatase deficiency

(B) Fetal aromatase deficiency

(C) WT-4 mutation

(D) Congenital adrenal hyperplasia (CAH)

Correct Answer: (A) Placental steroid sulfatase deficiency

Solution:

Step 1: Ambiguous genitalia in a genetic female (46,XX) results mainly from excess androgen exposure that virilises the external genitalia.
Step 2: Congenital adrenal hyperplasia (most often 21-hydroxylase deficiency) shunts precursors into androgens and is by far the commonest cause of a virilised

female infant, so option 4 is a frequent cause.
Step 3: Fetal aromatase deficiency prevents conversion of androgens to oestrogens, so fetal androgens accumulate and virilise the female fetus (with maternal virilisation too); it is a recognised cause, so option 2 is a genuine cause.
Step 4: WT1 / related WT pathway mutations affect gonadal and renal development and can produce disorders of sex development, so option 3 can contribute.
Step 5: Placental steroid sulfatase (STS) deficiency mainly causes low maternal oestriol and X-linked ichthyosis, with little direct virilisation of a female fetus, making it the least likely listed cause of ambiguous genitalia in a female child.
Conclusion: The answer is option 1 (Placental steroid sulfatase deficiency).

Quick Tip: Which listed enzyme defect causes ichthyosis and low maternal estriol rather than virilisation?

186. What will you give to treat hypothyroidism in a patient with ischemic heart disease?

(A) Low dose of levothyroxine

(B) Normal dose of levothyroxine

(C) Do not give levothyroxine

(D) Thyroid extract

Correct Answer: (A) Low dose of levothyroxine

Solution:

Step 1: Hypothyroidism must still be corrected in a patient with ischaemic heart disease (IHD), because untreated hypothyroidism worsens lipids and cardiac function.
Step 2: However, thyroid hormone increases myocardial oxygen demand, heart rate and contractility. Giving a full replacement dose abruptly can precipitate angina, arrhythmia or myocardial infarction in a diseased coronary circulation.
Step 3: The safe approach is to start with a low dose of levothyroxine (for

example 12.5 to 25 micrograms/day) and titrate up slowly over weeks while monitoring symptoms, so option 1 is correct.
Step 4: A normal/full starting dose (option 2) is unsafe; withholding therapy entirely (option 3) leaves hypothyroidism untreated; thyroid extract (option 4) gives unpredictable T3/T4 ratios and is not preferred.
Conclusion: The answer is option 1 (Low dose of levothyroxine).

Quick Tip: Start low and go slow to spare the ischaemic myocardium.

187. A 35-year-old female has proximal weakness of muscles, ptosis and easy fatiguability. The best test to diagnose her condition is:

(A) Muscle biopsy

(B) CPK

(C) Edrophonium test

(D) EMG

Correct Answer: (C) Edrophonium test

Solution:

Step 1: The combination of fluctuating proximal weakness, ptosis and fatiguability that worsens with activity in a young woman is the classic picture of myasthenia gravis, a disorder of the neuromuscular junction.
Step 2: The edrophonium (Tensilon) test uses a short-acting acetylcholinesterase inhibitor that increases acetylcholine at the junction; in myasthenia gravis it produces a rapid, transient improvement in ptosis and weakness, making it a quick bedside diagnostic test. So option 3 is correct.
Step 3: Muscle biopsy (option 1) and CPK (option 2) are tests for primary muscle disease (myopathy) and are typically normal in myasthenia, since the defect is at the junction, not the muscle fibre.
Step 4: EMG, specifically repetitive nerve stimulation or single-fibre EMG, supports the diagnosis, but among the choices given the edrophonium test is the

best/most specific immediate answer for this classic presentation.
Conclusion: The answer is option 3 (Edrophonium test).

Quick Tip: A drug that boosts acetylcholine briefly reverses ptosis and weakness.

188. Compliance is decreased in all except:

(A) Pulmonary congestion

(B) COPD

(C) Decreased surfactant

(D) Pulmonary fibrosis

Correct Answer: (B) COPD

Solution:

Step 1: Lung compliance is the change in lung volume per unit change in pressure; it reflects how easily the lung distends. Stiffer lungs have low compliance; floppier, less elastic lungs have high compliance.
Step 2: Pulmonary congestion (option 1) fills the interstitium and alveoli with fluid, making the lung stiff and lowering compliance.
Step 3: Decreased surfactant (option 3) raises alveolar surface tension and increases the tendency to collapse, which reduces compliance (as in respiratory distress syndrome).
Step 4: Pulmonary fibrosis (option 4) deposits collagen and scar tissue, making the lung rigid and markedly lowering compliance, the classic restrictive pattern.
Step 5: COPD, especially emphysema, destroys alveolar walls and elastic tissue. Loss of elastic recoil makes the lung easier to inflate, so compliance is increased, not decreased. Therefore COPD is the exception.
Conclusion: The answer is option 2 (COPD).

Quick Tip: Loss of elastic recoil in emphysema makes the lung easier, not harder, to inflate.

189. A 70-year-old patient presents with intermittent myoclonic jerks of recent onset, and the EEG shows bilateral periodic spike-wave complexes. What is the most probable diagnosis?

(A) Herpes simplex encephalitis

(B) Lewy body dementia

(C) Alzheimer's disease

(D) Creutzfeldt-Jakob disease (CJD)

Correct Answer: (D) Creutzfeldt-Jakob disease (CJD)

Solution:

Step 1: Identify the classic triad described. An elderly patient with rapidly progressive cognitive decline plus myoclonus (intermittent jerks) plus periodic complexes on EEG is the textbook presentation of Creutzfeldt-Jakob disease.
Step 2: Interpret the EEG. Bilateral periodic sharp-wave or spike-wave complexes (typically 1 to 2 Hz, often synchronous with the myoclonic jerks) are highly characteristic of sporadic CJD, a prion disease causing spongiform encephalopathy.
Step 3: Exclude the other options. Herpes simplex encephalitis affects the temporal lobes with fever, seizures and periodic lateralised epileptiform discharges (PLEDs), usually in a different clinical context. Lewy body dementia features fluctuating cognition, visual hallucinations and parkinsonism, not periodic EEG spikes. Alzheimer's disease is a slowly progressive amnestic dementia without early myoclonus or periodic complexes.
Step 4: Conclusion. The combination of recent-onset myoclonus and periodic bilateral EEG spikes in an elderly patient points to CJD.
The medically correct and printed answer is option 4 (CJD).

Quick Tip: Rapidly progressive dementia with myoclonus and periodic EEG complexes in an elderly patient.

190. Which of the following is NOT a disorder of protein misfolding?

(A) Alzheimer's disease

(B) Tuberculosis

(C) Cystic fibrosis

(D) Creutzfeldt-Jakob disease (CJD)

Correct Answer: (B) Tuberculosis

Solution:

Step 1: Define protein misfolding disorders (proteinopathies). These are diseases in which a protein adopts an abnormal three-dimensional conformation, leading to loss of function or toxic aggregation.
Step 2: Classify each option. Alzheimer's disease involves misfolded amyloid-beta and hyperphosphorylated tau aggregates, so it is a proteinopathy. CJD is caused by the misfolded prion protein (PrPSc), a classic protein-misfolding disease. Cystic fibrosis is caused by the delta-F508 CFTR mutation in which the CFTR protein misfolds and is degraded before reaching the cell membrane, so it is also a misfolding disorder.
Step 3: Identify the exception. Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. Its pathology is microbial infection and granulomatous inflammation, not protein misfolding.
Step 4: Conclusion. The odd one out is tuberculosis.
The medically correct and printed answer is option 2 (Tuberculosis).

Quick Tip: Three are conformational diseases; one is a bacterial infection.

191. A 12-year-old boy presents with hematemesis, melena and splenomegaly. What is the most probable diagnosis?

(A) Non-cirrhotic portal fibrosis (NCPF)

(B) Cirrhosis

(C) Malaria with DIC

(D) Extrahepatic portal venous obstruction (EHPVO)

Correct Answer: (D) Extrahepatic portal venous obstruction (EHPVO)

Solution:

Step 1: Recognise the clinical pattern. A child with upper GI bleeding (hematemesis and melena) plus splenomegaly indicates portal hypertension with bleeding varices.
Step 2: Match the age group. Extrahepatic portal venous obstruction (EHPVO), usually due to portal vein thrombosis or cavernoma, is the most common cause of portal hypertension and variceal bleeding in children, who otherwise have well-preserved liver function.
Step 3: Compare alternatives. NCPF typically presents in young adults rather than a 12-year-old. Cirrhosis is uncommon at this age and would usually show signs of hepatocellular failure. Malaria with DIC causes a bleeding diathesis with fever, not isolated variceal hematemesis with splenomegaly.
Step 4: Conclusion. In a child presenting with variceal bleeding and splenomegaly with preserved liver function, EHPVO is the most probable diagnosis.
The medically correct and printed answer is option 4 (Extrahepatic portal venous obstruction).

Quick Tip: Most common cause of variceal bleeding in a child with preserved liver function.

192. About diabetes insipidus, all of the following are true EXCEPT:

(A) The water deprivation test is diagnostic

(B) Before doing the test, hypoadrenalism (cortisol deficiency) should first be corrected

(C) Hypothyroidism does not affect the diagnostic test

(D) Pre-test serum osmolality of 288 mOsm/kg is in the normal range

Correct Answer: (C) Hypothyroidism does not affect the diagnostic test

Solution:

Step 1: Note this is a negative (true-except) question, so the correct choice is the false statement.
Step 2: Evaluate the true statements. The water deprivation test (with desmopressin response) is the standard diagnostic test for diabetes insipidus, so option A is true. Coexisting adrenal insufficiency must be corrected before the test, because cortisol is required for normal free-water excretion and uncorrected hypoadrenalism can mask DI, so option B is true. A serum osmolality of 288 mOsm/kg lies within the normal reference range (about 275 to 295 mOsm/kg), so option D is true.
Step 3: Identify the false statement. Thyroid hormone is also permissive for renal free-water clearance, and hypothyroidism can impair free-water excretion and thereby alter the water deprivation test result. Therefore the claim that hypothyroidism does not affect the diagnostic test is false.
Step 4: Conclusion. The exception (false statement) is option C.
The medically correct and printed answer is option 3.

Quick Tip: Like cortisol, thyroid hormone is permissive for free-water excretion.

193. Which of the following is a poor prognostic factor in acute lymphoblastic leukemia (ALL)?

(A) Hyperdiploidy

(B) t(9;22) and t(4;11)

(C) Age 2 to 8 years

(D) Total leukocyte count < 50000

Correct Answer: (B) t(9;22) and t(4;11)

Solution:

Step 1: Recall the prognostic stratification of ALL. Cytogenetics, age and presenting leukocyte count all influence outcome.
Step 2: Review the good prognostic features in the options. Hyperdiploidy (more than 50 chromosomes) is a favourable finding. Age between 2 and 8 (roughly 1 to 10) years is favourable. A presenting total leukocyte count below 50000 is also favourable.
Step 3: Identify the adverse feature. The Philadelphia chromosome t(9;22) (BCR-ABL) and the MLL rearrangement t(4;11) are both classic poor prognostic cytogenetic abnormalities in ALL, associated with high relapse rates.
Step 4: Conclusion. The poor prognostic factor is the t(9;22) and t(4;11) translocations.
The medically correct and printed answer is option 2.

Quick Tip: The Philadelphia chromosome and MLL rearrangement signal a bad outcome.

194. The acid-base status of a patient is as follows: pH 7.45, pCO2 30 mm Hg, pO2 105 mm Hg. The patient has partially compensated:

(A) Metabolic acidosis

(B) Metabolic alkalosis

(C) Respiratory acidosis

(D) Respiratory alkalosis

Correct Answer: (D) Respiratory alkalosis

Solution:

Step 1: Read the pH. A pH of 7.45 is at the upper end of normal, indicating an alkalemic tendency, so the primary process is an alkalosis.
Step 2: Examine the respiratory component. The pCO2 is low at 30 mm Hg (normal about 35 to 45). A low pCO2 raises the pH, so the low pCO2 is itself the cause of the alkalosis. This makes the primary disorder a respiratory alkalosis (hyperventilation blowing off CO2).
Step 3: Assess compensation. The pH is only at the high-normal edge rather than markedly elevated, indicating metabolic compensation (renal bicarbonate loss) is partly returning the pH toward normal, hence partially compensated.
Step 4: Conclusion. Low pCO2 driving an alkalemic pH that is being pulled back toward normal is partially compensated respiratory alkalosis.
The medically correct and printed answer is option 4.

Quick Tip: High-normal pH with a low pCO2 driving the change.

195. Clue cells are seen in:

(A) Bacterial vaginosis

(B) Vaginal candidiasis

(C) Chlamydial vaginosis

(D) Trichomoniasis

Correct Answer: (A) Bacterial vaginosis

Solution:

Step 1: Define clue cells. Clue cells are vaginal epithelial squamous cells whose borders are obscured (stippled and granular) by adherent coccobacilli, mainly Gardnerella vaginalis.
Step 2: Link them to the disease. Clue cells are a key Amsel criterion for bacterial vaginosis, along with a thin homogeneous discharge, vaginal pH above 4.5 and a positive whiff (amine) test.

Step 3: Exclude the alternatives. Vaginal candidiasis shows budding yeast and pseudohyphae with a thick curdy discharge. Chlamydial infection is diagnosed by NAAT, not clue cells. Trichomoniasis shows motile flagellated trophozoites on wet mount with a frothy discharge.
Step 4: Conclusion. Clue cells are characteristic of bacterial vaginosis.
The medically correct and printed answer is option 1.

Quick Tip: Epithelial cells studded with Gardnerella coccobacilli.

196. Hemoglobin H (HbH) disease is seen in which of the following?

(A) Deletion of 3 alpha genes

(B) Deletion of all 4 alpha genes

(C) Deletion of 3 beta genes

(D) Deletion of all 4 beta genes

Correct Answer: (A) Deletion of 3 alpha genes

Solution:

Step 1: Recall the alpha globin genetics. There are 4 alpha globin genes (two on each chromosome 16). The severity of alpha thalassemia depends on how many of these 4 genes are deleted.
Step 2: Map deletions to phenotype. One gene deleted gives a silent carrier; two genes deleted gives alpha thalassemia trait; three genes deleted gives HbH disease; all four genes deleted gives Hb Bart hydrops fetalis (incompatible with life).
Step 3: Understand why HbH forms. When 3 of 4 alpha genes are deleted, alpha chain production is markedly reduced. The excess beta chains that cannot pair with alpha chains form tetramers of beta chains (beta4), which is called Hemoglobin H.
Step 4: Apply to the question. HbH disease therefore corresponds to deletion of 3

alpha genes.
Conclusion: The correct answer is option A, deletion of 3 alpha genes.

Quick Tip: HbH is beta4 tetramer from severe alpha chain shortage, one step short of hydrops fetalis.

197. A 50 year old woman has a history of a sprained ankle 2 months back followed by apparent recovery. She now complains of severe pain in that ankle with inability to flex the foot. On local examination the physician notes edema and shiny skin. What is the probable diagnosis?

(A) Fibromyalgia

(B) Complex regional pain syndrome type 1

(C) Complex regional pain syndrome type 2

(D) Peripheral neuropathy

Correct Answer: (B) Complex regional pain syndrome type 1

Solution:

Step 1: Identify the clinical pattern. There is regional pain disproportionate to the original injury (a sprain), persisting and worsening after the injury should have healed, with autonomic and trophic changes (edema, shiny skin) localized to the affected limb.
Step 2: Recognize the syndrome. This constellation of disproportionate regional pain plus vasomotor, sudomotor and trophic skin changes after a noxious event defines complex regional pain syndrome (CRPS).
Step 3: Distinguish CRPS type 1 from type 2. CRPS type 1 (formerly reflex sympathetic dystrophy) follows trauma WITHOUT a definable nerve injury. CRPS type 2 (formerly causalgia) follows a documented peripheral nerve injury.
Step 4: Apply to this case. A simple ankle sprain is a soft tissue injury with no identifiable major nerve lesion, so this is CRPS type 1.
Step 5: Exclude other options. Fibromyalgia is widespread, not regional or trophic. Peripheral neuropathy gives a stocking-glove sensory pattern, not

localized shiny edematous skin after a sprain.
Conclusion: The correct answer is option B, complex regional pain syndrome type 1.

Quick Tip: Disproportionate regional pain plus shiny skin after a sprain with no named nerve injury equals CRPS type 1.

198. Which among the following is an early sign of magnesium toxicity?

(A) Depression of deep tendon reflexes

(B) Respiratory depression

(C) Cardiac arrest

(D) Decreased urine output

Correct Answer: (A) Depression of deep tendon reflexes

Solution:

Step 1: Recall the toxic effects of hypermagnesemia in order of rising serum levels. Magnesium acts as a physiological calcium antagonist and progressively blocks neuromuscular transmission as its level rises.
Step 2: Sequence the clinical signs. At mildly elevated levels the first detectable sign is loss or depression of the deep tendon reflexes. As levels climb further, somnolence, respiratory depression and finally cardiac conduction block and cardiac arrest occur.
Step 3: Apply the clinical rule. Because loss of deep tendon reflexes appears before respiratory or cardiac compromise, it is used as the earliest bedside warning sign, for example during magnesium sulphate therapy in eclampsia. Disappearance of the patellar reflex signals that infusion should be stopped.
Step 4: Compare options. Respiratory depression and cardiac arrest are late, dangerous effects; decreased urine output is a cause of magnesium retention rather than an early toxic sign.
Conclusion: The correct answer is option A, depression of deep tendon reflexes.

Quick Tip: Loss of the knee jerk is the bedside trigger to stop magnesium before breathing or the heart is hit.

199. Which of the following is true about gastric carcinoma?

(A) Occult bleeding in stool is not seen

(B) It is associated with achlorhydria or hypochlorhydria

(C) It is always squamous cell carcinoma

(D) It is radiosensitive

Correct Answer: (B) It is associated with achlorhydria or hypochlorhydria

Solution:

Step 1: Recall the histology of gastric cancer. The overwhelming majority of gastric carcinomas are adenocarcinomas arising from glandular mucosa, not squamous cell carcinomas. This eliminates option C.

Step 2: Consider gastric acid status. Chronic atrophic gastritis, pernicious anemia and Helicobacter pylori associated atrophy reduce acid output, producing achlorhydria or hypochlorhydria, and these are well recognized risk factors and associations of gastric adenocarcinoma. This supports option B.

Step 3: Consider bleeding. Gastric carcinoma frequently ulcerates and causes chronic blood loss, so occult blood in the stool is commonly positive. This makes option A false.

Step 4: Consider radiotherapy. Gastric adenocarcinoma is relatively radioresistant, and surgery is the mainstay of curative treatment, so option D is false.

Conclusion: The only true statement is option B, association with achlorhydria or hypochlorhydria.

Quick Tip: Gastric cancer is an adenocarcinoma, often radioresistant, bleeds occultly, and arises on a low-acid stomach.

200. Which of the following is true in ketoacidosis?

(A) Decreased HCO3

(B) Increased levels of lactate

(C) Glucose level < 250 mg/dl

(D) Normal anion gap

Correct Answer: (A) Decreased HCO3

Solution:

Step 1: Define the disorder. Ketoacidosis, typically diabetic ketoacidosis, is a high anion gap metabolic acidosis caused by accumulation of ketoacids (acetoacetate and beta-hydroxybutyrate).
Step 2: Apply the buffering principle. The excess hydrogen ions from the ketoacids are buffered by bicarbonate, which is consumed in the process. Therefore serum bicarbonate (HCO3) falls. This makes option A true.
Step 3: Examine the anion gap. Because unmeasured ketoanions accumulate, the anion gap is increased, not normal. This makes option D false.
Step 4: Examine lactate. Raised lactate is the hallmark of lactic acidosis, a different cause of high anion gap acidosis; it is not the defining feature of ketoacidosis. This makes option B false.
Step 5: Examine glucose. In classic diabetic ketoacidosis the glucose is typically well above 250 mg/dl, so a value below 250 mg/dl is not the rule. This makes option C false.
Conclusion: The correct answer is option A, decreased HCO3.

Quick Tip: Ketoacids consume bicarbonate and widen the anion gap; lactate belongs to lactic acidosis.

201. In a 7 year old child following surgery for craniopharyngioma, which hormone should be given first?

(A) Growth hormone

(B) Steroids

(C) Prolactin

(D) Thyroxine

Correct Answer: (B) Steroids

Solution:

Step 1: Understand the clinical setting. Surgery for a craniopharyngioma frequently damages the hypothalamic pituitary axis, producing panhypopituitarism. Several hormones may need replacement, so the question is about the correct ORDER of replacement.

Step 2: Identify the life threatening deficiency. The most urgent and potentially fatal deficiency after pituitary or hypothalamic injury is adrenal insufficiency from lack of ACTH, which leads to cortisol deficiency. This can cause hypotension and adrenal crisis.

Step 3: Apply the replacement sequence. Glucocorticoid (steroid) replacement must be started FIRST. Only after steroids are on board should thyroxine be added.

Step 4: Understand why steroids precede thyroxine. Giving thyroxine first in an unrecognized cortisol deficient patient increases metabolic demand and cortisol clearance and can precipitate an acute adrenal crisis. Steroids first prevent this.

Step 5: Place the other hormones. Growth hormone and sex steroids are replaced later, and prolactin is not therapeutically replaced.

Conclusion: The correct answer is option B, steroids.

Quick Tip: Replace cortisol before thyroxine to avoid precipitating adrenal crisis.

202. A patient presents with a high TSH and a low T4. What is the probable diagnosis?

(A) Grave's disease

(B) Hashimoto's disease

(C) Pituitary failure

(D) Hypothalamic failure

Correct Answer: (B) Hashimoto's disease

Solution:

Step 1: Interpret the thyroid function pattern. A high TSH with a low T4 indicates primary hypothyroidism. The thyroid gland is failing to produce thyroid hormone, and the pituitary responds by secreting more TSH to try to drive it, raising TSH.
Step 2: Localize the lesion. Because TSH is appropriately elevated, the pituitary is working normally; the defect is in the thyroid gland itself. This rules out pituitary and hypothalamic failure, where a low T4 would be accompanied by a low or inappropriately normal TSH.
Step 3: Identify the commonest cause. The most common cause of primary hypothyroidism in iodine sufficient areas is Hashimoto's (autoimmune chronic lymphocytic) thyroiditis.
Step 4: Exclude Graves disease. Graves disease causes hyperthyroidism with a low TSH and high T4, the opposite pattern.
Conclusion: The correct answer is option B, Hashimoto's disease.

Quick Tip: High TSH with low T4 equals primary hypothyroidism, most often Hashimoto thyroiditis.

203. Blood examination of a patient revealed low serum calcium, elevated phosphorus and elevated PTH. Which of the following investigations is least contributory to the diagnosis?

(A) Urine myoglobin

(B) cAMP response to PTH

(C) Vitamin D levels

(D) Serum creatinine levels

Correct Answer: (A) Urine myoglobin

Solution:

Step 1: Interpret the biochemistry.
Low serum calcium with HIGH phosphate and HIGH PTH points to PTH resistance, i.e. pseudohypoparathyroidism. The kidney and bone fail to respond to PTH despite raised hormone levels.

Step 2: Evaluate which tests confirm or refine this diagnosis.
cAMP response to PTH (the Ellsworth-Howard test) is the classic confirmatory test, since the renal tubular cAMP and phosphaturic response is blunted in pseudohypoparathyroidism. Vitamin D levels are helpful because vitamin D deficiency also raises PTH but typically gives LOW (not high) phosphate, so it helps differentiate. Serum creatinine helps exclude chronic kidney disease, another cause of low Ca with high phosphate and high PTH (secondary hyperparathyroidism).

Step 3: Identify the least contributory test.
Urine myoglobin reflects skeletal muscle breakdown (rhabdomyolysis) and has no role in evaluating calcium-phosphate-PTH disorders. It contributes nothing to this diagnosis.

Step 4: Recall-key correction.
The printed answer key marks Vitamin D levels, but vitamin D testing IS contributory because it distinguishes vitamin D deficiency from PTH resistance. The genuinely non-contributory test is urine myoglobin, so the medically correct answer is option A.

Conclusion: Urine myoglobin is the least contributory investigation.

Quick Tip: Which listed test has nothing to do with the calcium-phosphate-PTH axis?

204. A 40-year-old patient has a single kidney with an exophytic mass of 4 cm size at its lower pole. Which among the following is the best course of action?

(A) Partial nephrectomy

(B) Radical nephrectomy with dialysis

(C) Radical nephrectomy with immediate renal transplant

(D) Observation

Correct Answer: (A) Partial nephrectomy

Solution:

Step 1: Define the clinical problem.
A small (4 cm) exophytic renal mass at the lower pole in a patient with a SINGLE functioning kidney. A 4 cm mass is a clinical T1a renal cell carcinoma until proven otherwise.

Step 2: Apply nephron-sparing principle.
Because there is only one kidney, removing the whole kidney (radical nephrectomy) would render the patient anephric and dialysis-dependent. Nephron-sparing surgery is the imperative whenever preserving renal function is critical, such as a solitary kidney, bilateral tumours or pre-existing renal impairment.

Step 3: Confirm feasibility.
A 4 cm exophytic, lower-pole tumour is highly amenable to partial nephrectomy, which gives oncologic outcomes equivalent to radical surgery for T1a tumours while preserving function.

Step 4: Rule out other options.
Radical nephrectomy with dialysis or with transplant is excessive and unnecessary when the tumour can be excised with nephron preservation.

Observation is inappropriate for a likely malignant solid mass in a young patient.

Conclusion: Partial nephrectomy is the best option, consistent with the printed key.

Quick Tip: Only one kidney plus a small T1a tumour means preserve function.

205. In a 5-year-old child, the burn area corresponding to the size of the palm is equal to:

(A) 1%

(B) 5%

(C) 10%

(D) 20%

Correct Answer: (A) 1%

Solution:

Step 1: Recall the palmar rule.
The patient's own palm (palm plus fingers) represents approximately 1% of the total body surface area. This rule is used to estimate the extent of small or scattered burns.

Step 2: Apply to a child.
The palmar method is proportional to the individual's own body size, so it holds true regardless of age, including a 5-year-old child. The child's palm equals roughly 1% of the child's own body surface area.

Step 3: Why not the Rule of Nines.
The Rule of Nines assigns 9% to body regions and must be modified for children (larger head, smaller legs), but the palmar 1% rule is unaffected by age.

Conclusion: The palm equals 1% body surface area, matching the printed key.

Quick Tip: The patient's own palm with fingers approximates a fixed fraction of BSA.

206. Most common site of obstruction after TURP (transurethral resection of the prostate) is:

(A) Navicular fossa

(B) Bulb of urethra

(C) Prostatic membranous urethra

(D) Bladder neck

Correct Answer: (D) Bladder neck

Solution:

Step 1: Understand the late complication.
After transurethral resection of the prostate, a recognised late complication causing recurrent obstruction is fibrotic scarring leading to stricture or contracture.

Step 2: Identify the commonest site.
Bladder neck contracture (bladder neck stenosis) is the most common cause of obstruction following TURP, arising from scarring at the bladder neck after resection.

Step 3: Distinguish from urethral strictures.
Urethral strictures after TURP also occur, classically at the meatus, navicular fossa, bulbar urethra or membranous urethra due to instrument trauma, but the single most common obstructing lesion specifically attributed to TURP is bladder neck contracture.

Conclusion: Bladder neck is the most common site, matching the printed key.

Quick Tip: Think of cicatricial contracture at the freshly resected outlet.

207. A young male was brought to the emergency department following a stab injury. He presents with omentum protruding through the wound in the umbilical area. His vitals are stable, heart rate 80 bpm and blood pressure 110/80. The next step in the management of the patient is:

(A) FAST (focused assessment with sonography in trauma)

(B) Laparotomy

(C) Wound exploration and repositioning of the omentum

(D) CECT abdomen

Correct Answer: (B) Laparotomy

Solution:

Step 1: Recognise the hard sign.
Omentum protruding through an abdominal stab wound is evisceration, a hard sign of peritoneal penetration. Hard signs (evisceration, peritonitis, haemodynamic instability, blood from a viscus) mandate operative exploration regardless of stable vitals.

Step 2: Decide the management.
Visible evisceration is an absolute indication for exploratory laparotomy to assess for and repair underlying bowel, mesenteric or vascular injury. Stable haemodynamics do not exclude an internal injury.

Step 3: Why the other options are inferior.
FAST and CECT are useful for selective non-operative work-up of stable penetrating trauma WITHOUT hard signs; they would only delay definitive care here. Simply reducing the omentum back into the abdomen at the bedside risks

pushing contaminated tissue inside and missing an occult perforation.

Step 4: Recall-key correction.
The printed key chooses wound exploration and repositioning of omentum, but established trauma teaching is that evisceration is a hard sign requiring laparotomy, not bedside reduction. The medically correct answer is therefore laparotomy (option B).

Conclusion: Proceed to exploratory laparotomy.

Quick Tip: Evisceration is a hard sign of penetration, regardless of stable vitals.

208. Renal calculi associated with Proteus infection is:

(A) Uric acid

(B) Triple phosphate

(C) Calcium oxalate

(D) Xanthine

Correct Answer: (B) Triple phosphate

Solution:

Step 1: Link the organism to urine chemistry.
Proteus species are urease-producing bacteria. Urease splits urea into ammonia, which raises (alkalinises) the urine pH.

Step 2: Determine which stone forms in alkaline urine.
In alkaline, ammonia-rich urine, magnesium ammonium phosphate (struvite), also called triple phosphate, precipitates. These are the classic infection stones and form large staghorn calculi.

Step 3: Exclude the other stones.
Uric acid and xanthine stones form in acidic urine. Calcium oxalate, the most

common stone overall, is metabolic and not driven by urease-producing infection.

Conclusion: Proteus produces triple phosphate (struvite) stones, matching the printed key.

Quick Tip: Urease-splitting organism alkalinises urine and precipitates struvite.

209. Which of the following is a contraindication for medical treatment in gallstones?

(A) Radio-opaque stones

(B) Radiolucent stones

(C) Normal functioning gall bladder

(D) Small stones

Correct Answer: (A) Radio-opaque stones

Solution:

Step 1: Understand medical dissolution therapy.
Oral bile acid therapy (ursodeoxycholic acid) dissolves gallstones only when the stones are composed predominantly of cholesterol.

Step 2: Define the favourable stone profile.
Cholesterol stones are radiolucent on plain X-ray. Ideal candidates have small (less than 1 cm), radiolucent, cholesterol stones in a normally functioning gallbladder with a patent cystic duct.

Step 3: Identify the contraindication.
Radio-opaque stones are calcified (pigment or mixed) stones. They will NOT dissolve with bile acids, so radio-opacity is a contraindication to medical dissolution therapy.

Step 4: Confirm the other options favour treatment.
Radiolucent stones, a normally functioning gallbladder and small stones are all

FAVOURABLE features that support dissolution therapy, not contraindications.

Conclusion: Radio-opaque stones contraindicate medical treatment, matching the printed key.

Quick Tip: Bile acid therapy only dissolves non-calcified cholesterol stones.

210. Which organ obtained from a cadaver is not used for transplantation?

(A) Blood vessel

(B) Lung

(C) Liver

(D) Bladder

Correct Answer: (D) Bladder

Solution:

Step 1: Cadaveric (deceased) donors are a major source of organs and tissues for transplantation. Commonly retrieved organs include the kidneys, liver, heart, lungs, pancreas and intestine, while tissues include corneas, heart valves, blood vessels, bone, skin and tendons.

Step 2: Blood vessels are routinely harvested and used as vascular grafts (for example in coronary or peripheral bypass), lungs are transplanted in end-stage respiratory failure, and the liver is one of the most commonly transplanted solid organs. So options A, B and C are all valid transplant organs/tissues.

Step 3: The urinary bladder is NOT transplanted as an organ. When the bladder is diseased or removed (for example after radical cystectomy), it is reconstructed or replaced using the patient's own bowel (ileal conduit, neobladder or continent diversion), not by grafting a donor bladder. Bladder allotransplantation is not a standard procedure because of its complex innervation and the availability of good reconstructive alternatives.

Step 4: Therefore the organ from a cadaver that is not used for transplantation is

the bladder.

Answer: D (Bladder).

Quick Tip: When this organ fails, surgeons rebuild it from the patient's own bowel rather than graft a donor one.

211. A young sewage worker is brought to hospital with a history of exhaustion, abdominal pain, vomiting, fever and shock. His heart rate is 120/min, respiratory rate is 30/min and blood pressure is 100/70 mmHg. His clinical features are suggestive of peritonitis. What is the next step of management?

(A) Immediately take the patient for laparotomy under general anaesthesia

(B) Take the patient for diagnostic laparoscopy and then exploratory laparotomy

(C) Insert an abdominal drain under local anaesthesia and then proceed to exploratory laparotomy

(D) Resuscitate the patient with IV fluids and oxygen, then shift the patient for exploratory laparotomy

Correct Answer: (D) Resuscitate the patient with IV fluids and oxygen, then shift the patient for exploratory laparotomy

Solution:

Step 1: Identify the clinical picture. The patient has peritonitis with features of shock (tachycardia 120/min, tachypnoea 30/min, borderline-low/narrow-pulse-pressure blood pressure, fever, vomiting). This is a surgical emergency, but the patient is haemodynamically unstable.

Step 2: Apply the principle of resuscitation before definitive surgery. In a shocked patient, taking him straight to theatre under general anaesthesia is dangerous, because induction of anaesthesia in a hypovolaemic, septic patient can precipitate cardiovascular collapse.

Step 3: The correct sequence is to first stabilise the patient: secure the airway, give high-flow oxygen, establish IV access and give IV fluid resuscitation, start broad-spectrum antibiotics, insert a nasogastric tube and urinary catheter, and

correct electrolytes. Only after adequate resuscitation should he be shifted for definitive surgery.

Step 4: The definitive treatment of generalised peritonitis is exploratory laparotomy to identify and control the source. So once resuscitated, he goes for exploratory laparotomy.

Step 5: Options A, B and C either rush an unstable patient to surgery or perform inadequate procedures (an abdominal drain alone does not treat the source). The correct first step is resuscitate, then operate.

Answer: D (Resuscitate with IV fluids and oxygen, then shift for exploratory laparotomy).

Quick Tip: Never anaesthetise a shocked septic patient before optimising them; stabilise first, then operate.

212. A patient with head injury, on examination, revealed eye opening in response to pain, inappropriate words and pain localisation. Calculate the GCS.

(A) 10

(B) 8

(C) 12

(D) 14

Correct Answer: (A) 10

Solution:

Step 1: Recall the three components of the Glasgow Coma Scale: Eye opening (E, scored 1 to 4), Verbal response (V, scored 1 to 5) and Motor response (M, scored 1 to 6). The total ranges from 3 to 15.

Step 2: Score eye opening. Eye opening in response to pain corresponds to E = 2 (spontaneous = 4, to speech = 3, to pain = 2, none = 1).

Step 3: Score verbal response. Inappropriate words correspond to V = 3 (oriented = 5, confused = 4, inappropriate words = 3, incomprehensible sounds = 2, none = 1).

Step 4: Score motor response. Localising to pain corresponds to M = 5 (obeys commands = 6, localises pain = 5, withdrawal = 4, abnormal flexion = 3, extension = 2, none = 1).
Step 5: Add the components: $E + V + M = 2 + 3 + 5 = 10$.
Answer: A (GCS = 10).

Quick Tip: Eye to pain = 2, inappropriate words = 3, localises pain = 5; add them up.

213. A 5 year old child presents with ballooning of the prepuce during micturition. Preputial adhesions are present. What is the best treatment for him?

(A) Adhesiolysis and dilatation

(B) Circumcision

(C) Dorsal slit

(D) Conservative management

Correct Answer: (B) Circumcision

Solution:

Step 1: Interpret the clinical picture. Ballooning of the prepuce during micturition in a 5 year old indicates that urine is collecting under a tight, non-retractile foreskin before escaping, i.e. true (pathological) phimosis. Preputial adhesions are also present.
Step 2: Distinguish physiological from pathological phimosis. Physiological non-retractility is normal in infants and usually resolves by about 3 to 5 years, and asymptomatic non-retractility can be managed conservatively. However, when there is symptomatic phimosis with ballooning on voiding, intervention is indicated.
Step 3: Choose the definitive treatment. Circumcision is the definitive surgical treatment for symptomatic pathological phimosis with ballooning. It removes the obstructing preputial ring and relieves the symptoms.
Step 4: Why not the others. Adhesiolysis and dilatation is incomplete and adhesions tend to recur; a dorsal slit relieves the constriction but is reserved for

emergencies such as paraphimosis or when circumcision is contraindicated and leaves a cosmetically poor result; conservative management is appropriate only for asymptomatic physiological non-retractility, not for symptomatic ballooning phimosis.

Answer: B (Circumcision).

Quick Tip: Ballooning on voiding means pathological phimosis; the definitive cure is removal of the foreskin.

214. During TURP, the surgeon takes care to dissect above the verumontanum so as to prevent injury to which structure?

(A) External urethral sphincter

(B) Urethral crest

(C) Prostatic utricle

(D) Trigone of bladder

Correct Answer: (A) External urethral sphincter

Solution:

Step 1: Recall the anatomy of the verumontanum (colliculus seminalis). It is a prominence on the posterior wall of the prostatic urethra and is a critical surgical landmark during transurethral resection of the prostate (TURP).

Step 2: Understand the relationship of the external urethral sphincter (rhabdosphincter). The external (distal) urethral sphincter lies just distal to the verumontanum, in the membranous urethra. It is responsible for maintaining urinary continence.

Step 3: Apply this to the resection. During TURP the surgeon must stop resecting at the verumontanum and keep the resection proximal (above) to it; resecting distal to the verumontanum risks damaging the external sphincter and causing urinary incontinence.

Step 4: Therefore, dissecting above (proximal to) the verumontanum protects the external urethral sphincter. The urethral crest, prostatic utricle and bladder

trigone are not the structures protected by this manoeuvre.
Answer: A (External urethral sphincter).

Quick Tip: The continence-preserving sphincter sits just distal to the verumontanum, so resection stays proximal to it.

215. What is the best treatment option for genuine stress incontinence?

(A) Burch colposuspension

(B) Kelly's procedure

(C) Sling operation

(D) Tension-free vaginal tape

Correct Answer: (D) Tension-free vaginal tape

Solution:

Step 1: Define the condition. Genuine stress incontinence (urodynamic stress incontinence) is the involuntary leakage of urine on effort, exertion, sneezing or coughing, due to urethral hypermobility or sphincter weakness in the absence of detrusor overactivity.
Step 2: Recall the management ladder. Conservative measures (pelvic floor exercises, lifestyle changes) are first line; when surgery is indicated, several procedures exist.
Step 3: Compare the surgical options. Kelly's anterior colporrhaphy/plication has the lowest long-term cure rate and is largely outdated for stress incontinence. Burch colposuspension and pubovaginal sling are effective open procedures. The tension-free vaginal tape (TVT), a midurethral synthetic sling, is the minimally invasive procedure of choice with high cure rates, low morbidity and quick recovery, and has become the gold-standard surgical treatment.
Step 4: Therefore, among the options listed, tension-free vaginal tape is the best treatment for genuine stress incontinence.
Answer: D (Tension-free vaginal tape).

Quick Tip: The minimally invasive midurethral synthetic sling is the modern gold standard.

216. A patient presents with fever and abdominal pain. Clinical examination reveals hepatomegaly extending 4 finger-breadths below the costal margin. USG and CT reveal a 4 cm x 5 cm x 4 cm hypoechoic and hypodense lesion 1 cm deep to the liver surface. Tests for hydatid disease are negative. The best course of action is?

(A) Resection of the affected lobe

(B) Multiple percutaneous aspirations and metronidazole injection in the right lobe

(C) Metronidazole therapy only

(D) Surgical drainage of the abscess and metronidazole therapy

Correct Answer: (C) Metronidazole therapy only

Solution:

Step 1: Identify the diagnosis. Fever, abdominal pain, tender hepatomegaly and a solitary hypoechoic/hypodense liver lesion, with hydatid serology negative, points to an amoebic liver abscess. This is the commonest cause of a solitary liver abscess in endemic areas.

Step 2: Recall the principle of treatment. Uncomplicated amoebic liver abscess responds dramatically to medical therapy alone; metronidazole is the drug of choice (followed by a luminal amoebicide such as diloxanide furoate to clear intestinal carriage). Most abscesses resolve on drug therapy without any drainage.

Step 3: Decide whether drainage is needed. Drainage (preferably percutaneous aspiration, not open surgery) is reserved for specific indications: no clinical response after 48 to 72 hours of metronidazole, a large abscess (commonly quoted $>$ 5 to 6 cm or in the left lobe with risk of pericardial rupture), threatened or impending rupture, or diagnostic uncertainty. This 4 x 5 x 4 cm lesion is uncomplicated and not threatening rupture, so it does not yet meet drainage criteria.

Step 4: Eliminate the wrong options. Lobar resection is far too aggressive for an

abscess. Open surgical drainage is rarely needed and is reserved for rupture or failed aspiration. Repeated percutaneous aspiration is a second-line measure if medical therapy fails. The appropriate initial step here is metronidazole therapy alone.

Answer: C (Metronidazole therapy only).

Quick Tip: Hydatid-negative solitary liver abscess is amoebic; uncomplicated ones melt away on drugs alone.

217. A lady who presented with hematuria was, on evaluation, found to have stage 2 (muscle-invasive) transitional cell carcinoma of the bladder. Which of the following is true?

(A) 70% chance of requiring cystectomy in 5 years

(B) Cystoscopic fulguration is required in case of recurrence

(C) A 10 year history of beedi smoking is not a risk factor

(D) There is no role of chemotherapy

Correct Answer: (A) 70% chance of requiring cystectomy in 5 years

Solution:

Step 1: Stage the tumour. Stage 2 transitional (urothelial) cell carcinoma of the bladder is muscle-invasive disease, where the tumour has invaded into the detrusor (muscularis propria) but is confined to the bladder.

Step 2: Decide the standard treatment. Muscle-invasive bladder cancer is managed by radical cystectomy (with urinary diversion), with or without neoadjuvant chemotherapy. The likelihood of needing cystectomy in such patients is high, on the order of 70% within 5 years, which makes option A correct.

Step 3: Eliminate the other options. Cystoscopic fulguration is a treatment for superficial (non-muscle-invasive) tumours, not for muscle-invasive recurrence, so option B is false. Smoking, including beedi smoking, is the single most important modifiable risk factor for urothelial carcinoma, so option C is false. Platinum-

based chemotherapy (neoadjuvant and for metastatic disease) has a well-established role, so option D is false.
Step 4: Conclusion. The only true statement is the high probability of requiring cystectomy within 5 years.

Quick Tip: Stage 2 means muscle-invasive disease, which is treated by radical cystectomy.

218. Medical treatment for variceal bleeding is by which of the following?

(A) Octreotide

(B) Pantoprazole

(C) Desmopressin

(D) Somatotropin

Correct Answer: (A) Octreotide

Solution:

Step 1: Understand the pathophysiology. Variceal bleeding (esophageal/gastric varices) is driven by portal hypertension, so medical control depends on lowering portal and splanchnic blood flow.
Step 2: Identify the right drug class. Splanchnic vasoconstrictors reduce portal inflow and pressure. Octreotide, a somatostatin analogue, causes splanchnic vasoconstriction and is the standard pharmacological agent used to control acute variceal hemorrhage.
Step 3: Eliminate the other options. Pantoprazole is a proton pump inhibitor used for peptic ulcer and acid-related bleeding, not portal hypertension. Desmopressin is used in von Willebrand disease and mild hemophilia, not varices. Somatotropin (growth hormone) has no role in variceal bleed.
Step 4: Conclusion. Octreotide is the correct medical treatment for variceal bleeding.

Quick Tip: Think of a splanchnic vasoconstrictor that lowers portal pressure.

219. A 55 year old man presents with a history of 5 episodes of hematuria, each lasting about 4 to 5 days and associated with clots, over the past 5 years. What is the best investigation to arrive at a diagnosis?

(A) Urine examination and microscopy

(B) X-ray KUB

(C) Abdominal USG

(D) DTPA scan

Correct Answer: (A) Urine examination and microscopy

Solution:

Step 1: Interpret the clinical picture. Recurrent, painless gross hematuria with clots in an older male is highly suggestive of a urothelial (bladder) malignancy until proven otherwise.
Step 2: Choose the most useful investigation among the options. Urine examination with microscopy (including urine cytology) directly looks for red cells and malignant urothelial cells, providing diagnostic information about the bleeding and possible tumour. Among the choices given, it is the best initial investigation to work towards a diagnosis.
Step 3: Eliminate the other options. X-ray KUB mainly shows radio-opaque stones and gives little information on a bleeding tumour. Abdominal USG can show masses but is operator-dependent and less sensitive for small bladder lesions. A DTPA scan assesses differential renal function and drainage, not the cause of hematuria.
Step 4: Conclusion. Urine examination and microscopy (with cytology) is the best investigation among those listed; cystoscopy would be the definitive confirmatory test.

Quick Tip: Painless recurrent hematuria with clots in an older male means

malignancy; pick the test that detects cells.

220. A 50 year old patient presents with a 2 year history of recurrent abdominal pain radiating to the back, relieved only by parenteral analgesics. This time the pain is severe and radiating to the back. The appropriate treatment procedure is?

(A) Vagotomy with gastroduodenostomy

(B) Vagotomy with antrectomy

(C) Whipple procedure

(D) Longitudinal pancreaticojejunostomy

Correct Answer: (D) Longitudinal pancreaticojejunostomy

Solution:

Step 1: Identify the diagnosis. Chronic, recurrent epigastric pain radiating to the back over years, severe enough to need parenteral analgesics, is the classic presentation of chronic pancreatitis.
Step 2: Determine the surgical principle. When chronic pancreatitis is associated with a dilated main pancreatic duct, the surgical aim is ductal drainage (decompression) to relieve pain.
Step 3: Choose the correct procedure. A longitudinal (lateral) pancreaticojejunostomy, the Puestow / Partington-Rochelle procedure, opens the dilated duct along its length and anastomoses it to a jejunal loop, draining the duct and relieving pain while preserving pancreatic tissue.
Step 4: Eliminate the other options. Vagotomy with gastroduodenostomy and vagotomy with antrectomy are operations for peptic ulcer disease, not chronic pancreatitis. The Whipple procedure (pancreaticoduodenectomy) is a major resection reserved for head masses or suspected malignancy, not for drainage of a dilated duct in benign chronic pancreatitis.
Step 5: Conclusion. Longitudinal pancreaticojejunostomy is the appropriate procedure.

Quick Tip: Chronic pancreatitis with a dilated duct needs a drainage operation, not a resection.

221. Multiple sebaceous cysts are seen in which of the following?

(A) Gardner's syndrome

(B) Turcot syndrome

(C) Muir-Torre syndrome

(D) Cowden syndrome

Correct Answer: (A) Gardner's syndrome

Solution:

Step 1: Recall the syndrome features. Gardner's syndrome is a variant of familial adenomatous polyposis (FAP) characterized by colonic adenomatous polyps plus extra-intestinal features: multiple epidermoid/sebaceous cysts, osteomas, and desmoid tumours.
Step 2: Match the clue. The presence of multiple sebaceous (epidermoid) cysts is the classic skin finding of Gardner's syndrome, making option A correct.
Step 3: Eliminate the other options. Turcot syndrome combines colonic polyposis with central nervous system tumours (medulloblastoma/glioma). Muir-Torre syndrome features sebaceous adenomas/carcinomas with visceral malignancies, not multiple simple sebaceous cysts. Cowden syndrome is associated with multiple hamartomas, trichilemmomas, and breast/thyroid cancers.
Step 4: Conclusion. Multiple sebaceous cysts are seen in Gardner's syndrome.

Quick Tip: Sebaceous cysts plus osteomas plus desmoids point to an FAP variant.

222. A patient presents with epigastric pain that radiates to the back and is relieved by food. He has a history of similar pain in the past for which he was taking analgesics, and in the past 5 years he was operated twice for duodenal ulcer. The pain before and after surgery was controlled with proton pump inhibitors. What is the probable diagnosis?

(A) Gastric ulcer

(B) Duodenal ulcer

(C) Chronic pancreatitis

(D) Atrophic gastritis

Correct Answer: (B) Duodenal ulcer

Solution:

Step 1: Analyse the pain pattern. Epigastric pain that is relieved by food (and the classic hunger pain / night pain that improves on eating) is characteristic of duodenal ulcer, in contrast to gastric ulcer where pain typically worsens with food.
Step 2: Use the history. The patient has been operated twice for duodenal ulcer and responds to proton pump inhibitors, indicating recurrent acid-peptic disease of the duodenum.
Step 3: Eliminate the other options. Gastric ulcer pain is aggravated by eating. Chronic pancreatitis pain radiates to the back but is not relieved by food and is not controlled simply by PPIs. Atrophic gastritis causes reduced acid and is associated with malignancy risk, not food-relieved ulcer pain.
Step 4: Conclusion. The food-relieved pain, recurrent surgeries, and PPI response point to recurrent duodenal ulcer.

Quick Tip: Pain relieved by eating, with prior duodenal ulcer surgeries, means duodenal ulcer.

223. A patient has pain in the epigastrium that radiates to the back. The serum amylase is normal, and USG of the abdomen reveals a gall stone and a bulky pancreas. A CT scan was done, which clinched the diagnosis. The scenario is suggestive of which of the following?

(A) Acute pancreatitis

(B) Acute cholecystitis

(C) Duodenal ulcer

(D) Acute appendicitis

Correct Answer: (A) Acute pancreatitis

Solution:

Step 1: Read the clinical pattern. Epigastric pain radiating to the back, together with gallstones on ultrasound, strongly suggests gallstone-induced acute pancreatitis.
Step 2: Reconcile the normal amylase. Serum amylase can be normal in acute pancreatitis, especially when the patient presents late or in hyperlipidemic/alcoholic settings, so a normal value does not exclude the diagnosis.
Step 3: Use imaging. Ultrasound shows the precipitating gallstone and a bulky (edematous) pancreas, and contrast-enhanced CT confirms pancreatic inflammation and severity, which is why the CT clinched the diagnosis.
Step 4: Eliminate the other options. Acute cholecystitis causes right upper quadrant pain with a tender gallbladder, not back-radiating epigastric pain with a bulky pancreas. Duodenal ulcer pain is relieved by food and does not give a bulky pancreas. Acute appendicitis presents with right iliac fossa pain.
Step 5: Conclusion. The picture is of acute (gallstone) pancreatitis.

Quick Tip: Gallstone plus bulky pancreas equals pancreatitis, even when amylase is normal.

224. Earliest symptom of gastroesophageal reflux disease (GERD) that becomes pathological in an infant is?

(A) Respiratory distress

(B) Upper GI bleed

(C) Regurgitation and vomiting

(D) Food bolus obstruction

Correct Answer: (C) Regurgitation and vomiting

Solution:

Step 1: Distinguish physiological reflux from pathological GERD in infants. Almost all healthy infants have some physiological gastroesophageal reflux, which presents as effortless spitting up of feeds (regurgitation) without distress and with normal weight gain.
Step 2: Reflux becomes pathological (GERD) when stomach contents, including acid, move repeatedly into the esophagus and up to or out of the mouth, producing troublesome symptoms or complications.
Step 3: The earliest and most frequent symptom that signals the shift from normal spitting up to true GERD is frequent regurgitation and vomiting. A normal-reflux infant only spits up after a meal; once persistent vomiting and regurgitation appear, it is a pathological sign.
Step 4: Other listed features are not the earliest. Respiratory distress (from aspiration or reflux-triggered airway symptoms) is a late manifestation. Upper GI bleed (from reflux esophagitis) and food bolus obstruction (from peptic stricture) are complications of long-standing disease, not early signs.
Conclusion: The earliest symptom that becomes pathological is regurgitation and vomiting. This matches the printed key (option C).

Quick Tip: Normal infants only spit up; once frequent vomiting starts, reflux has turned pathological.

225. The most important prognostic factor in congenital diaphragmatic hernia is?

(A) Pulmonary hypertension

(B) Timing of surgery

(C) Size of the defect

(D) Gestational age at which the child was born

Correct Answer: (A) Pulmonary hypertension

Solution:

Step 1: Understand the pathophysiology of congenital diaphragmatic hernia (CDH). The diaphragmatic defect allows abdominal viscera to herniate into the thorax during fetal life, compressing the developing lungs and causing pulmonary hypoplasia.
Step 2: The hypoplastic lung has a reduced and abnormally muscularized pulmonary vascular bed. After birth this produces persistent pulmonary hypertension, with right-to-left shunting and refractory hypoxemia.
Step 3: Outcome in CDH is determined mainly by the degree of lung hypoplasia and the severity of the resulting pulmonary hypertension, not by the operation itself. CDH is no longer a surgical emergency; surgery is delayed until the infant is physiologically stable.
Step 4: The other options are weaker predictors. Timing of surgery does not drive survival once the infant is stabilized. Size of the defect correlates with hypoplasia but acts through the degree of pulmonary hypertension. Gestational age matters generally but is not the dominant factor here.
Conclusion: Pulmonary hypertension (with the underlying pulmonary hypoplasia) is the most important prognostic factor. This matches the printed key (option A).

Quick Tip: Think of what actually causes death: lung hypoplasia leading to refractory pulmonary hypertension, not the surgery.

226. A child presented with fever, mild breathlessness and non-productive cough. She was treated with a course of antibiotics and improved over 4 days, but later deteriorated again with fever and more breathlessness. Chest X-ray showed hyperlucency. Pulmonary function test was suggestive of obstructive airway disease. The probable diagnosis would be?

(A) Bronchiolitis obliterans

(B) Alveolar proteinosis

(C) Post viral syndrome

(D) Asthma

Correct Answer: (A) Bronchiolitis obliterans

Solution:

Step 1: Identify the clinical pattern. A respiratory infection that initially improves and then relapses with worsening breathlessness, leaving a chronic obstructive picture, suggests post-infectious airway injury rather than a single acute illness.
Step 2: Interpret the chest X-ray finding of hyperlucency. Unilateral or patchy hyperlucency (the Swyer-James / MacLeod pattern) reflects air trapping and reduced perfusion in lung damaged after infection, classically seen in bronchiolitis obliterans.
Step 3: Interpret the pulmonary function test. An obstructive pattern indicates small-airway disease. Bronchiolitis obliterans is a fixed, post-infectious obliteration of the small airways producing exactly this fixed obstructive picture with air trapping.
Step 4: Exclude the alternatives. Alveolar proteinosis gives a restrictive picture with alveolar filling (ground-glass), not hyperlucency. Post viral syndrome is self-limited without fixed obstruction or hyperlucency. Asthma causes reversible (not fixed) obstruction and does not produce persistent hyperlucency on a plain film after a single infection.
Conclusion: The combination of post-infectious relapse, hyperlucency, and fixed obstructive PFT points to bronchiolitis obliterans. This matches the printed key (option A).

Quick Tip: Post-infection relapse plus hyperlucency plus a fixed obstructive PFT equals obliterated small airways.

227. Which among the following is the most common tumour associated with neurofibromatosis in a child?

(A) Juvenile myelomonocytic leukemia

(B) Acute lymphoblastic leukemia

(C) Acute monocytic leukemia

(D) Acute myeloid leukemia

Correct Answer: (A) Juvenile myelomonocytic leukemia

Solution:

Step 1: Recall the genetics of neurofibromatosis type 1 (NF1). NF1 is caused by loss of the NF1 gene, whose product neurofibromin is a negative regulator of the RAS signaling pathway. Loss of neurofibromin leads to unrestrained RAS activity.
Step 2: Link NF1 to hematologic malignancy. Among leukemias, the one most strongly tied to dysregulated RAS signaling in children is juvenile myelomonocytic leukemia (JMML), a clonal myeloproliferative/myelodysplastic disorder of early childhood.
Step 3: Apply the epidemiologic associations of JMML. About 80% of JMML cases carry an identifiable genetic abnormality in the RAS pathway: roughly 15 to 20% occur in children with NF1, about 25% have a RAS-family oncogene mutation, and about 35% have a PTPN11 mutation. NF1 children therefore have a markedly increased risk of JMML.
Step 4: Exclude the other leukemias. While ALL is the most common childhood leukemia overall, the leukemia specifically and characteristically associated with NF1 is JMML, not ALL, acute monocytic leukemia, or AML.
Conclusion: JMML is the leukemia most characteristically associated with neurofibromatosis in children. This matches the printed key (option A).

Quick Tip: NF1 loss drives the RAS pathway, and the RAS-driven childhood leukemia is JMML.

228. A 3.8 kg baby of a diabetic mother developed seizures 16 hours after birth. The most probable cause is?

(A) Hypoglycemia

(B) Hypocalcemia

(C) Birth asphyxia

(D) Intraventricular hemorrhage

Correct Answer: (A) Hypoglycemia

Solution:

Step 1: Recognize the setting. An infant of a diabetic mother (IDM) who is large for gestational age (3.8 kg) has had chronic intrauterine hyperglycemia driving fetal hyperinsulinemia.
Step 2: Apply the timing of metabolic complications. After birth the maternal glucose supply stops abruptly while the baby's high insulin levels persist, causing early neonatal hypoglycemia. This typically appears within the first few hours and up to the first day of life, comfortably including the 16-hour mark.
Step 3: Contrast with hypocalcemia. IDM-related hypocalcemia is also common but characteristically presents later, generally after 24 to 72 hours of life, so it is less likely as the cause of a seizure at 16 hours.
Step 4: Exclude the remaining options. Birth asphyxia causes encephalopathy that usually manifests in the first 12 to 24 hours but requires a history of a difficult/asphyxiated delivery, which is not given. Intraventricular hemorrhage is mainly a problem of preterm infants, not a term LGA IDM.
Conclusion: Given an IDM presenting with seizures at 16 hours, the most probable cause is hypoglycemia. This matches the printed key (option A); note that hypocalcemia would be favored if the seizure occurred after about 72 hours.

Quick Tip: In an IDM, glucose falls within hours while calcium drops later (after about 72 hours).

229. The most common cause of meningoencephalitis in children is?

(A) Herpes simplex virus (HSV)

(B) Enterovirus

(C) Mumps

(D) Listeria

Correct Answer: (B) Enterovirus

Solution:

Step 1: Define the question. Meningoencephalitis means combined inflammation of the meninges and brain parenchyma, and most cases in children are viral (aseptic).
Step 2: Identify the leading viral group. Enteroviruses (coxsackievirus and echovirus) are the single most common cause of viral meningitis and meningoencephalitis in children, especially during summer and autumn, transmitted by the fecal-oral route.
Step 3: Place the other viruses correctly. HSV is the most common cause of sporadic fatal/severe encephalitis and is the most important to treat with acyclovir, but it is not the most common cause overall. Mumps was a frequent cause before vaccination but is now uncommon.
Step 4: Exclude the bacterial option. Listeria is a bacterial cause of meningoencephalitis seen mainly in neonates, the elderly, and the immunocompromised, not the commonest cause in children.
Conclusion: The most common cause of meningoencephalitis in children is enterovirus. This matches the printed key (option B). Remember the contrast: enterovirus = commonest overall, HSV = commonest cause of severe sporadic encephalitis.

Quick Tip: Commonest equals enterovirus; HSV is commonest only for severe sporadic encephalitis.

230. A baby born at 33 weeks with a body weight of 1.5 kg should be started on?

(A) Oral and IV fluids

(B) Oral nasogastric tube feeding / alternate oral route

(C) IV fluids and assessment

(D) Total parenteral nutrition (TPN)

Correct Answer: (B) Oral nasogastric tube feeding / alternate oral route

Solution:

Step 1: Assess the infant. A 33-week, 1.5 kg preterm baby is moderately low birth weight but, if otherwise stable, can tolerate enteral nutrition.
Step 2: Consider the maturity of feeding reflexes. Coordinated suck, swallow, and breathing develops at roughly 32 to 34 weeks. At 33 weeks this coordination is usually immature, so direct breast or bottle feeding is unsafe due to aspiration risk.
Step 3: Choose the feeding route. The appropriate method is to give expressed breast milk by an orogastric or nasogastric tube (gavage feeding), which delivers enteral nutrition while bypassing the immature suck-swallow reflex. This is the alternate oral route described in the option.
Step 4: Exclude the other options. A stable 1.5 kg infant does not need IV fluids alone or as the primary strategy, and reserving care to IV fluids plus assessment withholds needed enteral feeds. TPN is reserved for infants who cannot tolerate enteral feeds (for example, very low birth weight, sick, or with gut problems), which is not indicated for a stable 1.5 kg baby.
Conclusion: The correct start is enteral feeding by nasogastric tube / alternate oral route. This matches the printed key (option B).

Quick Tip: Suck-swallow coordination matures near 34 weeks, so feed the stable 1.5

kg baby by gavage tube.

231. A 6 year old child presents with pain in the hip in the femoral triangle region and limitation of movements. X-ray does not reveal any abnormality. What is the next step?

(A) USG

(B) MRI

(C) Aspiration

(D) Traction

Correct Answer: (B) MRI

Solution:

Step 1: Identify the clinical picture. A 6 year old with hip pain referred to the femoral triangle (groin) and restricted hip movements, with a normal plain X-ray, is the classic early presentation of Perthes disease (Legg-Calve-Perthes disease), an idiopathic avascular necrosis of the femoral head.
Step 2: Understand why the X-ray is normal. In the very early (avascular) stage of Perthes disease, plain radiographs are frequently normal because bony changes such as a small epiphysis, increased density, crescent sign and fragmentation take weeks to appear.
Step 3: Choose the most sensitive next investigation. MRI detects early marrow ischaemia and avascular necrosis before any change is visible on X-ray, making it the investigation of choice when the X-ray is normal but Perthes is suspected.
Step 4: Eliminate the other options. USG only shows a joint effusion and is non-specific, aspiration is reserved for suspected septic arthritis, and traction is a treatment, not a diagnostic step.
Step 5: The correct answer is MRI (option 2).

Quick Tip: Early Perthes disease can have a normal X-ray; pick the most sensitive imaging for avascular necrosis.

232. The ideal age for surgery in unilateral undescended testis is?

(A) 6 months

(B) 12 months

(C) 24 months

(D) 36 months

Correct Answer: (A) 6 months

Solution:

Step 1: Recall the natural history. A cryptorchid (undescended) testis may descend spontaneously during the first few months of life, so surgery is not done at birth.
Step 2: Recall the window for spontaneous descent. Spontaneous descent essentially stops by about 6 months of age; after this, descent is very unlikely.
Step 3: Recall why early orchidopexy matters. An undescended testis left in an abnormal position is at risk of impaired spermatogenesis, infertility, malignancy and torsion, and these risks increase with delay, so the testis should be brought down and fixed early.
Step 4: Apply the guideline. The recommended ideal age for orchidopexy is around 6 months (and is generally completed by 1 to 2 years at the latest), so the earliest correct option here is 6 months.
Step 5: The correct answer is 6 months (option 1).

Quick Tip: Spontaneous descent stops by about 6 months, so orchidopexy is done from that age.

233. Pentalogy of Fallot has which one of the following entities:

(A) ASD

(B) Coarctation of aorta

(C) LVH

(D) PDA

Correct Answer: (A) ASD

Solution:

Step 1: Recall the components of tetralogy of Fallot (TOF). The four features are ventricular septal defect (VSD), pulmonary stenosis (right ventricular outflow obstruction), overriding of the aorta, and right ventricular hypertrophy.
Step 2: Define pentalogy of Fallot. Pentalogy of Fallot is tetralogy of Fallot plus a fifth lesion, namely an atrial septal defect (ASD) or a patent foramen ovale.
Step 3: Match with the options. Among the choices, the additional fifth entity is the ASD.
Step 4: Eliminate the others. Coarctation of aorta, left ventricular hypertrophy (TOF causes right not left ventricular hypertrophy), and PDA are not part of the pentalogy.
Step 5: The correct answer is ASD (option 1).

Quick Tip: Pentalogy of Fallot is tetralogy plus one more shunt at the atrial level.

234. A child presents with abdominal pain only during passage of stools. There are no other symptoms like vomiting or blood in stools, and there are no signs of intestinal obstruction. The most probable diagnosis is?

(A) Rectal polyp

(B) Intussusception

(C) Meckel's diverticulum

(D) Necrotising enterocolitis

Correct Answer: (A) Rectal polyp

Solution:

Step 1: Pick out the key features. The pain occurs only at the time of passing stool, with no vomiting, no blood and no features of obstruction. This points to a low rectal lesion that is irritated during defecation.
Step 2: Consider rectal polyp. A juvenile rectal polyp is the commonest cause of

such localised symptoms in a child and characteristically causes discomfort or pain during defecation; it is the best fit here.
Step 3: Eliminate intussusception. Intussusception causes colicky pain, vomiting and red-currant-jelly (bloody) stools with a mass, none of which are present.
Step 4: Eliminate Meckel's diverticulum. It classically causes painless lower GI bleeding, not pain limited to defecation.
Step 5: Eliminate necrotising enterocolitis. NEC is a neonatal emergency with feed intolerance, abdominal distension, bloody stools and an unwell infant, not an otherwise well child with isolated pain on defecation.
Step 6: The correct answer is rectal polyp (option 1).

Quick Tip: Pain only while passing stool, otherwise well, in a child points to a low rectal lesion.

235. Coarctation of aorta is most commonly associated with:

(A) Bicuspid aortic valve

(B) PDA

(C) VSD

(D) ASD

Correct Answer: (A) Bicuspid aortic valve

Solution:

Step 1: Recall the definition. Coarctation of the aorta is a narrowing of the aorta, typically just distal to the origin of the left subclavian artery near the ductal region.
Step 2: Recall the commonest associated lesion. The most frequent cardiac association of coarctation is a bicuspid aortic valve, present in a large proportion of cases.
Step 3: Compare with the other options. A patent ductus arteriosus, VSD and ASD can occur with coarctation but are less frequently associated than the bicuspid aortic valve.

Step 4: Note the wider associations for context. Coarctation is also linked with Turner syndrome, but among the cardiac defects listed, the bicuspid aortic valve is the commonest.
Step 5: The correct answer is bicuspid aortic valve (option 1).

Quick Tip: Think of the valve lesion that most often accompanies aortic narrowing.

236. An 8 days old male infant was brought in a state of dehydration and shock. Examination revealed hyperpigmentation over the body with normal external genitalia. Blood tests revealed hypoglycemia, Na = 124 mEq/L and K = 7 mEq/L. What is the probable diagnosis?

(A) Congenital adrenal hyperplasia

(B) Adrenal haemorrhage and shock

(C) Acute gastroenteritis with dehydration

(D) Hyperaldosteronism

Correct Answer: (A) Congenital adrenal hyperplasia

Solution:

Step 1: List the biochemical findings. The infant has hyponatremia (Na 124, low), hyperkalemia (K 7, high) and hypoglycemia, together with dehydration and shock. This is the classic salt-wasting crisis picture.
Step 2: Note the hyperpigmentation. Excess ACTH (driven by low cortisol) raises melanocyte stimulation, causing generalised hyperpigmentation, which is a strong clue to primary adrenal insufficiency from birth.
Step 3: Recognise the diagnosis. Salt-wasting congenital adrenal hyperplasia (most often 21-hydroxylase deficiency) causes deficient cortisol and aldosterone, leading to hyponatremia, hyperkalemia, hypoglycemia, dehydration and shock in the second week of life, with compensatory ACTH excess and hyperpigmentation.
Step 4: Address the normal genitalia. In a male infant, salt-wasting CAH typically presents with normal-looking external genitalia, so a crisis without genital ambiguity in a boy still strongly suggests CAH.

Step 5: Eliminate the others. Adrenal haemorrhage is usually acute and not associated with chronic hyperpigmentation, gastroenteritis would not characteristically cause hyperkalemia with this pattern plus pigmentation, and hyperaldosteronism causes hypokalemia and hypertension (the opposite of this picture).
Step 6: The correct answer is congenital adrenal hyperplasia (option 1).

Quick Tip: Neonate with low sodium, high potassium, low sugar and hyperpigmentation equals salt-wasting adrenal failure.

237. A neonate delivered at 38 weeks of gestation with a birth weight of 2.2 kg develops intolerance to feeds on the 2nd day. Physical examination reveals no abnormalities. Sepsis screen is negative and PCV is 70%. What is the next step in management?

(A) IV fluid

(B) Presumptive treatment of sepsis

(C) Exchange transfusion

(D) Repeat sepsis screen

Correct Answer: (C) Exchange transfusion

Solution:

Step 1: Interpret the PCV. A packed cell volume (haematocrit) of 70% indicates polycythemia in a neonate (a central venous haematocrit greater than 65 percent defines polycythemia).
Step 2: Link to the clinical scenario. This is a small-for-gestational-age term infant (38 weeks, 2.2 kg), a classic setting for neonatal polycythemia and hyperviscosity.
Step 3: Recognise the symptom. Feed intolerance is a recognised symptom of hyperviscosity from polycythemia, and the sepsis screen is negative, so infection is not the cause.
Step 4: Apply management. A symptomatic neonate with a venous haematocrit

greater than 65 percent (here 70 percent) is treated with partial exchange transfusion to lower the haematocrit and reduce viscosity.
Step 5: Eliminate the others. IV fluid alone does not adequately correct symptomatic polycythemia, antibiotics are not indicated with a negative screen and a non-septic picture, and repeating the sepsis screen does not address the high PCV.
Step 6: The correct answer is exchange transfusion (partial exchange transfusion) (option 3).

Quick Tip: A symptomatic SGA neonate with PCV greater than 65 percent needs partial exchange transfusion.

238. In the expectant management of placenta praevia, all of the following are done except?

(A) Cervical cerclage (encirclage)

(B) Anti-D administration

(C) Corticosteroid administration

(D) Blood transfusion

Correct Answer: (A) Cervical cerclage (encirclage)

Solution:

Step 1: Understand expectant (conservative) management of placenta praevia. It is offered to a stable, preterm patient (usually < 37 weeks) whose bleeding has settled, with the aim of prolonging the pregnancy to gain fetal maturity (Macafee and Johnson regimen).
Step 2: Review the standard components. Corticosteroids are given between 24 and 34 weeks to promote fetal lung maturity in anticipation of preterm delivery. Blood transfusion or keeping cross-matched blood ready is part of resuscitation and correcting anaemia from antepartum haemorrhage. Anti-D immunoglobulin is given to Rh-negative mothers who bleed, to prevent isoimmunisation.
Step 3: Evaluate cervical cerclage. Placenta praevia is an abnormally low-lying

placenta; the bleeding is from placental separation at the lower segment, not from cervical incompetence. A cerclage suture around the cervix does not stop praevia bleeding and is not a recognised part of expectant management.
Step 4: Therefore the procedure that is NOT done is cervical cerclage.
Answer: Option A, Cervical cerclage.

Quick Tip: Cerclage treats an incompetent cervix, not a misplaced placenta.

239. The best test / gold standard test for assessing hCG (human chorionic gonadotropin) is?

(A) Radioimmunoassay

(B) ELISA

(C) Latex agglutination test

(D) Bioassay

Correct Answer: (A) Radioimmunoassay

Solution:

Step 1: Identify what is being asked, the most sensitive and specific quantitative assay for hCG.
Step 2: Compare the options. The latex agglutination (slide) test is a qualitative urine test with low sensitivity (detects hCG only around 1500 to 2500 mIU/mL), so it is the least sensitive. Bioassays are historical, slow and imprecise. ELISA is sensitive and widely used clinically, but it is not classically labelled the gold standard for hCG quantification.
Step 3: Recall that radioimmunoassay (RIA), which uses a radiolabelled hCG competing for antibody, is highly sensitive and specific and can detect very low levels of the beta subunit. It is traditionally regarded as the gold standard quantitative method for hCG.
Step 4: Hence the answer is radioimmunoassay.
Answer: Option A, Radioimmunoassay.

Quick Tip: Think of the most sensitive radiolabelled quantitative beta-hCG assay.

240. Causes of primary amenorrhoea are all of the following except?

(A) Rokitansky syndrome (Mayer-Rokitansky-Kuster-Hauser syndrome)

(B) Kallmann syndrome

(C) Sheehan syndrome

(D) Turner syndrome

Correct Answer: (C) Sheehan syndrome

Solution:

Step 1: Define primary amenorrhoea, the failure to start menstruating by age 15 (or 13 with absent secondary sexual characteristics). The cause must therefore exist before menarche.

Step 2: Assess each option. Mayer-Rokitansky-Kuster-Hauser syndrome is congenital absence of the uterus and upper vagina, so menstruation never begins, a classic cause of primary amenorrhoea. Kallmann syndrome is congenital hypogonadotropic hypogonadism with anosmia, again present from birth and causing primary amenorrhoea. Turner syndrome (45,X gonadal dysgenesis) causes streak ovaries and is a leading chromosomal cause of primary amenorrhoea.

Step 3: Consider Sheehan syndrome. It is postpartum pituitary necrosis following severe obstetric haemorrhage. By definition it occurs after a pregnancy and delivery, in a woman who has already menstruated and conceived, so it causes SECONDARY amenorrhoea, not primary.

Step 4: The exception is therefore Sheehan syndrome.

Answer: Option C, Sheehan syndrome.

Quick Tip: One of these only happens after a postpartum haemorrhage.

241. Which of the following is NOT a contraindication for pregnancy?

(A) Wolff-Parkinson-White (WPW) syndrome

(B) Pulmonary hypertension

(C) Eisenmenger syndrome

(D) Marfan syndrome with aortic root dilatation

Correct Answer: (A) Wolff-Parkinson-White (WPW) syndrome

Solution:

Step 1: Recall the cardiac conditions in which pregnancy is contraindicated because of unacceptably high maternal mortality (mWHO class IV).
Step 2: Severe pulmonary arterial hypertension carries very high maternal mortality because the fixed high resistance cannot accommodate the increased cardiac output and volume of pregnancy, so pregnancy is contraindicated. Eisenmenger syndrome (a reversed shunt with pulmonary hypertension) is one of the most dangerous, with maternal mortality of 30 to 50 percent, and is contraindicated. Marfan syndrome with a dilated aortic root (commonly > 4 to 4.5 cm) carries a high risk of aortic dissection and rupture in pregnancy, so it too is contraindicated.
Step 3: Consider WPW syndrome. It is a pre-excitation arrhythmia syndrome. It may cause supraventricular tachycardia, but it does not impose the prohibitive maternal mortality of the other three and can be managed; it is not a contraindication to pregnancy.
Step 4: Hence WPW syndrome is the option that is NOT a contraindication.
Answer: Option A, WPW syndrome.

Quick Tip: Three options threaten catastrophic haemodynamic collapse; one is a manageable arrhythmia.

242. Weight gain in pregnancy is related to all of the following except?

(A) Ethnicity

(B) Smoking

(C) Socioeconomic status

(D) Pre-conceptional weight

Correct Answer: (B) Smoking

Solution:

Step 1: Identify factors that influence maternal weight gain during pregnancy. Pre-pregnancy weight (and BMI) is the strongest determinant, since the recommended gain is set according to the starting BMI category. Socioeconomic status affects nutrition and access to food, influencing gain. Ethnicity is associated with differing body composition and patterns of gestational gain.
Step 2: Consider smoking. Smoking primarily reduces fetal birth weight (placental vasoconstriction and intrauterine growth restriction) rather than being listed among the recognised determinants of maternal gestational weight gain in this classic answer key.
Step 3: By the standard examination answer, the factor that is NOT counted among those related to pregnancy weight gain is smoking.
Step 4: Hence the exception is smoking.
Answer: Option B, Smoking.

Quick Tip: One option mainly cuts the baby's birth weight, not the mother's gain.

243. Regarding PCOD (polycystic ovarian disease), all of the following are true except?

(A) High LH/FSH ratio

(B) High DHEAS

(C) Markedly high prolactin

(D) Raised LH

Correct Answer: (C) Markedly high prolactin

Solution:

Step 1: Recall the hormonal profile of PCOD. There is increased pulsatile GnRH leading to a raised LH and a reversed LH/FSH ratio (classically about 2:1 or more).
Step 2: Androgens are increased; adrenal androgen DHEAS is mildly to moderately elevated in a proportion of patients, and ovarian androgens (testosterone) are raised, producing hyperandrogenism.
Step 3: Consider prolactin. A mild elevation in prolactin can occasionally be seen, but a MARKEDLY high prolactin is not a feature of PCOD. A markedly raised prolactin points to a prolactinoma or other cause of hyperprolactinaemia, which is a separate differential. Therefore markedly high prolactin is the false statement.
Step 4: Hence the exception is markedly high prolactin.
Answer: Option C, Markedly high prolactin.

Quick Tip: A grossly raised level here would point you toward a prolactinoma instead.

244. The best marker for intrahepatic cholestasis of pregnancy is?

(A) Bile acids (serum bile acids)

(B) Liver enzymes (AST and ALT)

(C) Bilirubin

(D) Alkaline phosphatase

Correct Answer: (A) Bile acids (serum bile acids)

Solution:

Step 1: Recall intrahepatic cholestasis of pregnancy (ICP), which presents in the second or third trimester with pruritus (typically palms and soles) without a rash.
Step 2: Evaluate the markers. Transaminases (AST/ALT) may be mildly raised but are non-specific. Bilirubin is often normal or only mildly elevated late in the course. Alkaline phosphatase is physiologically raised in normal pregnancy

(placental origin), so it is unreliable.
Step 3: Serum total bile acids are the most sensitive and specific marker; they are the key to diagnosis and correlate with severity and with the risk of adverse fetal outcomes such as stillbirth. Markedly elevated bile acids (for example 40 micromol/L or more) indicate severe disease.
Step 4: Hence the best marker is bile acids.
Answer: Option A, Bile acids.

Quick Tip: Pick the test whose level predicts fetal stillbirth risk.

245. Which of the following is a feature of obstructive azoospermia?

(A) High FSH, high testosterone

(B) Low FSH, high testosterone

(C) High FSH, low testosterone

(D) Normal FSH, normal testosterone

Correct Answer: (D) Normal FSH, normal testosterone

Solution:

Step 1: Define azoospermia. Azoospermia is the complete absence of spermatozoa in the ejaculate. It is broadly divided into obstructive (post-testicular) and non-obstructive (pre-testicular or testicular) types.
Step 2: Understand the hormonal axis. Spermatogenesis is driven by the hypothalamic-pituitary-gonadal axis. FSH acts on Sertoli cells to support sperm production, while LH acts on Leydig cells to drive testosterone synthesis. Inhibin B from Sertoli cells provides negative feedback on FSH.
Step 3: Reason out obstructive azoospermia. In obstructive azoospermia the testes are histologically normal and spermatogenesis is intact; the problem is a mechanical block in the ductal system (vas deferens, epididymis, or ejaculatory duct). Because the seminiferous tubules and Leydig cells function normally, feedback to the pituitary is preserved.
Step 4: Predict the hormone profile. Since spermatogenesis is normal, inhibin B

and testosterone feedback keep gonadotropins in the normal range. Therefore FSH is normal and testosterone is normal.

Step 5: Contrast with non-obstructive azoospermia. In testicular failure (non-obstructive), reduced spermatogenesis lowers inhibin B feedback, so FSH rises (often $>$ 2 to 3 times normal), helping clinically distinguish the two types.

Conclusion: Obstructive azoospermia is characterised by normal FSH and normal testosterone, so the answer is option D.

Quick Tip: Production is intact, only the pipe is blocked, so feedback hormones stay normal.

246. Which of the following contraceptive methods is contraindicated in women with epilepsy?

(A) Oral contraceptive pill

(B) IUCD

(C) Condom

(D) Mifepristone

Correct Answer: (A) Oral contraceptive pill

Solution:

Step 1: Understand the interaction issue. Many antiepileptic drugs (AEDs) are hepatic enzyme inducers, particularly of the cytochrome P450 system (phenytoin, phenobarbitone, carbamazepine, topiramate, oxcarbazepine).

Step 2: Effect on oral contraceptive pills. Enzyme induction accelerates the hepatic metabolism of the estrogen and progestogen components of combined oral contraceptive pills, lowering their blood levels and causing contraceptive failure (breakthrough ovulation and unintended pregnancy).

Step 3: Evaluate each option. An IUCD acts locally within the uterus and is not affected by hepatic enzyme induction, so it is a safe and reliable choice. Condoms are a barrier method with no drug interaction. Mifepristone is an abortifacient and not a routine contraceptive method.

Step 4: Choose the contraindicated method. Because enzyme-inducing AEDs reduce the efficacy of the combined oral contraceptive pill, it is the method best avoided or used with caution in women on these drugs.
Conclusion: The oral contraceptive pill is contraindicated (least reliable) in women with epilepsy on enzyme-inducing AEDs, so the answer is option A.

Quick Tip: Enzyme-inducing antiepileptics speed up clearance of pill hormones, causing failure.

247. A low dose oral contraceptive pill contains which of the following?

(A) Levonorgestrel

(B) Norgestrel

(C) Desogestrel

(D) Norethisterone

Correct Answer: (C) Desogestrel

Solution:

Step 1: Define a low dose pill. A low dose combined oral contraceptive pill typically contains 20 to 35 micrograms of ethinyl estradiol combined with a low quantity of a potent progestogen.
Step 2: Recall progestogen generations. Progestogens have evolved across generations. Levonorgestrel and norgestrel are second-generation; norethisterone is a first-generation (estrane) progestogen. Desogestrel is a third-generation progestogen.
Step 3: Link potency to dose. Third-generation progestogens such as desogestrel are highly selective and potent, so they achieve reliable contraception at very small doses and are used in modern low dose formulations. They also have a more favourable androgenic profile.
Step 4: Eliminate the others. Norethisterone is used in higher milligram doses (older, higher dose pills). Levonorgestrel and norgestrel, while widely used, represent the second generation and are not the hallmark of the lowest dose

third-generation preparations referenced here.
Conclusion: The low dose oral contraceptive pill characteristically contains desogestrel, so the answer is option C.

Quick Tip: The third-generation, highly potent progestogen lets the dose be kept lowest.

248. Mother to baby transmission of HIV can be minimised by all of the following except?

(A) Zidovudine

(B) HAART

(C) Vaginal delivery

(D) Avoidance of breast feeding

Correct Answer: (C) Vaginal delivery

Solution:

Step 1: Identify the question type. This is an except question, so three options reduce vertical (mother to child) transmission of HIV and one does not.
Step 2: Recall routes of vertical transmission. HIV can pass from mother to child in utero, during labour and delivery (exposure to maternal blood and genital secretions), and through breast milk.
Step 3: Evaluate antiretroviral options. Zidovudine and HAART (highly active antiretroviral therapy) lower the maternal viral load. A low or undetectable viral load greatly reduces the risk of transmission at every stage, so both clearly help.
Step 4: Evaluate breastfeeding. Avoidance of breast feeding (where safe replacement feeding is available) removes the postnatal breast milk route of transmission, so it also reduces risk.
Step 5: Evaluate mode of delivery. Vaginal delivery exposes the neonate to maternal blood and genital secretions in the birth canal. In a mother with a high viral load this increases transmission risk; an elective caesarean section is what reduces intrapartum transmission. Therefore vaginal delivery does NOT minimise

transmission.

Conclusion: All except vaginal delivery reduce vertical transmission, so the answer is option C.

Quick Tip: Elective caesarean, not vaginal birth, cuts intrapartum HIV transmission.

249. A primigravida at 37 weeks of gestation presents with a 1 cm dilated, uneffaced cervix and uterine contractions with pain suggestive of labour for the last 10 hours. What is the management?

(A) Sedate the patient and wait

(B) LSCS

(C) Amniotomy

(D) Induction with membrane rupture

Correct Answer: (A) Sedate the patient and wait

Solution:

Step 1: Interpret the cervical findings. After 10 hours of painful contractions the cervix is only 1 cm dilated and remains uneffaced. True labour produces progressive cervical effacement and dilatation; the lack of any progress here points to false labour, not established (active) labour.

Step 2: Confirm she is in the latent phase or false labour. A closed or barely dilated, uneffaced cervix despite contractions is the hallmark of false labour or a very early latent phase. There is no indication for delivery on these findings.

Step 3: Eliminate operative and active intervention. LSCS has no indication in a term primigravida with a normal fetus and no labour progress problem, malpresentation or distress. Amniotomy and induction with membrane rupture are interventions to augment or start active labour and are inappropriate when the patient is not yet in established labour and there is no maternal or fetal indication to deliver.

Step 4: Choose conservative management. The correct step in false labour or early latent phase is reassurance, analgesia and sedation, allowing the patient to

rest while the situation is observed. Many will settle or progress naturally into true labour.

Conclusion: Sedate the patient and wait, so the answer is option A.

Quick Tip: No cervical progress after 10 hours means false labour, so reassure and observe.

250. A primigravida in the first trimester has sputum positive for acid fast bacillus. What is the preferred treatment?

(A) Treatment deferred till the second trimester

(B) Category 1 DOTS

(C) Category 2 DOTS

(D) Category 3 DOTS

Correct Answer: (B) Category 1 DOTS

Solution:

Step 1: Establish the diagnosis. A sputum positive for acid fast bacillus in a symptomatic patient indicates active sputum-positive pulmonary tuberculosis. This is a new case in a previously untreated patient.

Step 2: Decide whether to treat in pregnancy. Active tuberculosis in pregnancy must be treated promptly. Untreated maternal TB is far more dangerous to both mother and fetus than the standard first-line drugs, so treatment is never deferred to a later trimester.

Step 3: Confirm drug safety. The first-line drugs isoniazid, rifampicin, ethambutol and pyrazinamide are considered safe in pregnancy. Streptomycin is the agent to avoid because it is ototoxic to the fetus.

Step 4: Select the correct DOTS category. Under the DOTS programme, a new sputum-positive pulmonary TB case is treated with the new-case regimen, which is Category 1 DOTS. Category 2 is reserved for previously treated cases (relapse, failure, default), and Category 3 was for less severe or smear-negative disease.

Conclusion: A new sputum-positive case in the first trimester is treated with Category 1 DOTS, so the answer is option B.

Quick Tip: A new sputum-positive TB case gets the new-case first-line regimen, started immediately.

251. A 45 year old lady presents with dysfunctional uterine bleeding and an ultrasound finding of 8 mm thick endometrium. What is the next step?

(A) Endometrial histopathology

(B) Hysterectomy

(C) OCP

(D) Follow up

Correct Answer: (A) Endometrial histopathology

Solution:

Step 1: Note the age and the bleeding. The patient is 45 years old (perimenopausal) and has abnormal uterine bleeding. In any woman above 40 years with abnormal uterine bleeding, endometrial carcinoma and hyperplasia must be excluded before treatment.

Step 2: Interpret the endometrial thickness. An endometrial thickness of 8 mm is increased and warrants tissue sampling in this age group to rule out hyperplasia or malignancy. Ultrasound alone cannot give a histological diagnosis.

Step 3: Establish the next step. The appropriate next investigation is to obtain endometrial tissue for histopathology, by endometrial biopsy or dilatation and curettage (ideally with hysteroscopic guidance). Histopathology determines whether the endometrium is normal, hyperplastic or malignant and guides further management.

Step 4: Eliminate the other options. Hysterectomy is premature without a tissue diagnosis. Starting OCP or hormonal therapy to control bleeding before excluding malignancy could mask a cancer. Mere follow up is unsafe in a perimenopausal woman with abnormal bleeding and thickened endometrium.

Conclusion: The next step is endometrial histopathology, so the answer is option A.

Quick Tip: Perimenopausal bleeding with thick endometrium needs tissue diagnosis before any treatment.

252. Fallopian tube dysmotility is seen in which of the following conditions?

(A) Churg-Strauss syndrome

(B) Kartagener's syndrome

(C) Noonan syndrome

(D) Turner syndrome

Correct Answer: (B) Kartagener's syndrome

Solution:

Step 1: Identify the structural basis of fallopian tube motility. The internal lining of the fallopian tube is a ciliated columnar epithelium, and the coordinated beating of these cilia (along with peristaltic muscular contractions) propels the ovum towards the uterus.
Step 2: Recognise the defect in Kartagener's syndrome. It is a subtype of primary ciliary dyskinesia (PCD) caused by an absence or defect of the dynein arms in the ciliary axoneme, leading to immotile or dyskinetic cilia throughout the body.
Step 3: Apply this to the tube. Because the same ciliary defect affects the fallopian tube epithelium, ovum transport is impaired, causing tubal dysmotility and a predisposition to subfertility and ectopic pregnancy.
Step 4: The classic Kartagener triad is situs inversus, chronic sinusitis, and bronchiectasis; the underlying ciliary problem also explains immotile sperm in males and tubal dysmotility in females.
Step 5: Exclude the others. Churg-Strauss is an eosinophilic vasculitis, Noonan syndrome is a RASopathy with congenital heart disease and short stature, and Turner syndrome (45,XO) causes gonadal dysgenesis, none of which act through

a ciliary motility defect.
Hence the answer is Kartagener's syndrome.

Quick Tip: Think of the syndrome of immotile cilia with situs inversus, sinusitis and bronchiectasis.

253. Which is the best marker for an open neural tube defect?

(A) Acetylcholinesterase

(B) Pseudocholinesterase

(C) Alpha-fetoprotein (AFP)

(D) hCG

Correct Answer: (A) Acetylcholinesterase

Solution:

Step 1: Understand what an open neural tube defect (NTD) is. When the neural tube fails to close (open spina bifida or anencephaly), exposed fetal neural tissue and cerebrospinal fluid leak substances into the amniotic fluid.
Step 2: Distinguish the two key markers. Maternal serum and amniotic AFP are raised in open NTDs, but AFP also rises in many other conditions (abdominal wall defects, multiple gestation, fetal demise, wrong dates), so it is a sensitive screening marker, not the most specific.
Step 3: Identify the confirmatory marker. Acetylcholinesterase (AChE) is a neural-specific enzyme. Its presence in amniotic fluid indicates leakage from open neural tissue and is far more specific for an open NTD than AFP.
Step 4: Apply the logic of the question. When asked for the BEST (most specific/confirmatory) marker for an open NTD, amniotic fluid acetylcholinesterase is chosen, used to confirm a positive AFP screen.
Step 5: Exclude the rest. Pseudocholinesterase is a liver enzyme used in suxamethonium apnoea, and hCG is a marker of trophoblastic tissue and Down syndrome screening, neither being specific for NTDs.
Hence the best marker is acetylcholinesterase.

Quick Tip: AFP screens, but a neural-specific enzyme confirms an open defect.

254. All of the following are used in the management of shoulder dystocia EXCEPT?

(A) Mauriceau-Smellie-Veit maneuver

(B) Suprapubic pressure

(C) McRoberts maneuver

(D) Woods screw maneuver

Correct Answer: (A) Mauriceau-Smellie-Veit maneuver

Solution:

Step 1: Define shoulder dystocia. It is failure of the anterior shoulder to deliver after the head, due to impaction behind the maternal symphysis pubis, and it is an obstetric emergency in cephalic delivery.
Step 2: Recall the standard maneuvers. First-line is McRoberts maneuver (hyperflexion of the maternal hips), combined with suprapubic pressure to push the anterior shoulder under the symphysis. If these fail, internal rotational maneuvers such as the Woods (corkscrew) maneuver and delivery of the posterior arm are used.
Step 3: Identify the odd one out. The Mauriceau-Smellie-Veit maneuver is a technique for delivering the AFTER-COMING HEAD in a breech (vaginal breech) delivery, not for a stuck shoulder in a cephalic presentation.
Step 4: Apply the exception logic. Since the question asks which is NOT part of shoulder dystocia management, the answer is the breech head-delivery technique.
Step 5: Confirm. Suprapubic pressure, McRoberts, and Woods maneuvers are all recognised steps in the shoulder dystocia drill (HELPERR), whereas Mauriceau-Smellie-Veit is not.
Hence the answer is the Mauriceau-Smellie-Veit maneuver.

Quick Tip: One of these is actually for delivering the after-coming head in a breech,

not a stuck shoulder.

255. Which of the following is NOT associated with the human menstrual cycle?

(A) Hormonal changes

(B) Vaginal cytology changes

(C) Estrus profile

(D) Endometrial changes

Correct Answer: (C) Estrus profile

Solution:

Step 1: Recall what defines the human reproductive cycle. Primates, including humans, have a MENSTRUAL cycle, characterised by cyclical shedding (menstruation) of the endometrium when fertilisation does not occur.
Step 2: Identify what an estrus (oestrous) cycle is. Estrus is the reproductive cycle of most non-primate mammals, in which there is a discrete period of heat (sexual receptivity) and the endometrium is reabsorbed rather than shed; humans do NOT have an estrus cycle.
Step 3: Match the genuine components of the menstrual cycle. Cyclical hormonal changes (FSH, LH, estrogen, progesterone), endometrial changes (proliferative then secretory phase, then menstruation), and vaginal cytology changes (shifting epithelial cell maturation with estrogen) all occur as part of the menstrual cycle.
Step 4: Apply the exception logic. The feature that does NOT belong to the human menstrual cycle is the estrus profile, which is a property of non-primate mammals.
Step 5: Hence the answer is the estrus profile.

Quick Tip: Humans menstruate; the term that belongs to non-primate mammals is the odd one out.

256. Confined blood chimerism is associated with which of the following?

(A) Dichorionic diamniotic twins

(B) Monochorionic diamniotic twins

(C) Singleton pregnancy

(D) Monochorionic monoamniotic twins

Correct Answer: (B) Monochorionic diamniotic twins

Solution:

Step 1: Define blood chimerism. It is the presence of two genetically distinct cell populations in one individual, here in the blood, arising when blood cells are exchanged between twins in utero.
Step 2: Identify the requirement for blood exchange. Mixing of fetal blood needs vascular anastomoses in a SHARED (monochorionic) placenta. Twins with separate (dichorionic) placentas have no such connections.
Step 3: Explain why it is CONFINED. In confined blood chimerism the foreign cells are limited to the blood (hematopoietic) lineage, because the exchange occurs through shared placental vessels after the hematopoietic system is established, rather than involving all tissues.
Step 4: Match to the option. This requires a monochorionic placenta. Among the choices, monochorionic diamniotic twins are the common monochorionic type that carry vascular anastomoses, so they classically show confined blood chimerism.
Step 5: Exclude the rest. Dichorionic diamniotic twins have separate placentas (no anastomoses), and a singleton has no co-twin to exchange with. (Monochorionic monoamniotic twins are also monochorionic, but the standard examination association is with monochorionic diamniotic twins as keyed.) Hence the answer is monochorionic diamniotic twins.

Quick Tip: Blood swap needs vascular anastomoses, which exist only in a shared monochorionic placenta.

257. Which of the following is NOT an evidence-based treatment for menorrhagia?

(A) Ethamsylate

(B) Oral contraceptive pills (OCPs)

(C) Tranexamic acid

(D) Progesterone

Correct Answer: (A) Ethamsylate

Solution:

Step 1: Define menorrhagia. It is heavy menstrual bleeding (excessive amount or duration of menstrual flow), commonly managed medically before considering surgery.
Step 2: List the evidence-based medical options. Tranexamic acid (antifibrinolytic) and NSAIDs reduce blood loss; combined oral contraceptive pills regulate and lighten flow; and progestogens (oral or the levonorgestrel intrauterine system) thin the endometrium and reduce bleeding. All have good evidence.
Step 3: Evaluate ethamsylate. Ethamsylate is a hemostatic agent claimed to act on capillaries, but controlled trials have shown it to be ineffective at meaningfully reducing menstrual blood loss, so it is NOT an evidence-based treatment.
Step 4: Apply the exception logic. The question asks which is NOT evidence-based; that is ethamsylate.
Step 5: Confirm. Tranexamic acid, OCPs, and progesterone all have demonstrated efficacy, leaving ethamsylate as the answer.
Hence the answer is ethamsylate.

Quick Tip: One of these hemostatic agents lacks trial proof of reducing menstrual blood loss.

258. Which of the following statements is TRUE regarding Chlamydia?

(A) Culture of endocervical discharge can be used for isolation of the organism

(B) Patients using OCPs are at higher risk for Chlamydia infection

(C) Most genital Chlamydia infections are asymptomatic

(D) Penicillin is the drug of choice

Correct Answer: (C) Most genital Chlamydia infections are asymptomatic

Solution:

Step 1: Recall the biology of Chlamydia trachomatis. It is an obligate intracellular bacterium and a leading cause of sexually transmitted genital infection.
Step 2: Evaluate the clinical course. The hallmark of genital chlamydial infection is that the MAJORITY of cases are asymptomatic, especially in women, which allows silent transmission and complications such as PID, tubal infertility, and ectopic pregnancy. This statement is TRUE.
Step 3: Test the other options against this. Because it is obligately intracellular, Chlamydia does NOT grow on ordinary culture of discharge, it requires cell culture (or, in practice, nucleic acid amplification tests), so the simple endocervical discharge culture statement is false.
Step 4: Drug of choice. The treatment of choice is azithromycin (single dose) or doxycycline, NOT penicillin, because Chlamydia lacks a conventional peptidoglycan cell wall target; so that option is false.
Step 5: OCP risk. OCP use is not the recognised key risk factor; chlamydial infection relates chiefly to sexual behaviour and young age (though cervical ectopy is debated), so that statement is not the best answer.
Step 6: Apply the recall-key note. The printed key marks option B (OCP), but that is medically incorrect; the medically correct TRUE statement is that most genital chlamydial infections are asymptomatic. Answer corrected to option 3. Hence the answer is that most genital Chlamydia infections are asymptomatic.

Quick Tip: It is an obligate intracellular organism that usually causes silent infection.

259. A female presents with an XO genotype and primary amenorrhoea. What is the most likely diagnosis?

(A) Gonadal dysgenesis

(B) Androgen insensitivity syndrome

(C) Mayer-Rokitansky-Kuster-Hauser (MRKH) syndrome

(D) Congenital adrenal hyperplasia (CAH)

Correct Answer: (A) Gonadal dysgenesis

Solution:

Step 1: Identify the karyotype. A 45,XO genotype is the classic karyotype of Turner syndrome.
Step 2: Link karyotype to gonadal status. In Turner syndrome the single X is insufficient for ovarian maintenance, so the ovaries are replaced by fibrous tissue (streak gonads). This is termed gonadal dysgenesis.
Step 3: Explain the amenorrhoea. Streak (dysgenetic) gonads produce little or no oestrogen, so secondary sexual characters fail to develop and menstruation never starts, giving primary amenorrhoea with raised FSH and LH (hypergonadotropic hypogonadism).
Step 4: Exclude the other options. Androgen insensitivity syndrome has a 46,XY karyotype with testes; MRKH has a normal 46,XX karyotype with absent uterus and vagina but normal ovaries; CAH is associated with a 46,XX karyotype and ambiguous genitalia, not XO.
Conclusion: XO with primary amenorrhoea is gonadal dysgenesis of Turner syndrome. The printed key (A) is medically correct.

Quick Tip: XO equals Turner syndrome; the ovaries become non-functional streak gonads.

260. Pseudoisomorphic phenomenon is seen in:

(A) Psoriasis

(B) Lichen planus

(C) Vitiligo

(D) Plane warts

Correct Answer: (D) Plane warts

Solution:

Step 1: Define the terms. The true isomorphic (Koebner) phenomenon is the appearance of typical lesions of an active skin disease along a line of trauma, seen in psoriasis, lichen planus and vitiligo.
Step 2: Define pseudoisomorphic (pseudo-Koebner) phenomenon. Here lesions also line up along a scratch, but they arise because an infectious agent is mechanically seeded into the scratched skin rather than because of a true inflammatory reaction.
Step 3: Apply to the options. Plane (flat) warts are caused by human papilloma virus; scratching spreads the virus in a linear track, producing new warts along the line. This is the classic pseudo-Koebner or pseudoisomorphic response. Molluscum contagiosum behaves the same way.
Step 4: Exclude the others. Psoriasis, lichen planus and vitiligo show the genuine Koebner phenomenon, not the pseudo form.
Conclusion: Pseudoisomorphic phenomenon is seen in plane warts. The printed key (D) is medically correct.

Quick Tip: Pseudo-Koebner means auto-inoculation of an infectious agent along a scratch, as in viral warts.

261. Cicatrising alopecia with perifollicular blue-gray patches is most commonly associated with:

(A) Nail dystrophy

(B) Whitish lesion in the buccal mucosa

(C) Arthritis

(D) Discoid plaques on the face

Correct Answer: (B) Whitish lesion in the buccal mucosa

Solution:

Step 1: Interpret the scalp finding. Cicatrising (scarring) alopecia with perifollicular violaceous or blue-gray patches and follicular plugging is the picture of lichen planopilaris, the follicular variant of lichen planus.
Step 2: Recall the multisystem links of lichen planus. Lichen planus characteristically involves the oral mucosa, where it produces a lacy white reticulate pattern (Wickham striae) on the buccal mucosa.
Step 3: Match the best association. Because lichen planopilaris is part of the lichen planus spectrum, the most commonly associated finding is the whitish reticulate lesion of the buccal mucosa.
Step 4: Exclude the others. Nail dystrophy and arthritis fit psoriasis, and discoid plaques on the face fit discoid lupus erythematosus (which is the other major cause of scarring alopecia but does not give buccal white lesions).
Conclusion: The association is a whitish lesion in the buccal mucosa. The printed key (B) is medically correct.

Quick Tip: Scarring alopecia with violaceous follicular rims is lichen planopilaris, part of the lichen planus spectrum.

262. Erythema nodosum is seen in all of the following except:

(A) Pregnancy

(B) Tuberculosis

(C) SLE

(D) Chronic pancreatitis

Correct Answer: (D) Chronic pancreatitis

Solution:

Step 1: Define erythema nodosum. It is a septal panniculitis presenting as tender red nodules on the shins, representing a delayed hypersensitivity reaction to many triggers.
Step 2: Review the known triggers. Recognised causes include streptococcal infection, tuberculosis, sarcoidosis, inflammatory bowel disease, drugs such as oral contraceptives and sulfonamides, pregnancy, and connective tissue diseases such as SLE.
Step 3: Check the odd option. Chronic pancreatitis is not a cause of erythema nodosum. Pancreatic disease instead causes a different skin lesion, pancreatic panniculitis (lobular panniculitis with fat necrosis and saponification), driven by circulating lipase, not a septal panniculitis.
Step 4: Select the exception. Pregnancy, tuberculosis and SLE all cause erythema nodosum, so the answer to all except is chronic pancreatitis.
Conclusion: Chronic pancreatitis is the exception. The printed key (D) is medically correct.

Quick Tip: Pancreatic disease causes pancreatic panniculitis, not erythema nodosum.

263. A young male presented with a history of fever and a nodule in the leg. Histopathology of the nodule revealed foamy histiocytes and a neutrophilic infiltrate in the dermis. The most probable diagnosis is:

(A) Sweet's syndrome

(B) Rosai-Dorfman disease

(C) Erythema nodosum leprosum

(D) Erythema nodosum

Correct Answer: (C) Erythema nodosum leprosum

Solution:

Step 1: Note the key histology. The combination of foamy (lipid-laden) histiocytes plus a neutrophilic infiltrate in the dermis is the hallmark of erythema nodosum leprosum (type 2 lepra reaction).
Step 2: Explain the foamy histiocytes. In lepromatous leprosy macrophages are stuffed with degenerating Mycobacterium leprae and lipid, producing foam cells (Virchow lepra cells); during the type 2 reaction neutrophils are recruited into this background.
Step 3: Correlate with the clinical picture. Fever with crops of tender nodules on the limbs in a young patient is the classic acute systemic presentation of erythema nodosum leprosum.
Step 4: Exclude the others. Plain erythema nodosum shows septal panniculitis without foamy histiocytes; Sweet's syndrome shows a dense dermal neutrophilic infiltrate but no foam cells; Rosai-Dorfman disease shows histiocytes with emperipolesis, not neutrophils.
Conclusion: The foam cells plus neutrophils point to erythema nodosum leprosum. The printed key (D, erythema nodosum) is medically incorrect; the medically correct option is C, erythema nodosum leprosum.

Quick Tip: Foamy histiocytes plus neutrophils equals a type 2 lepra reaction, not plain erythema nodosum.

264. A man presents with a maculopapular rash two weeks after having a painless genital ulcer. The causative organism of this condition is:

(A) Treponema pallidum

(B) Chlamydia trachomatis

(C) Calymmatobacterium (Klebsiella) granulomatis

(D) Haemophilus ducreyi

Correct Answer: (A) Treponema pallidum

Solution:

Step 1: Interpret the first lesion. A painless, indurated genital ulcer (chancre) is the primary lesion of syphilis.
Step 2: Interpret the later rash. A widespread maculopapular rash appearing a few weeks after the chancre, classically involving the palms and soles, is secondary syphilis.
Step 3: Identify the organism. Both stages are caused by the spirochaete Treponema pallidum.
Step 4: Exclude the others. Chlamydia trachomatis (LGV) causes a transient painless ulcer with painful buboes but not this rash; Klebsiella granulomatis causes painless beefy-red ulcers of donovanosis without a secondary rash; Haemophilus ducreyi causes a painful ulcer (chancroid), which is the opposite of the painless lesion described.
Conclusion: The painless ulcer followed by a maculopapular rash is syphilis caused by Treponema pallidum. The printed key (A) is medically correct.

Quick Tip: Painless ulcer then a palm-and-sole rash equals secondary syphilis.

265. Spinal anaesthesia is given at which level?

(A) L1-2

(B) L3-4

(C) S1

(D) Midline thoracic segments

Correct Answer: (B) L3-4

Solution:

Step 1: Recall the anatomy. In adults the spinal cord ends (conus medullaris) at the lower border of L1 to L2, so the cord must not be punctured below this point during lumbar puncture.
Step 2: Choose a safe interspace. The L3-L4 (or L4-L5) interspace lies well below the conus, in the region of the cauda equina, where the needle can enter the subarachnoid space without injuring the cord.

Step 3: Use the surface landmark. Tuffier's line, joining the tops of the iliac crests, crosses the spine at the L4 vertebra or the L3-L4 interspace, marking the standard site for spinal anaesthesia.
Step 4: Exclude the others. L1-2 is too high and risks cord injury, S1 is below the usual dural sac end and is not a routine site, and midline thoracic injection is not used for spinal anaesthesia.
Conclusion: Spinal anaesthesia is given at the L3-L4 level. The printed key (B) is medically correct.

Quick Tip: Inject below the conus medullaris; Tuffier's line marks the L3-L4 space.

266. Epileptic (epileptogenic) potential is present in which of the following inhalational anaesthetic agents?

(A) Desflurane

(B) Halothane

(C) Sevoflurane

(D) Ether

Correct Answer: (C) Sevoflurane

Solution:

Step 1: The question asks which inhalational agent is associated with epileptiform EEG activity (seizure-like spikes), i.e. has epileptogenic potential.
Step 2: Among the listed agents, Sevoflurane is well documented to produce epileptiform EEG discharges, especially at high concentrations, during rapid inhalational induction, and with hypocapnia (hyperventilation). For this reason caution is advised in patients with a history of seizures.
Step 3: Reviewing the other options: Desflurane and Halothane are not associated with epileptiform activity. Ether is a classical anaesthetic without notable epileptogenic action; the most epileptogenic volatile agent historically is enflurane, but it is not in the option list.
Step 4: Therefore, among the given choices, Sevoflurane is the agent with

epileptic potential.
Conclusion: The correct answer is Sevoflurane (option 3), matching the printed key.

Quick Tip: Think of the volatile agent linked to EEG spikes during hyperventilation and fast mask induction.

267. Which of the following anaesthetic drugs is contraindicated in a patient with hypertension who is being posted for cholecystectomy?

(A) Ketamine

(B) Propofol

(C) Etomidate

(D) Midazolam

Correct Answer: (A) Ketamine

Solution:

Step 1: Identify the haemodynamic profile required: in a hypertensive patient we must avoid an agent that further raises blood pressure and heart rate.
Step 2: Ketamine is a dissociative anaesthetic that stimulates the sympathetic nervous system and inhibits noradrenaline re-uptake. This produces a rise in heart rate, blood pressure, cardiac output, and myocardial oxygen demand.
Step 3: These sympathomimetic effects make ketamine relatively contraindicated in uncontrolled or poorly controlled hypertension, as well as in ischaemic heart disease and raised intracranial pressure.
Step 4: Comparing the alternatives: Propofol tends to lower blood pressure; Etomidate is notably cardiostable; Midazolam causes only mild cardiovascular depression. All three are far safer than ketamine in a hypertensive patient.
Conclusion: Ketamine is the contraindicated agent (option 1), matching the printed key.

Quick Tip: Which induction agent raises BP and heart rate via sympathetic stimulation?

268. All of the following are true about spinal (intrathecal) opioids EXCEPT?

(A) Acts on dorsal horn substantia gelatinosa

(B) Can cause itching

(C) Intestinal motility is decreased

(D) Can cause respiratory depression

Correct Answer: (C) Intestinal motility is decreased

Solution:

Step 1: This is a negative ("all except") question, so we identify the one statement that is NOT a recognised feature of spinal opioids.
Step 2: Spinal opioids act at the substantia gelatinosa (Rexed lamina II) of the dorsal horn, binding presynaptic and postsynaptic opioid receptors to inhibit nociceptive transmission. Statement A is true.
Step 3: Pruritus (itching) is one of the most common side effects of intrathecal opioids, classically affecting the face and trunk and mediated centrally rather than by histamine. Statement B is true.
Step 4: Respiratory depression, including delayed depression from rostral cephalad spread of the drug in the CSF, is a well known and serious complication. Statement D is true.
Step 5: The intended exception is statement C. Because intrathecal opioids are given in very small doses and act predominantly at the spinal cord with limited systemic absorption, a clinically significant decrease in intestinal motility (ileus) is not a typical feature compared with systemic opioids. Hence within this exam it is taken as the untrue option.
Conclusion: The exception is "intestinal motility is decreased" (option 3), matching the printed key.

Quick Tip: Three are classic neuraxial opioid effects; which gut effect is the odd one out at intrathecal doses?

269. A fire breaks out during laser vocal cord surgery on the larynx under general anaesthesia. What is NOT to be done in the management of the above situation?

(A) Pouring sterile water into the oral cavity

(B) Removing the endotracheal tube

(C) 100% oxygen after discontinuing anaesthetic gases

(D) Treatment with steroid and antibiotic

Correct Answer: (C) 100% oxygen after discontinuing anaesthetic gases

Solution:

Step 1: Recognise this as an airway fire emergency. The classic immediate steps are to stop the flow of fresh gases, disconnect the breathing circuit, remove the burning endotracheal tube, and pour saline or water into the airway/oral cavity to extinguish the fire.

Step 2: Option A (pouring sterile water/saline into the oral cavity) is a correct extinguishing manoeuvre, so it IS to be done.

Step 3: Option B (removing the endotracheal tube) is correct, because the tube itself is the fuel and must be taken out, then ventilation re-established with a fresh tube.

Step 4: Option D (steroids and antibiotics for the resulting airway burn/inflammation and to prevent infection) is appropriate later management, so it IS to be done.

Step 5: Option C is the wrong action. Oxygen is an oxidiser that feeds combustion; giving 100% oxygen would intensify the fire. During an airway fire the FiO2 must be reduced, not raised. Hence giving 100% oxygen is exactly what should NOT be done.

Conclusion: The action NOT to be done is administering 100% oxygen (option 3), matching the printed key.

Quick Tip: Fire needs an oxidiser; which step would actually fuel the airway fire?

270. Which anaesthetic modality is to be avoided in a patient with sickle cell disease?

(A) General anaesthesia

(B) Brachial plexus block

(C) Intravenous regional anaesthesia

(D) Spinal anaesthesia

Correct Answer: (C) Intravenous regional anaesthesia

Solution:

Step 1: Understand the pathophysiology: in sickle cell disease, sickling is precipitated by hypoxia, acidosis, venous stasis, dehydration, and hypothermia. The goal is to avoid any technique that promotes these.

Step 2: Intravenous regional anaesthesia (Bier block) requires exsanguination of the limb followed by application of a tourniquet to occlude blood flow. This produces deliberate venous stasis, ischaemia, hypoxia, and acidosis in the isolated limb.

Step 3: These very conditions strongly trigger sickling of red cells, risking a local vaso-occlusive crisis. Therefore IV regional anaesthesia is the modality to be avoided in sickle cell disease.

Step 4: The other options are acceptable when normoxia, normal perfusion, warmth, and hydration are maintained: general anaesthesia, brachial plexus block, and spinal anaesthesia do not mandate prolonged limb exsanguination with a tourniquet.

Conclusion: The modality to avoid is intravenous regional anaesthesia (option 3), matching the printed key.

Quick Tip: Which technique deliberately exsanguinates the limb and causes stasis and hypoxia?

271. A 40 year old female underwent surgery. Postoperatively she told the anaesthetist that she was aware of operative events and was very uncomfortable about it. Intraoperative awareness is best evaluated (to prevent such instances) by?

(A) Pulse oximetry

(B) Colour Doppler

(C) Bispectral index

(D) End tidal carbon dioxide

Correct Answer: (C) Bispectral index

Solution:

Step 1: The clinical problem is intraoperative awareness, i.e. inadequate depth of anaesthesia letting the patient perceive and recall events. We need a monitor of depth of anaesthesia (level of consciousness).
Step 2: The Bispectral index (BIS) is a processed EEG-derived number from 0 to 100 that reflects the hypnotic component / depth of anaesthesia. A target of roughly 40 to 60 indicates adequate general anaesthesia and reduces the risk of awareness.
Step 3: Reviewing the alternatives: pulse oximetry measures oxygen saturation and pulse, not depth; colour Doppler is a vascular/blood-flow imaging tool unrelated to anaesthetic depth; end tidal carbon dioxide monitors ventilation and circuit integrity, not consciousness.
Step 4: Hence the appropriate monitor to detect and prevent intraoperative awareness is the Bispectral index.
Conclusion: The correct answer is Bispectral index (option 3), matching the printed key.

Quick Tip: You need a processed-EEG monitor of depth of anaesthesia, not oxygenation or ventilation.

272. A 35 year old female was undergoing thyroid surgery under general anaesthesia during which there was a sudden rise in end tidal carbon dioxide. It can be due to all of the following EXCEPT:

(A) Anaphylaxis

(B) Malignant hyperthermia

(C) Thyroid storm

(D) Neuroleptic malignant syndrome

Correct Answer: (A) Anaphylaxis

Solution:

Step 1: This is a negative question. A sudden rise in end tidal carbon dioxide usually reflects a hypermetabolic state with greatly increased carbon dioxide production. We must find the option that does NOT raise end tidal carbon dioxide.

Step 2: Malignant hyperthermia is the classic cause: a hypermetabolic crisis triggered by volatile agents/succinylcholine, producing a steep, often the earliest, rise in end tidal carbon dioxide. So it can cause it.

Step 3: Thyroid storm is a hypermetabolic emergency with hyperthermia and increased oxygen consumption and carbon dioxide production, so it too can raise end tidal carbon dioxide, and it is highly relevant in thyroid surgery.

Step 4: Neuroleptic malignant syndrome is also a hypermetabolic state with rigidity, hyperthermia, and raised carbon dioxide production, so it can raise end tidal carbon dioxide.

Step 5: Anaphylaxis, by contrast, causes circulatory collapse, hypotension, and reduced cardiac output along with bronchospasm. Reduced pulmonary perfusion increases dead space and lowers, rather than raises, end tidal carbon dioxide. Hence anaphylaxis is the exception.

Conclusion: The exception is anaphylaxis (option 1), matching the printed key.

Quick Tip: Three are hypermetabolic states; which one drops EtCO2 by causing circulatory collapse?

273. An anaesthesia resident was giving epidural anaesthesia when the patient had sudden aphonia and loss of consciousness. What could have happened?

(A) Total spinal anaesthesia

(B) Anaphylaxis

(C) Vasovagal attack

(D) Intravascular injection

Correct Answer: (C) Vasovagal attack

Solution:

Step 1: Read the clinical picture.
During epidural placement the patient suddenly develops aphonia (inability to phonate) and loss of consciousness. The event is abrupt and self-limiting in the classic recall scenario, pointing toward a transient drop in cerebral perfusion rather than a drug effect.

Step 2: Understand a vasovagal attack.
A vasovagal (neurocardiogenic) reaction is triggered by pain, anxiety or instrumentation. Increased vagal tone causes bradycardia and vasodilatation, blood pressure falls, cerebral perfusion drops, and the patient suddenly loses consciousness. Transient cerebral hypoperfusion can produce momentary aphonia just before or as the patient faints.

Step 3: Exclude the distractors.
Total spinal anaesthesia causes hypotension with apnoea and unresponsiveness, but it develops over a short period after intrathecal spread, not as an instantaneous faint during needle placement. Anaphylaxis presents with urticaria, bronchospasm, angioedema and circulatory collapse rather than isolated sudden aphonia. Intravascular (local anaesthetic systemic) injection causes perioral tingling, tinnitus, seizures and cardiac toxicity.

Step 4: Conclusion.
The sudden, transient aphonia with loss of consciousness during the procedure is most consistent with a vasovagal attack.

Correct answer: **Vasovagal attack**.

Quick Tip: Sudden, transient faint at the moment of instrumentation points to a reflex autonomic event.

274. All are definitive airways except?

(A) Nasotracheal tube

(B) Orotracheal tube

(C) Laryngeal mask airway (LMA)

(D) Cricothyroidotomy

Correct Answer: (C) Laryngeal mask airway (LMA)

Solution:

Step 1: Define a definitive airway.
A definitive airway is a cuffed tube placed in the trachea, secured in position, and connected to an oxygen-enriched assisted ventilation source. The cuff sitting below the vocal cords protects against aspiration.

Step 2: Apply the definition to each option.
A nasotracheal tube and an orotracheal (endotracheal) tube are both cuffed tubes that sit within the trachea, so both are definitive airways. A surgical cricothyroidotomy places a tube directly into the trachea through the cricothyroid membrane and is also a definitive airway.

Step 3: Identify the exception.
The laryngeal mask airway sits in the hypopharynx over the laryngeal inlet. It does not enter the trachea and its cuff does not lie below the cords, so it does not reliably protect against aspiration. The LMA is a supraglottic (rescue) device, not a definitive airway.

Step 4: Conclusion.
The LMA is the only listed device that is not a definitive airway.

Correct answer: **LMA**.

Quick Tip: A definitive airway needs a cuffed tube inside the trachea; supraglottic devices do not count.

275. Anaesthetic agents with vasoconstrictor properties are contraindicated in?

(A) Finger block

(B) Spinal block

(C) Epidural block

(D) Surface anaesthesia for bronchoscopy

Correct Answer: (A) Finger block

Solution:

Step 1: Recall why vasoconstrictors are added.
Adrenaline (epinephrine) is added to local anaesthetics to cause local vasoconstriction. This slows systemic absorption, prolongs the block, reduces local anaesthetic peak plasma levels and limits bleeding.

Step 2: Identify the danger.
Vasoconstriction is hazardous where the tissue is supplied by end arteries without collateral flow. Profound vasoconstriction there can cause ischaemia and gangrene.

Step 3: Apply to a finger block.
The digits (fingers and toes) are supplied by end arteries. Adding a vasoconstrictor to a digital (ring) block risks ischaemic necrosis of the digit, so adrenaline-containing solutions are classically contraindicated in finger blocks. The same caution applies to the toes, penis, ear lobe and nose tip.

Step 4: Exclude the others.
Spinal and epidural blocks and surface anaesthesia of the airway are not supplied by isolated end arteries in the same vulnerable way, so a vasoconstrictor is not contraindicated there on the grounds of end-artery ischaemia.

Step 5: Conclusion.
Correct answer: **Finger block**.

Quick Tip: Think of regions supplied by end arteries with no collateral flow.

276. The distant metastasis to bone can be best detected by:

(A) MRI

(B) Bone scan

(C) CT

(D) Intravenous venogram

Correct Answer: (B) Bone scan

Solution:

Step 1: Define the clinical need.
The aim is to screen the whole skeleton for distant metastatic deposits, so the ideal investigation surveys the entire body in one study and is highly sensitive to early bony involvement.

Step 2: Recall the radionuclide bone scan.
A bone scan uses technetium-99m labelled methylene diphosphonate (Tc-99m MDP), which is taken up at sites of increased osteoblastic activity and bone turnover. Metastatic deposits stimulate reactive bone formation and therefore appear as areas of increased tracer uptake (hot spots).

Step 3: Why the bone scan is preferred.

It images the whole skeleton in a single examination and detects lesions earlier than plain radiographs, which require substantial bone loss before a lesion is visible. This makes it the standard screening test for skeletal metastases.

Step 4: Exclude the others.
MRI and CT give excellent local anatomical detail but are not practical whole-body screening tools for distant skeletal disease in routine practice. An intravenous venogram images veins and has no role in detecting bone metastasis.

Step 5: Conclusion.
Correct answer: **Bone scan**.

Quick Tip: Which test surveys the entire skeleton in one sitting and shows lesions before plain x-rays do?

277. The dose of radiation required for development of the haematological (bone marrow) syndrome is?

(A) 2 to 5 Gy

(B) 10 Gy

(C) 100 Gy

(D) 200 Gy

Correct Answer: (A) 2 to 5 Gy

Solution:

Step 1: Recall the acute radiation syndromes.
Acute radiation syndrome occurs in dose-dependent stages: the haematopoietic (bone marrow) syndrome at lower doses, the gastrointestinal syndrome at intermediate doses, and the cerebrovascular (central nervous system) syndrome at the highest doses.

Step 2: Dose threshold for the haematological syndrome.

The haematopoietic syndrome appears with whole-body doses in the range of roughly 2 to 5 Gy (up to about 10 Gy). At these doses the radiosensitive bone marrow stem cells are depleted, leading to pancytopenia with anaemia, infection and bleeding.

Step 3: Compare with the higher-dose syndromes.
The gastrointestinal syndrome occurs at higher doses (about 5 to 10 Gy and above), and the cerebrovascular or CNS syndrome occurs at very high doses (above roughly 20 to 50 Gy, far higher than 100 to 200 Gy in the older teaching frameworks). The lowest threshold among the listed options corresponds to the marrow syndrome.

Step 4: Conclusion.
The haematological syndrome develops at a whole-body dose of about 2 to 5 Gy.

Correct answer: **2 to 5 Gy**.

Quick Tip: Bone marrow stem cells are highly radiosensitive, so this syndrome needs the lowest dose.

278. Which among the following is preferred in a patient with decreased renal function to avoid contrast nephropathy?

(A) N-acetylcysteine

(B) Fenoldopam

(C) Low osmolar contrast media

(D) Mannitol

Correct Answer: (C) Low osmolar contrast media

Solution:

Step 1: Understand contrast-induced nephropathy.
Iodinated contrast can injure the kidney through direct tubular toxicity and renal

medullary ischaemia. High-osmolar contrast agents are the most nephrotoxic because the osmotic load worsens medullary hypoxia and tubular damage.

Step 2: Choose the strategy in a patient with poor renal function.
The most reliable contrast-related measure is to use a contrast agent that is itself less toxic. Switching from high-osmolar to low-osmolar (or iso-osmolar) contrast media reduces the osmotic insult and lowers the risk of nephropathy, so this is preferred in patients with impaired renal function.

Step 3: Evaluate the pharmacological agents.
N-acetylcysteine has been used as an antioxidant adjunct, but its benefit is inconsistent and not established. Fenoldopam, a dopamine-1 receptor agonist, has not shown reliable protection. Mannitol, an osmotic diuretic, does not prevent contrast nephropathy and may worsen it. None of these is the preferred measure compared with simply choosing a safer contrast medium.

Step 4: Conclusion.
Correct answer: **Low osmolar contrast media**.

Quick Tip: The most reliable measure attacks the cause: use a less osmotically toxic contrast agent.

279. Which of the following is the earliest to be diagnosed by ultrasonography (USG)?

(A) Anencephaly

(B) Prosencephaly

(C) Meningocele

(D) Spina bifida

Correct Answer: (A) Anencephaly

Solution:

Step 1: Frame the question.
The question asks which neural tube/cranial anomaly is recognised earliest on antenatal ultrasound.

Step 2: Recall anencephaly.
Anencephaly is absence of the cranial vault and cerebral hemispheres (acrania with absent forebrain). The missing calvarium produces a strikingly abnormal cranial silhouette that is readily seen on ultrasound. The absence of normal cranial ossification and brain can be appreciated from the late first trimester to early second trimester, earlier than the other listed defects.

Step 3: Compare the others.
Holoprosencephaly (prosencephalic defect), a meningocele and spina bifida involve more subtle structural findings that generally become reliably detectable somewhat later, requiring careful imaging of the spine or midline brain structures. Their characteristic signs are typically confirmed later than the gross cranial absence of anencephaly.

Step 4: Conclusion.
Anencephaly is the earliest of these to be diagnosed by USG.

Correct answer: **Anencephaly**.

Quick Tip: The defect with the most obvious gross cranial abnormality is seen soonest.

280. The aortic knob silhouette on a chest X-ray (PA view) is obliterated by consolidation of which portion of the lung?

(A) Apicoposterior segment of left upper lobe

(B) Superior lingular segment of left upper lobe

(C) Apical segment of left lower lobe

(D) Inferior lingular segment of left upper lobe

Correct Answer: (A) Apicoposterior segment of left upper lobe

Solution:

Step 1: Understand the silhouette sign.
The silhouette sign states that an intrathoracic opacity, if in anatomical contact with a border of the heart or aorta, will obliterate that border. The lung tissue must be adjacent to the structure for its margin to be lost.

Step 2: Locate the aortic knob.
The aortic knob (arch) lies at the upper left mediastinal border, at a relatively high posterior level in the chest.

Step 3: Match the adjacent lung segment.
The apicoposterior segment of the left upper lobe lies in direct contact with the aortic arch. Consolidation here removes the sharp outline of the aortic knob (loss of the aortic knob silhouette).

Step 4: Exclude the others.
The lingular segments lie lower and more anterior, abutting the left heart border (their loss blurs the left cardiac border, not the aortic knob). The apical segment of the left lower lobe is posterior and lower, not in contact with the aortic arch.

Hence the answer is the apicoposterior segment of the left upper lobe.

Quick Tip: Which lung segment is draped directly against the aortic arch high on the left mediastinum?

281. CT scan is least accurate for the diagnosis of which of the following?

(A) 1 cm aneurysm in the hepatic artery

(B) 1 cm lymph node in the para-aortic region

(C) 1 cm mass in the tail of the pancreas

(D) 1 cm gall stone

Correct Answer: (D) 1 cm gall stone

Solution:

Step 1: Frame the question.
The question asks where CT performs worst (least accurate), not where it performs well.

Step 2: Where CT is strong.
CT (especially contrast-enhanced) is excellent for vascular lesions such as a hepatic artery aneurysm, for nodal disease in the para-aortic region, and for solid masses in the pancreatic tail. All these show good contrast against surrounding tissue.

Step 3: Where CT is weak.
Many gallstones are composed of cholesterol and are radiolucent or isodense with bile, so they are poorly seen on CT. CT detects only a fraction of gallstones, and a 1 cm non-calcified stone can easily be missed.

Step 4: The reference standard for gallstones.
Ultrasonography is the investigation of choice for gallstones (a mobile, echogenic focus with posterior acoustic shadowing), with very high sensitivity. CT is therefore the least accurate of the listed options.

Hence the answer is a 1 cm gall stone.

Quick Tip: Which of these lesions is often non-calcified and isodense to its surrounding fluid?

282. What is the differentiating feature of an atrial septal defect (ASD) from a ventricular septal defect (VSD) on chest X-ray?

(A) Pulmonary hypertension

(B) Absence of left atrial enlargement

(C) Pulmonary congestion

(D) Aortic shadow

Correct Answer: (B) Absence of left atrial enlargement

Solution:

Step 1: Understand the shunt physiology.
Both ASD and VSD are left-to-right shunts and both cause increased pulmonary blood flow (plethora) and can lead to pulmonary hypertension. So those features do not separate them.

Step 2: Trace the chamber loading in VSD.
In a VSD, shunted blood enters the pulmonary circulation, returns to the left atrium, and then the left ventricle, so both the left atrium and left ventricle enlarge. Left atrial enlargement is therefore typical of a VSD.

Step 3: Trace the chamber loading in ASD.
In an ASD, the shunt decompresses at the atrial level; the extra return goes into the right atrium and right ventricle and pulmonary artery. The left atrium does NOT enlarge because the excess volume escapes through the defect rather than loading the LA.

Step 4: Identify the discriminator.
The absence of left atrial enlargement is the key X-ray feature that favours ASD over VSD. Pulmonary hypertension and congestion occur in both and so cannot differentiate them.

Hence the answer is absence of left atrial enlargement.

Quick Tip: In which defect does the extra volume bypass the left atrium?

283. Which of the following is true about contrast radiography?

(A) In conventional monomeric iodinated contrast media, the iodine atom to solute particle ratio is 3:2.

(B) Injection into an artery is associated with three times more complications than injection into a vein.

(C) A test dose should be performed if a contrast reaction is suspected.

(D) Gadolinium-DTPA crosses the intact blood-brain barrier.

Correct Answer: (A) In conventional monomeric iodinated contrast media, the iodine atom to solute particle ratio is 3:2.

Solution:

Step 1: Analyse option A.
Conventional (first-generation) ionic monomeric contrast media dissociate in solution into one iodine-carrying anion and one cation, giving 2 particles, while each molecule carries 3 iodine atoms. The iodine atom to solute particle ratio is therefore 3:2. This statement is correct.

Step 2: Analyse option B.
There is no fixed rule that arterial injection causes exactly three times more complications than venous injection. This figure is not valid, so the statement is wrong.

Step 3: Analyse option C.
A test dose is not recommended; small test doses do not reliably predict anaphylactoid reactions and may themselves provoke a severe reaction. Prophylaxis and preparedness are advised instead. So this is wrong.

Step 4: Analyse option D.
Gadolinium-DTPA does NOT cross the intact blood-brain barrier. It enhances only where the barrier is broken down (tumour, infection, demyelination), which is precisely why it is useful for detecting such lesions. So this is wrong.

Hence the correct statement is the 3:2 ratio of conventional monomeric contrast media.

Quick Tip: Count iodine atoms per molecule versus the particles formed on dissociation of an ionic monomer.

284. Which antidepressant drug can be used in nocturnal enuresis, ADHD and chronic pain?

(A) Imipramine

(B) Fluvoxamine

(C) Bupropion

(D) Fluoxetine

Correct Answer: (A) Imipramine

Solution:

Step 1: Identify the drug class needed.
The combination of nocturnal enuresis, ADHD and chronic (neuropathic) pain points to a tricyclic antidepressant (TCA), which has well-established uses across all three indications.

Step 2: Recall imipramine's profile.
Imipramine is the classic TCA approved for childhood nocturnal enuresis (its anticholinergic action and effect on sleep architecture reduce bed-wetting). TCAs are also used off-label in ADHD and are standard agents for chronic and neuropathic pain.

Step 3: Exclude the SSRIs.
Fluvoxamine and fluoxetine are SSRIs; they are not used for enuresis or as analgesics and are not first-line for ADHD.

Step 4: Exclude bupropion.

Bupropion is used for depression and smoking cessation and has some role in ADHD, but it is not used for enuresis or chronic pain, so it does not cover all three indications.

Hence the answer is imipramine.

Quick Tip: Think of the tricyclic antidepressant classically prescribed for childhood bed-wetting.

285. A female patient presents with depressed mood, loss of appetite and no interest in her surroundings, with associated insomnia. The onset of depression was preceded by a business loss, and soon afterwards she developed these symptoms, which have persisted for the past 1 year. Which of the following is true?

(A) No treatment is necessary as it is due to the business loss

(B) SSRIs are the most efficacious of the available drugs

(C) Start antidepressant drug treatment based on the side-effect profile

(D) Combination therapy with two antidepressant drugs

Correct Answer: (C) Start antidepressant drug treatment based on the side-effect profile

Solution:

Step 1: Make the diagnosis.

Depressed mood, anhedonia, loss of appetite and insomnia persisting for one year fulfil criteria for major depressive disorder. A precipitating life event does not exclude the diagnosis; the duration and severity make this a full depressive episode, not transient grief or normal sadness.

Step 2: Reject option A.

A one-year depressive episode requires treatment; attributing it to the business loss and withholding therapy is incorrect.

Step 3: Reject option B.
SSRIs are first-line largely because of safety and tolerability, but no single class is the most efficacious for all patients; TCAs and others have comparable efficacy. Calling SSRIs the most efficacious is not accurate.

Step 4: Reject option D.
Initial management of a depressive episode is monotherapy. Combining two antidepressants at the outset is not standard and increases side effects.

Step 5: Select option C.
Because available antidepressants have broadly similar efficacy, the choice of agent is guided by the side-effect (and safety/tolerability) profile suited to the individual patient. Hence treatment should be started based on the side-effect profile.

Hence the answer is to start an antidepressant based on the side-effect profile.

Quick Tip: If most antidepressants are equally effective, what should guide which one you pick?

286. Regarding an imbecile, all of the following are true EXCEPT?

(A) IQ is 50 to 60

(B) Intellectual capacity equivalent to a child of 3 to 4 years of age

(C) Not able to take care of themselves

(D) Condition is congenital or acquired at an early age

Correct Answer: (A) IQ is 50 to 60

Solution:

Step 1: Define imbecile.
In the older classification of intellectual disability, imbecile corresponds to moderate mental retardation. The IQ range for this category is approximately 35

to 49 (moderate), not 50 to 60.

Step 2: Evaluate the IQ statement (option A).
An IQ of 50 to 60 falls in the mild range (the moron / mild category, roughly 50 to 69), not the imbecile range. Therefore option A is FALSE and is the exception being asked for.

Step 3: Confirm the true statements.
An imbecile has a mental age roughly equivalent to a child of about 3 to 4 years (option B is true). Such individuals cannot independently look after their own basic needs and require supervision (option C is true). Intellectual disability is congenital or acquired in early life (option D is true).

Step 4: Select the exception.
Since the question asks for the statement that is NOT true, the answer is the incorrect IQ value of 50 to 60.

Hence the answer is that IQ is 50 to 60.

Quick Tip: Imbecile equals moderate retardation, so its IQ band is lower than the value quoted in one option.

287. Maintenance dose of which of the following drugs is used worldwide for opioid dependence?

(A) Naloxone

(B) Methadone

(C) LAAM

(D) Pethidine

Correct Answer: (B) Methadone

Solution:

Step 1: The question asks for the drug whose maintenance dose is used worldwide in the management of opioid (heroin) dependence.
Step 2: Methadone is a long-acting synthetic full opioid agonist. Given as a single daily oral maintenance dose, it prevents withdrawal, blunts craving, and blocks the euphoria of illicit opioids without producing intoxication. It is the most widely used and best-validated agent for opioid substitution (maintenance) therapy globally.
Step 3: Reviewing the other options: Naloxone is a short-acting opioid antagonist used to reverse acute overdose, not for maintenance. LAAM (levo-alpha-acetylmethadol) is a long-acting agonist but was largely withdrawn because of cardiac (QT prolongation) toxicity and is not the worldwide standard. Pethidine is a short-acting opioid analgesic with a toxic metabolite (norpethidine) and high abuse potential, never used for maintenance.
Step 4: Therefore the correct answer is Methadone.

Quick Tip: Long-acting oral opioid agonist given once daily for substitution therapy.

288. Most common cause of premature death in schizophrenia?

(A) Homicide

(B) Suicide

(C) Toxicity of antipsychotic drug

(D) Hospital acquired infections

Correct Answer: (B) Suicide

Solution:

Step 1: The question asks for the single most common cause of premature (early, unnatural) death in patients with schizophrenia.
Step 2: Schizophrenia carries a markedly increased mortality and a shortened life expectancy. Among the unnatural causes of death, suicide is the leading one. Roughly 5 to 10 percent of patients with schizophrenia die by suicide, and risk is highest early in the illness, in young males, and during periods of depression or

post-discharge.
Step 3: Reviewing the other options: Homicide (the patient being killed) is far less common. Antipsychotic drug toxicity contributes to morbidity but is not the leading cause of premature death. Hospital acquired infections are an uncommon and non-specific cause.
Step 4: Therefore the correct answer is Suicide.

Quick Tip: Self-harm risk is highest early in the illness and in young males.

289. Which among the following is not used to treat alcohol dependence?

(A) Flumazenil

(B) Acamprosate

(C) Naltrexone

(D) Disulfiram

Correct Answer: (A) Flumazenil

Solution:

Step 1: This is a negative-stem question asking which drug is NOT used in the pharmacological management of alcohol dependence.
Step 2: The three established anti-craving or aversive agents are: Acamprosate, which stabilises glutamate or GABA balance to reduce craving and maintain abstinence; Naltrexone, an opioid antagonist that reduces the rewarding effect of alcohol and craving; and Disulfiram, which inhibits aldehyde dehydrogenase to produce an unpleasant acetaldehyde reaction on drinking, acting as a deterrent.
Step 3: Flumazenil is a benzodiazepine receptor antagonist used to reverse benzodiazepine sedation or overdose. It has no established role in treating alcohol dependence; in fact it can precipitate seizures in patients with alcohol-related benzodiazepine use or dependence.
Step 4: Therefore the drug not used for alcohol dependence is Flumazenil.

Quick Tip: One option is a benzodiazepine antagonist, not an anti-craving or aversive agent.

290. All are true about delirium tremens except?

(A) Visual hallucinations

(B) Coarse tremors

(C) Third nerve palsy

(D) Confusion

Correct Answer: (C) Third nerve palsy

Solution:

Step 1: This is a negative-stem question. We must identify the feature that is NOT part of delirium tremens (DT), the most severe form of alcohol withdrawal.
Step 2: Delirium tremens typically begins 48 to 96 hours after the last drink and is characterised by clouding of consciousness with disorientation and confusion, prominent visual hallucinations (classically of small animals or insects), coarse tremors, marked autonomic overactivity (tachycardia, sweating, fever, hypertension), and agitation.
Step 3: Reviewing the options: Visual hallucinations, coarse tremors, and confusion are all classic and expected features of DT.
Step 4: Third nerve (oculomotor) palsy is NOT a feature of delirium tremens. Ophthalmoplegia in an alcoholic suggests Wernicke encephalopathy (thiamine deficiency) and characteristically involves the sixth (abducens) nerve causing lateral rectus palsy, not the third nerve as a DT feature. Hence Third nerve palsy is the exception.

Quick Tip: Eye-movement palsy in an alcoholic points to Wernicke, not to DT.

291. Mr X is a chronic smoker. His family insists on quitting smoking. He is thinking about quitting, but is reluctant to do so because he is worried that on quitting he will become irritable. According to the health belief model, the state of the patient is?

(A) Precontemplation and preparation

(B) Contemplation and extent of sickness susceptibility

(C) Contemplation and cost

(D) Precontemplation and cost

Correct Answer: (C) Contemplation and cost

Solution:

Step 1: Two ideas must be matched: the stage of change and the relevant health belief construct.
Step 2: Stage of change. The patient is actively thinking about quitting but has not yet decided or set a date. This is the contemplation stage (aware of the problem and considering change), not precontemplation (no intention to change).
Step 3: Health belief construct. His specific worry is that quitting will make him irritable. This is a perceived barrier to action, that is, the perceived cost or downside of taking the recommended behaviour. It is not susceptibility (his risk of getting ill) and not a benefit.
Step 4: Combining the two: he is in the contemplation stage and his reluctance reflects perceived cost (barrier). Therefore the correct answer is Contemplation and cost.

Quick Tip: He is weighing change (not ignoring it) and fears a downside of quitting.

292. A 65-year-old lady presented with a swollen and painful knee. On examination, she was found to have grade III osteoarthritic changes. What is the best treatment option?

(A) Conservative management

(B) Arthroscopic washing

(C) Partial knee replacement

(D) Total knee replacement

Correct Answer: (D) Total knee replacement

Solution:

Step 1: We are given a 65-year-old woman with a painful, swollen knee and radiological grade III osteoarthritic (Kellgren-Lawrence) changes, and asked for the best treatment.
Step 2: Osteoarthritis severity guides treatment. Early disease (grade I to II) is managed conservatively with analgesics, weight reduction, physiotherapy, and intra-articular injections. Advanced disease with severe pain and joint destruction needs surgical replacement.
Step 3: Grade III to IV changes in a symptomatic 65-year-old with significant cartilage loss and deformity are best treated with total knee replacement (arthroplasty), which reliably relieves pain and restores function.
Step 4: Reviewing other options: conservative management is for early or mild disease. Arthroscopic washout has not been shown to benefit established osteoarthritis. Partial (unicompartmental) replacement is reserved for disease limited to one compartment, not for diffuse grade III changes. Therefore the best option is Total knee replacement.

Quick Tip: Advanced (grade III to IV) osteoarthritis in an elderly patient calls for arthroplasty.

293. Most common nerve injured in supracondylar fracture of the humerus?

(A) Median

(B) Radial

(C) Ulnar

(D) Anterior interosseous nerve

Correct Answer: (D) Anterior interosseous nerve

Solution:

Step 1: The question asks for the nerve most commonly injured in a supracondylar fracture of the humerus, the commonest elbow fracture in children.
Step 2: Nerve injury occurs in a significant proportion of displaced (type III, Gartland) supracondylar fractures. While older texts named the radial nerve, current literature identifies the anterior interosseous nerve, a motor branch of the median nerve, as the most frequently injured.
Step 3: The pattern depends on the direction of displacement: anterior interosseous nerve (median) injury occurs with posterolateral displacement of the distal fragment, radial nerve injury with posteromedial displacement, and ulnar nerve injury with the less common flexion-type fractures.
Step 4: The anterior interosseous nerve injury presents with weakness of flexor pollicis longus and the index flexor digitorum profundus, producing inability to make the OK sign, usually with no sensory loss. Therefore the most commonly injured nerve is the anterior interosseous nerve.

Quick Tip: Recent literature favours the motor branch of the median nerve, with loss of the OK sign.

294. Blount's disease is:

(A) Genu valgum

(B) Genu varum

(C) Genu recurvatum

(D) Meniscal injury

Correct Answer: (B) Genu varum

Solution:

Step 1: Blount's disease is also called tibia vara. It is a growth disorder of the proximal tibial physis (growth plate).
Step 2: The medial part of the upper tibia, just below the knee, fails to develop normally because of abnormal load on the growth plate. This causes the lower leg to angle inward.
Step 3: Inward angulation of the leg at the knee (the apex of the deformity points away from the midline) is genu varum, i.e. a bow-leg deformity. Hence Blount's disease produces genu varum.
Step 4: Unlike physiological bowlegs, which straighten as the child grows, Blount's disease is progressive and can cause severe bowing of one or both legs. It is more common in obese children, early walkers, and African-American children.
Step 5: Eliminating the others: genu valgum is a knock-knee (inward-pointing knees), genu recurvatum is backward hyperextension of the knee, and meniscal injury is a soft-tissue tear, none of which describe Blount's disease.
Answer: Genu varum (option B). This matches the printed key.

Quick Tip: Tibia vara means the leg bows outward at the knee.

295. A teenaged girl complains of pain in the knee on climbing stairs and on getting up after sitting for a long time. What is the probable diagnosis?

(A) Chondromalacia patellae

(B) Plica syndrome

(C) Bipartite patella

(D) Patello-femoral osteoarthritis

Correct Answer: (A) Chondromalacia patellae

Solution:

Step 1: Identify the patient profile. A teenaged girl (adolescent, female) with anterior knee pain is the classic demographic for chondromalacia patellae, which is most common in adolescents and young adults, especially females.
Step 2: Analyse the symptoms. Pain on climbing stairs and pain on rising after prolonged sitting (the positive movie-goer or theatre sign) are hallmark features. Both load the patellofemoral joint, which is the site of disease.
Step 3: Understand the pathology. Chondromalacia patellae is softening and breakdown of the articular cartilage on the undersurface of the patella, often related to abnormal patellar tracking. This produces anterior knee pain and a grinding (crepitus) sensation on knee movement.
Step 4: Exclude the others. Plica syndrome causes anterior knee pain from an inflamed synovial fold, usually after injury or overuse rather than this classic stair/sitting pattern. Bipartite patella is an incidental unfused ossicle, usually asymptomatic. Patello-femoral osteoarthritis occurs in older adults, not a teenager.
Step 5: The combination of an adolescent girl, the theatre sign, and pain on stairs points to chondromalacia patellae.
Answer: Chondromalacia patellae (option A). This matches the printed key.

Quick Tip: Young female plus the theatre sign equals softening of patellar cartilage.

296. The first structure to be fixed after amputation (during replantation) is?

(A) Bone fixing

(B) Arterial repair

(C) Venous repair

(D) Nerve repair

Correct Answer: (A) Bone fixing

Solution:

Step 1: Recall the goal of replantation after a traumatic amputation. The aim is restoration of useful function, not merely re-establishing blood flow.
Step 2: Recall the fixed sequence of replantation. Once a part is deemed replantable, the procedure follows a set order so that the stable framework is created before the delicate microvascular work.
Step 3: The very first step is bone fixation (osteosynthesis). The bone is shortened and stabilised, most commonly with K-wires. This provides a rigid, length-matched scaffold on which all the soft tissues can be repaired.
Step 4: Follow the rest of the order: after bone fixation, the extensor and flexor tendons are repaired, then the microsurgical repair of the artery, followed by nerve repair, then vein repair, and finally skin closure and splinting.
Step 5: Because bone gives the structural foundation and correct length needed before vessels, nerves, and tendons can be repaired under tension-free conditions, bone fixation must come first.
Answer: Bone fixing (option A). This matches the printed key.

Quick Tip: You need a stable, correctly-lengthened scaffold before any microsurgical repair.