INI CET Anatomy

Sample Paper – 9

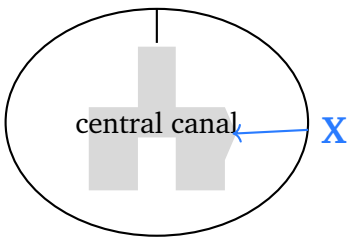
Duration: 45 Minutes **Maximum Marks: 50**

Instructions

- This paper contains **50** Multiple Choice Questions (Single Best Response), modelled on the Anatomy content of **INI CET** (Institutes of National Importance Combined Entrance Test) conducted by AIIMS New Delhi.
- Each correct answer carries **+1 mark**. There is **negative marking of one-third (0.33) mark** for every incorrect answer; unattempted questions carry no penalty.
- Every question has **exactly one best answer**. Choose the single most appropriate option.
- INI CET is a computer-based test taken in fixed 50-question blocks of **45 minutes** each; attempt this practice paper in one timed sitting of about **45 minutes**.
- Use of textbooks, mobile phones, and other electronic gadgets is strictly prohibited during the attempt.

Neuroanatomy

Q1. In the schematic cross-section of the thoracic spinal cord below, preganglionic sympathetic fibres arise from the cell column marked **X** (spinal segments T1–L2). This column is the:



(posterior / dorsal aspect is at the top)

(A) Nucleus proprius of the dorsal horn

(B) Intermediolateral cell column (lateral horn)

(C) Clarke's column (nucleus dorsalis)

(D) Anterior horn somatic motor column

Q2. The cranial (as opposed to sacral) parasympathetic outflow is carried by which set of cranial nerves?

(A) III, VII, IX and X

(B) III, IV, VI and XII

(C) V, VII and IX

(D) II, III, IV and VI

Q3. In the three-neuron oculosympathetic (Horner) pathway, the first-order (central) neuron runs from the hypothalamus to the ciliospinal centre. This first-order neuron is best described as the:

(A) Hypothalamospinal tract descending to the ciliospinal centre in the intermediolateral column

(B) Preganglionic fibre in the T1 ventral root

(C) Postganglionic fibre of the superior cervical ganglion

(D) Fibre of the internal carotid sympathetic plexus

Q4. The ciliospinal centre of Budge, where the second-order (preganglionic) oculosympathetic neuron begins, lies in the intermediolateral column at which spinal level?

(A) S2–S4

(B) C3–C5

(C) L1–L2

(D) C8–T2 (chiefly T1–T2)

Q5. When body temperature rises, stimulation of the anterior (preoptic) hypothalamus triggers which thermoregulatory response?

(A) Heat loss, through sweating and cutaneous vasodilatation

(B) Heat conservation, through shivering and vasoconstriction

(C) An increase in appetite and food intake

(D) A shift in the circadian sleep-wake phase

Q6. Which hypothalamic nucleus is the master clock of circadian rhythm, entrained to the light-dark cycle by the retinohypothalamic tract?

(A) Supraoptic nucleus

(B) Paraventricular nucleus

(C) Suprachiasmatic nucleus

(D) Mammillary body

Q7. Bilateral destruction of the lateral hypothalamic nucleus (the "hunger centre") classically produces:

(A) Hyperphagia and obesity

(B) Aphagia with severe weight loss

(C) Loss of temperature control

(D) Diabetes insipidus

Q8. Which statement about the rami communicantes of the sympathetic trunk is correct?

(A) Grey rami carry myelinated preganglionic fibres and exist only at T1–L2

(B) White rami are present at every spinal level from C1 to the coccyx

(C) Grey rami carry preganglionic parasympathetic fibres

(D) White rami carry myelinated preganglionic sympathetic fibres and are confined to T1–L2

Q9. The flow chart traces the sympathetic supply of the adrenal medulla. Which fibres belong in the box marked **?**, synapsing directly on the medullary chromaffin cells?

(A) Postganglionic fibres relaying in the coeliac ganglion

(B) Postganglionic parasympathetic fibres from the vagus

(C) Preganglionic sympathetic fibres of the greater splanchnic nerve, with no synapse in a ganglion

(D) Somatic motor fibres from the ventral rami

Head and Neck

Q10. Which cranial nerves leave the skull through the jugular foramen?

(A) VII and VIII

(B) II only

(C) III, IV and VI

(D) IX, X and XI

Q11. The internal acoustic meatus transmits which two cranial nerves?

(A) Glossopharyngeal (IX) and vagus (X)

(B) Trigeminal (V) and abducent (VI)

(C) Oculomotor (III) and trochlear (IV)

(D) Facial (VII) and vestibulocochlear (VIII)

Q12. Which structure passes through the foramen spinosum to enter the middle cranial fossa?

(A) Mandibular nerve

(B) Middle meningeal artery

(C) Maxillary nerve

(D) Internal carotid artery

Q13. In the schematic of the sphenoid/orbital openings below, the opening marked **X** transmits the optic nerve together with the ophthalmic artery. This opening is the:

Sup. orbital fissure	X	Foramen rotundum	Foramen ovale

(A) Superior orbital fissure

(B) Optic canal

(C) Foramen rotundum

(D) Foramen ovale

Q14. Which set of nerves passes through the superior orbital fissure to enter the orbit?

(A) The optic nerve with the ophthalmic artery

(B) The maxillary nerve (V_2) alone

(C) The oculomotor (III), trochlear (IV) and abducent (VI) nerves, with the ophthalmic division of the trigeminal (V_1)

(D) The glossopharyngeal, vagus and accessory nerves

Q15. The maxillary nerve (V_2) leaves the middle cranial fossa through the:

(A) Foramen rotundum

(B) Foramen ovale

(C) Foramen spinosum

(D) Jugular foramen

Q16. The facial nerve (CN VII) emerges from the base of the skull through the:

(A) Internal acoustic meatus

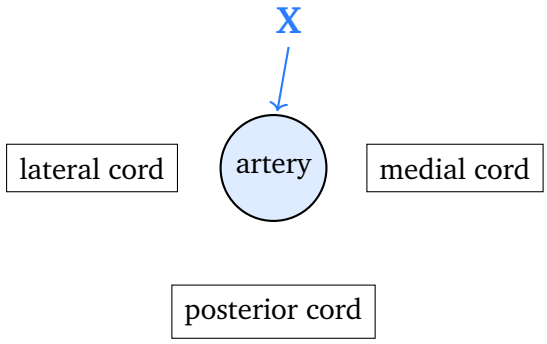
(B) Jugular foramen

(C) Foramen ovale

(D) Stylomastoid foramen

Upper and Lower Limb

Q17. In the diagram the three cords of the brachial plexus are arranged around the second part of the axillary artery. The cords are named lateral, medial and posterior according to their relationship to:



(A) The clavicle

(B) The pectoralis minor muscle

(C) The first rib

(D) The axillary artery

Q18. The two terminal branches of the posterior cord of the brachial plexus are the:

(A) Axillary and radial nerves

(B) Median and ulnar nerves

(C) Musculocutaneous and median nerves

(D) Ulnar and medial pectoral nerves

Q19. Which nerve is the largest terminal branch of the medial cord of the brachial plexus?

(A) Radial nerve

(B) Axillary nerve

(C) Musculocutaneous nerve

(D) Ulnar nerve

Q20. Injury to the long thoracic nerve (roots C5–C7) paralyses serratus anterior and produces:

(A) Wrist drop

(B) Winging of the scapula

(C) Claw hand

(D) A “waiter’s tip” posture

Q21. The thoracodorsal nerve, a branch of the posterior cord, supplies which muscle?

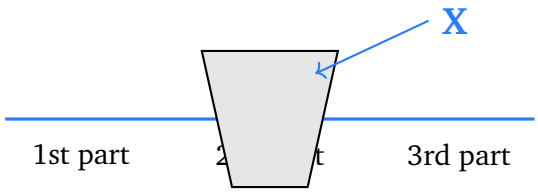
(A) Serratus anterior

(B) Pectoralis major

(C) Teres minor

(D) Latissimus dorsi

Q22. In the diagram the axillary artery is crossed by a muscle that divides it into three parts. This muscle, marked **X**, is the:



(A) Subclavius

(B) Pectoralis minor

(C) Coracobrachialis

(D) Teres major

Q23. The musculocutaneous nerve pierces and supplies which muscle before continuing to supply biceps brachii and brachialis?

(A) Deltoid

(B) Pronator teres

(C) Coracobrachialis

(D) Brachioradialis

Thorax, Abdomen and Pelvis

Q24. The broad ligament of the uterus has three named subdivisions. The part enclosing the uterine tube is the mesosalpinx, and the part suspending the ovary is the mesovarium. The remaining, largest subdivision below the tube is the:

(A) Mesocolon

(B) Mesoappendix

(C) Mesometrium

(D) Mesentery proper

Q25. The ovarian artery arises from which vessel, and at what vertebral level?

(A) From the internal iliac artery within the pelvis

(B) From the abdominal aorta at the level of L2

(C) From the uterine artery

(D) From the renal artery

Q26. The ovarian vessels reach the ovary by running within which structure?

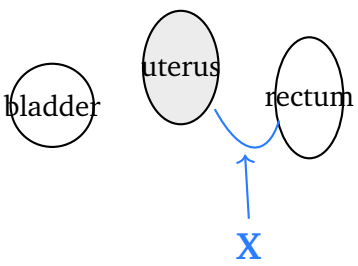
(A) The round ligament of the uterus

(B) The ovarian ligament proper

(C) The mesosalpinx

(D) The suspensory ligament of the ovary (infundibulopelvic ligament)

Q27. In the mid-sagittal diagram of the female pelvis, the lowest peritoneal recess marked **X**, where fluid collects and can be drained through the posterior vaginal fornix, is the:



(A) Vesicouterine pouch

(B) Rectouterine pouch (of Douglas)

(C) Paravesical fossa

(D) Retropubic space of Retzius

Q28. From which spinal segments does the pudendal nerve arise?

(A) S2, S3 and S4

(B) L1 and L2

(C) T12 and L1

(D) S1 and S2

Q29. A collection of pus lateral to the anal canal, which may spread across the midline behind the anus to the opposite side, typically occupies which space?

(A) The ischioanal (ischiorectal) fossa

(B) The retropubic space

(C) The rectouterine pouch

(D) The inguinal canal

Q30. The round ligament of the uterus leaves the pelvis through the deep inguinal ring, traverses the inguinal canal, and ends in the:

(A) Ovary

(B) Anterior abdominal wall at the umbilicus

(C) Labium majus

(D) Perineal body

Embryology

Q31. The fetal (functional, villous) part of the placenta develops from which structure?

(A) Decidua basalis

(B) Chorion frondosum (villous chorion)

(C) Chorion laeve (smooth chorion)

(D) Decidua capsularis

Q32. In the mature third-trimester placenta, the placental membrane (barrier) separating maternal from fetal blood is composed of:

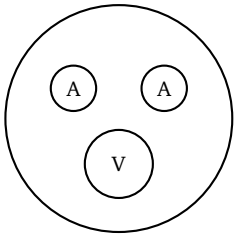
(A) A single layer of maternal endothelium only

(B) Cytotrophoblast and syncytiotrophoblast only

(C) Fused amnion and chorion

(D) Syncytiotrophoblast, a thin discontinuous cytotrophoblast, connective tissue and fetal capillary endothelium

Q33. The cross-section of the umbilical cord below shows three vessels embedded in Wharton's jelly. Which statement about them is correct?



A = artery, V = vein

(A) The two arteries carry oxygenated blood towards the fetus

(B) The two umbilical arteries carry deoxygenated blood from the fetus to the placenta, while the single vein carries oxygenated blood to the fetus

(C) There are normally two veins and one artery

(D) The single vein carries deoxygenated blood away from the fetus

Q34. The finding of a single umbilical artery on antenatal ultrasound is clinically important because it is associated with:

(A) An invariably normal outcome

(B) Twin pregnancy only

(C) An increased incidence of congenital (especially cardiac and renal) anomalies

(D) Prolonged post-term delivery

Q35. Placenta previa, a classic cause of painless third-trimester bleeding, is due to:

(A) Premature separation of a normally sited placenta

(B) Implantation of the placenta in the lower uterine segment, over or near the internal os

(C) Invasion of the placenta deep through the myometrium

(D) Implantation of the conceptus within the uterine tube

Q36. Monozygotic twins who share one placenta and a single amniotic sac (monochorionic, monoamniotic) arise from splitting of the inner cell mass:

(A) After the amniotic cavity has formed, about days 8–13

(B) Within the first 3 days, before the morula stage

(C) At the moment of fertilisation

(D) After day 13, when they are always conjoined

Q37. Amniotic fluid, which cushions the fetus and allows its movement, is contained within the sac formed by which membrane?

(A) The chorion

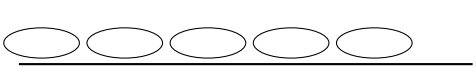
(B) The decidua

(C) The amnion

(D) The yolk sac

Histology

Q38. The schematic shows the flattened single-cell lining of a blood vessel, whose cells contain rod-shaped Weibel–Palade bodies that store von Willebrand factor. This lining is:



(A) Simple squamous epithelium (endothelium)

(B) Simple cuboidal epithelium

(C) Stratified squamous epithelium

(D) Transitional epithelium

Q39. Brown adipose tissue, abundant in the newborn, generates heat because its multilocular cells are packed with mitochondria containing:

(A) Uncoupling protein-1 (thermogenin)

(B) Myoglobin

(C) Pulmonary surfactant

(D) Melanin

Q40. Rapid saltatory conduction along a myelinated axon depends on dense clusters of voltage-gated sodium channels concentrated at the:

(A) Axon hillock only

(B) Internode, beneath the myelin

(C) Schmidt–Lanterman clefts

(D) Nodes of Ranvier

Q41. In the spleen, the periarteriolar lymphoid sheath (PALS) of the white pulp is populated chiefly by:

(A) Red blood cells

(B) Macrophages of the red pulp cords

(C) T lymphocytes

(D) Megakaryocytes

Q42. The macula densa, which senses the sodium chloride concentration of the tubular fluid, is a specialised region of the:

(A) Proximal convoluted tubule

(B) Thin descending limb of the loop

(C) Distal convoluted tubule (early distal tubule)

(D) Collecting duct

Q43. Merkel cells, which act as slowly-adapting touch receptors, lie in which layer of the epidermis?

(A) Stratum basale

(B) Stratum corneum

(C) Stratum lucidum

(D) Stratum granulosum

Genetics and Cytogenetics

Q44. Tuberous sclerosis, characterised by hamartomas and hypopigmented "ash-leaf" macules, follows which inheritance pattern?

(A) Autosomal dominant

(B) Autosomal recessive

(C) X-linked recessive

(D) Mitochondrial (maternal)

Q45. Hereditary haemochromatosis, caused by mutation of the HFE gene with progressive iron overload, is inherited as:

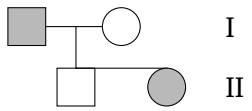
(A) X-linked dominant

(B) Autosomal recessive

(C) Autosomal dominant

(D) Mitochondrial (maternal)

Q46. The pedigree shows a disorder in which affected fathers transmit it to all their daughters but to none of their sons, with no unaffected carriers. Vitamin-D-resistant (hypophosphatemic) rickets follows this pattern, which is:



filled = affected

(A) Autosomal recessive

(B) X-linked recessive

(C) X-linked dominant

(D) Autosomal dominant

Q47. Amniocentesis for fetal karyotyping is most commonly performed at which stage of pregnancy?

(A) 6–8 weeks

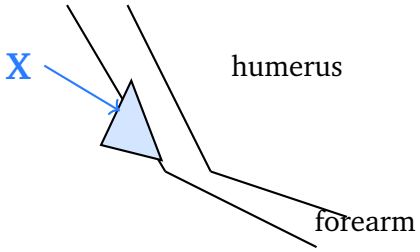
(B) 11–13 weeks

(C) 15–18 weeks

(D) 30–32 weeks

Osteology and Radiological Anatomy

Q48. On a lateral elbow radiograph of a child after a fall, the shaded triangular elevation of the anterior fat pad marked **X** (the "sail sign") indicates:



(A) A normal radiographic finding

(B) An occult fracture (supracondylar or radial head) with a joint effusion

(C) Osteoarthritis of the elbow

(D) A dislocated shoulder

Q49. Which statement about the normal curvatures of the adult vertebral column is correct?

(A) The cervical and lumbar regions are kyphotic

(B) The thoracic curve is a secondary curvature acquired after birth

(C) The cervical and lumbar curves are lordotic (secondary), while the thoracic and sacral curves are kyphotic (primary)

(D) All four curves are primary and present at birth

Q50. On a plain KUB radiograph, the normal course of the ureter can be traced along:

(A) The lateral border of psoas only, ending at the pubic symphysis

(B) The tips of the lumbar transverse processes, then crossing the sacroiliac joint before curving to the bladder

(C) The midline directly over the vertebral bodies

(D) The iliac crest and out through the greater sciatic notch

Detailed Solutions

Q1.

Solution

Concept – origin of sympathetic outflow: Preganglionic sympathetic neurons occupy a specific grey-matter column of the thoracolumbar cord.

Step 1 – locate the column at X: The arrow points to the small lateral projection of grey matter, the **intermediolateral cell column (lateral horn)**.

Step 2 – confirm the level: This column is present only in segments T1–L2, which defines the thoracolumbar (sympathetic) outflow.

Why the other options are wrong:

- A, Nucleus proprius: a sensory relay in the dorsal horn.
- C, Clarke's column: gives the posterior spinocerebellar tract, not sympathetic fibres.
- D, Anterior horn: houses somatic motor neurons to skeletal muscle.

Final Answer: Intermediolateral cell column $\Rightarrow$ B

Answer: (B) Go Back to Q1

Q2.

Solution

Concept – craniosacral parasympathetic outflow: Parasympathetic preganglionic fibres leave the central nervous system through certain cranial nerves and sacral roots.

Step 1 – list the cranial carriers: The cranial parasympathetic fibres travel with cranial nerves **III, VII, IX and X**.

Step 2 – eliminate the impostors: Nerves such as IV, VI and XII carry no parasympathetic fibres.

Why the other options are wrong:

- B: III, IV, VI, XII include purely motor nerves without a parasympathetic component.
- C: leaves out X, the largest parasympathetic nerve.
- D: II is purely sensory and IV, VI are somatic motor.

Final Answer: III, VII, IX and X $\Rightarrow$ A

Answer: (A) Go Back to Q2

Q3.

Solution

Concept – three-neuron oculosympathetic pathway: The pathway to the pupil dilator runs hypothalamus → ciliospinal centre → superior cervical ganglion → eye.

Step 1 – define the first-order neuron: The first-order (central) neuron is the **hypothalamospinal tract**, descending from the posterolateral hypothalamus to the ciliospinal centre of the intermediolateral column.

Step 2 – fit the option: Only option A describes this central descending limb.

Why the other options are wrong:

- B: the T1 preganglionic fibre is the second-order neuron.
- C: the superior cervical ganglion fibre is the third-order neuron.
- D: the internal carotid plexus carries third-order postganglionic fibres.

Final Answer: Hypothalamospinal (first-order) tract ⇒ A

Answer: (A) Go Back to Q3

Q4.

Solution

Concept – ciliospinal centre of Budge: This is where preganglionic sympathetic fibres for the eye originate.

Step 1 – give the level: The centre lies in the intermediolateral column at **C8–T2**, chiefly T1–T2.

Step 2 – clinical link: An apical lung (Pancoast) tumour at this level can produce Horner syndrome.

Why the other options are wrong:

- A, S2–S4: the sacral parasympathetic outflow.
- B, C3–C5: the phrenic nerve roots.
- C, L1–L2: the lower end of the sympathetic outflow, not the ocular centre.

Final Answer: C8–T2 (chiefly T1–T2) ⇒ D

Answer: (D) Go Back to Q4

Q5.

Solution

Concept – hypothalamic thermoregulation: The two ends of the hypothalamus drive opposite responses to temperature.

Step 1 – action of the anterior hypothalamus: The anterior (preoptic) hypothalamus is the **heat-loss** centre, triggering sweating and cutaneous vasodilatation when the body is hot.

Step 2 – contrast the posterior: The posterior hypothalamus conserves and generates heat (shivering, vasoconstriction).

Why the other options are wrong:

- B: heat conservation is the posterior hypothalamic function.
- C: appetite is a lateral/ventromedial function.
- D: circadian timing is the suprachiasmatic nucleus.

Final Answer: Heat loss (sweating, vasodilatation) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q5

Q6.

Solution

Concept – the biological clock: One hypothalamic nucleus keeps circadian time.

Step 1 – name it: The **suprachiasmatic nucleus** is the master clock.

Step 2 – how it is set: It receives light information directly from the retina via the retinohypothalamic tract, entraining it to the day-night cycle.

Why the other options are wrong:

- A, Supraoptic: makes antidiuretic hormone.
- B, Paraventricular: makes oxytocin and drives autonomic/endocrine output.
- D, Mammillary body: part of the memory (Papez) circuit.

Final Answer: Suprachiasmatic nucleus $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q6

Q7.

Solution

Concept – hunger and satiety centres: The lateral hypothalamus drives feeding; the ventromedial nucleus stops it.

Step 1 – effect of losing the hunger centre: Destroying the **lateral hypothalamus** removes the drive to eat, producing **aphagia** and weight loss.

Step 2 – mirror image: Destroying the ventromedial (satiety) nucleus instead causes hyperphagia and obesity.

Why the other options are wrong:

- A, Hyperphagia and obesity: follows a ventromedial lesion, not a lateral one.
- C, Temperature control: an anterior/posterior hypothalamic function.
- D, Diabetes insipidus: follows supraoptic/pituitary damage.

Final Answer: Aphagia with weight loss $\Rightarrow$ B

Answer: (B) Go Back to Q7

Q8.

Solution

Concept – white versus grey rami communicantes: The two rami differ in myelination, fibre type and level.

Step 1 – describe the white ramus: The **white ramus communicans** carries **myelinated preganglionic sympathetic fibres** and, because these arise only from T1–L2, is confined to those segments.

Step 2 – contrast the grey ramus: Grey rami carry unmyelinated postganglionic fibres and are present at every spinal level.

Why the other options are wrong:

- A: grey rami are unmyelinated and are found at all levels.
- B: white rami are limited to T1–L2, not every level.
- C: rami of the sympathetic trunk carry sympathetic, not parasympathetic, fibres.

Final Answer: White rami carry preganglionic fibres, T1–L2 $\Rightarrow$ D

Answer: (D) Go Back to Q8

Q9.

Solution

Concept – innervation of the adrenal medulla: The medulla is a modified sympathetic ganglion.

Step 1 – identify the fibres at ?: The chromaffin cells are supplied by **preganglionic sympathetic fibres of the greater splanchnic nerve, which do not synapse in a ganglion** but pass straight to the medulla.

Step 2 – explain why: The chromaffin cells are themselves modified postganglionic neurons, so they receive the preganglionic fibre directly and release catecholamines into the blood.

Why the other options are wrong:

- A: there is no relay in the coeliac ganglion for the medulla.
- B: the vagus does not supply the adrenal medulla.
- D: the supply is autonomic, not somatic motor.

Final Answer: Preganglionic splanchnic fibres, no synapse $\Rightarrow$ C

Answer: (C) Go Back to Q9

Q10.

Solution

Concept – contents of the jugular foramen: This posterior cranial fossa foramen transmits three cranial nerves and major veins.

Step 1 – list the nerves: The **glossopharyngeal (IX), vagus (X) and accessory (XI)** nerves pass through it, along with the internal jugular vein and sigmoid sinus.

Step 2 – match the option: Only option D lists IX, X and XI.

Why the other options are wrong:

- A, VII and VIII: use the internal acoustic meatus.
- B, II: uses the optic canal.
- C, III, IV, VI: use the superior orbital fissure.

Final Answer: IX, X and XI $\Rightarrow$ D

Answer: (D) Go Back to Q10

Q11.

Solution

Concept – contents of the internal acoustic meatus: This canal in the petrous temporal bone carries two cranial nerves.

Step 1 – name them: The **facial (VII)** and **vestibulocochlear (VIII)** nerves, with the labyrinthine artery, traverse it.

Step 2 – clinical note: A vestibular schwannoma here can compress both nerves.

Why the other options are wrong:

- A, IX and X: use the jugular foramen.
- B, V and VI: V exits through several foramina and VI uses the superior orbital fissure.
- C, III and IV: use the superior orbital fissure.

Final Answer: Facial (VII) and vestibulocochlear (VIII) $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q11

Q12.

Solution

Concept – foramen spinosum: This small foramen of the greater wing of the sphenoid lies posterolateral to the foramen ovale.

Step 1 – name the content: It transmits the **middle meningeal artery** (with its accompanying vein and the meningeal branch of V_3) into the middle cranial fossa.

Step 2 – clinical link: A pterion fracture tearing this artery causes an extradural haematoma.

Why the other options are wrong:

- A, Mandibular nerve: exits through the foramen ovale.
- C, Maxillary nerve: exits through the foramen rotundum.
- D, Internal carotid artery: passes through the carotid canal.

Final Answer: Middle meningeal artery $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q12

Q13.

Solution

Concept – the optic canal: Each labelled opening transmits a defined set of structures.

Step 1 – identify X: The opening transmitting the **optic nerve (CN II)** together with the **ophthalmic artery** is the **optic canal**.

Step 2 – separate the neighbours: The superior orbital fissure lies just lateral and carries the ocular motor nerves and V_1.

Why the other options are wrong:

- A, Superior orbital fissure: III, IV, V_1, VI, not the optic nerve.
- C, Foramen rotundum: V_2.
- D, Foramen ovale: V_3.

Final Answer: Optic canal $\Rightarrow$ B

Answer: (B) Go Back to Q13

Q14.

Solution

Concept – contents of the superior orbital fissure: This fissure connects the middle cranial fossa with the orbit.

Step 1 – list the nerves: It transmits the **oculomotor (III), trochlear (IV) and abducent (VI)** nerves and the **ophthalmic division of the trigeminal (V_1)**.

Step 2 – match the option: Option C names exactly this group.

Why the other options are wrong:

- A: the optic nerve and ophthalmic artery use the optic canal.
- B: V_2 uses the foramen rotundum.
- D: IX, X and XI use the jugular foramen.

Final Answer: III, IV, VI and V_1 $\Rightarrow$ C

Answer: (C) Go Back to Q14

Q15.

Solution

Concept – exit of the maxillary nerve: Each trigeminal division leaves the cranium by its own foramen.

Step 1 – name the foramen: The maxillary nerve (V_2) leaves through the **foramen rotundum** into the pterygopalatine fossa.

Step 2 – remember the set: V_1 uses the superior orbital fissure, V_2 the foramen rotundum, V_3 the foramen ovale.

Why the other options are wrong:

- B, Foramen ovale: transmits V_3.
- C, Foramen spinosum: transmits the middle meningeal artery.
- D, Jugular foramen: transmits IX, X, XI.

Final Answer: Foramen rotundum $\Rightarrow$ $\boxed{A}$

Answer: (A) Go Back to Q15

Q16.

Solution

Concept – exit of the facial nerve: The facial nerve enters the internal acoustic meatus but leaves the skull elsewhere.

Step 1 – name the exit: It emerges through the **stylomastoid foramen**, between the styloid and mastoid processes.

Step 2 – what happens next: It then enters the parotid gland and divides into its five terminal branches.

Why the other options are wrong:

- A, Internal acoustic meatus: its entry point, not its skull-base exit.
- B, Jugular foramen: for IX, X, XI.
- C, Foramen ovale: for V_3.

Final Answer: Stylomastoid foramen $\Rightarrow$ $\boxed{D}$

Answer: (D) Go Back to Q16

Q17.

Solution

Concept – naming of the plexus cords: The cords are named for their position around a single vessel.

Step 1 – identify the reference: The lateral, medial and posterior cords are named by their relationship to the **axillary artery** (its second part, behind pectoralis minor).

Step 2 – apply it: The lateral cord lies lateral to the artery, the medial cord medial, and the posterior cord behind it.

Why the other options are wrong:

- A, Clavicle: the trunks and divisions relate to it, not the cords' names.
- B, Pectoralis minor: it divides the axillary artery into parts but does not name the cords.
- C, First rib: marks the start of the axillary artery, not the cord names.

Final Answer: The axillary artery $\Rightarrow$ D

Answer: (D) Go Back to Q17

Q18.

Solution

Concept – branches of the posterior cord: The posterior cord serves extensors and the shoulder.

Step 1 – name the terminal branches: Its two terminal branches are the **axillary and radial nerves**.

Step 2 – recall its collaterals: It also gives the upper and lower subscapular and thoracodorsal nerves.

Why the other options are wrong:

- B, Median and ulnar: median comes from both lateral and medial cords; ulnar from the medial cord.
- C, Musculocutaneous and median: from the lateral cord region.
- D, Ulnar and medial pectoral: medial cord branches.

Final Answer: Axillary and radial nerves $\Rightarrow$ A

Answer: (A) Go Back to Q18

Q19.

Solution

Concept – terminal branches of the medial cord: The medial cord contributes to the median nerve and gives the ulnar nerve.

Step 1 – name the largest branch: The **ulnar nerve** is the largest terminal branch of the medial cord.

Step 2 – other branches: The medial cord also gives the medial pectoral, medial cutaneous nerves and its contribution to the median nerve.

Why the other options are wrong:

- A, Radial: from the posterior cord.
- B, Axillary: from the posterior cord.
- C, Musculocutaneous: from the lateral cord.

Final Answer: Ulnar nerve $\Rightarrow$ D

Answer: (D) Go Back to Q19

Q20.

Solution

Concept – long thoracic nerve: It supplies serratus anterior, which holds the scapula against the chest wall.

Step 1 – effect of injury: Paralysis of serratus anterior causes the medial border of the scapula to lift off, producing **winging of the scapula**.

Step 2 – functional loss: The patient cannot raise the arm above the horizontal because the scapula fails to rotate.

Why the other options are wrong:

- A, Wrist drop: radial nerve injury.
- C, Claw hand: ulnar nerve injury.
- D, "Waiter's tip": Erb's palsy of the upper trunk.

Final Answer: Winging of the scapula $\Rightarrow$ B

Answer: (B) Go Back to Q20

Q21.

Solution

Concept – thoracodorsal nerve: This posterior cord branch runs down the posterior axillary wall.

Step 1 – name its muscle: It supplies the **latissimus dorsi**.

Step 2 – clinical relevance: It is at risk during axillary lymph node clearance in breast surgery.

Why the other options are wrong:

- A, Serratus anterior: long thoracic nerve.
- B, Pectoralis major: medial and lateral pectoral nerves.
- C, Teres minor: axillary nerve.

Final Answer: Latissimus dorsi $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q21

Q22.

Solution

Concept – three parts of the axillary artery: One muscle crosses the artery and defines its parts.

Step 1 – identify the muscle at X: Pectoralis minor crosses the artery; the part proximal to it is the first, the part behind it the second, and the part distal the third.

Step 2 – reason it out: The number of branches of each part follows the "1, 2, 3" rule relative to pectoralis minor.

Why the other options are wrong:

- A, Subclavius: lies under the clavicle, above the artery.
- C, Coracobrachialis: guides the artery but does not cross to divide it.
- D, Teres major: marks where the axillary becomes the brachial artery.

Final Answer: Pectoralis minor $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q22

Q23.

Solution

Concept – course of the musculocutaneous nerve: It pierces a muscle in the arm before supplying the flexors.

Step 1 – name the pierced muscle: It pierces and supplies the **coracobrachialis**, then runs between biceps and brachialis.

Step 2 – continue its course: Beyond the elbow it becomes the lateral cutaneous nerve of the forearm.

Why the other options are wrong:

- A, Deltoid: axillary nerve.
- B, Pronator teres: median nerve.
- D, Brachioradialis: radial nerve.

Final Answer: Coracobrachialis $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q23

Q24.

Solution

Concept – subdivisions of the broad ligament: The broad ligament is divided by the structures it drapes over.

Step 1 – name the third subdivision: Below the uterine tube and mesovarium lies the largest part, the **mesometrium**, alongside the uterus.

Step 2 – complete the set: Mesovarium (ovary), mesosalpinx (tube) and mesometrium (uterus) make up the broad ligament.

Why the other options are wrong:

- A, Mesocolon: suspends parts of the colon.
- B, Mesoappendix: suspends the appendix.
- D, Mesentery proper: suspends the small intestine.

Final Answer: Mesometrium $\Rightarrow$ $\boxed{C}$

Answer: (C) Go Back to Q24

Q25.

Solution

Concept – origin of the ovarian artery: The gonadal arteries arise high on the abdominal aorta.

Step 1 – give source and level: The ovarian artery springs from the **abdominal aorta at the level of L2**, just below the renal arteries.

Step 2 – explain the high origin: This reflects the ovary's embryological development high in the abdomen before its descent.

Why the other options are wrong:

- A, Internal iliac: gives the uterine and vaginal arteries, not the ovarian.
- C, Uterine artery: anastomoses with, but does not give rise to, the ovarian artery.
- D, Renal artery: lies just above, but is not the source.

Final Answer: Abdominal aorta at L2 $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q25

Q26.

Solution

Concept – suspensory ligament of the ovary: One peritoneal fold conveys the ovarian vessels into the pelvis.

Step 1 – name the ligament: The ovarian vessels run within the **suspensory ligament of the ovary (infundibulopelvic ligament)**.

Step 2 – surgical note: This ligament must be clamped and tied when removing the ovary.

Why the other options are wrong:

- A, Round ligament: runs to the labium majus, no ovarian vessels.
- B, Ovarian ligament proper: connects ovary to uterus, carries no major vessels.
- C, Mesosalpinx: suspends the tube, not the ovarian vessels.

Final Answer: Suspensory ligament of the ovary $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q26

Q27.

Solution

Concept – lowest peritoneal recess in the female: Fluid in the peritoneal cavity gravitates to the deepest pouch.

Step 1 – identify X: The pouch between the rectum and uterus is the **rectouterine pouch of Douglas**, the lowest point of the female peritoneal cavity.

Step 2 – clinical use: Pus or blood here can be detected or drained through the posterior fornix of the vagina (culdocentesis).

Why the other options are wrong:

- A, Vesicouterine pouch: lies anteriorly and is shallower.
- C, Paravesical fossa: beside the bladder, not the lowest point.
- D, Retropubic space: extraperitoneal, in front of the bladder.

Final Answer: Rectouterine pouch of Douglas $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q27

Q28.

Solution

Concept – roots of the pudendal nerve: This is the main nerve of the perineum.

Step 1 – give the roots: The pudendal nerve arises from the ventral rami of **S2, S3 and S4**.

Step 2 – follow its course: It leaves the pelvis through the greater sciatic foramen, hooks around the ischial spine, and re-enters through the lesser sciatic foramen into Alcock's canal.

Why the other options are wrong:

- B, L1–L2: give the ilioinguinal and genitofemoral nerves.
- C, T12–L1: the subcostal and iliohypogastric region.
- D, S1–S2: contribute to the sciatic nerve, not chiefly the pudendal.

Final Answer: S2, S3 and S4 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q28

Q29.

Solution

Concept – ischioanal fossa abscess: The fat-filled fossa on each side of the anal canal can harbour infection.

Step 1 – name the space: Pus lateral to the anal canal collects in the **ischioanal (ischiorectal) fossa**.

Step 2 – why it spreads: The two fossae communicate posteriorly behind the anal canal, so an abscess can form a "horseshoe" across the midline.

Why the other options are wrong:

- B, Retropubic space: lies anterior to the bladder.
- C, Rectouterine pouch: an intraperitoneal recess, not perianal.
- D, Inguinal canal: in the groin, unrelated to perianal abscess.

Final Answer: Ischioanal (ischiorectal) fossa $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q29

Q30.

Solution

Concept – termination of the round ligament: The round ligament follows the path of the gubernaculum.

Step 1 – trace its end: It passes through the deep ring, along the inguinal canal, and ends by blending into the **labium majus**.

Step 2 – embryological link: It is the female homologue of the gubernaculum testis, explaining its course.

Why the other options are wrong:

- A, Ovary: connected by the ovarian ligament, not the round ligament's end.
- B, Umbilicus: the median umbilical ligament (urachus) ends there.
- D, Perineal body: a central tendon of the perineum, unrelated.

Final Answer: Labium majus $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q30

Q31.

Solution

Concept – fetal part of the placenta: The placenta has a maternal (decidual) and a fetal (chorionic) component.

Step 1 – name the fetal part: The fetal placenta forms from the **chorion frondosum**, the bushy villous chorion at the embryonic pole.

Step 2 – contrast the smooth chorion: The rest of the chorion loses its villi and becomes the chorion laeve.

Why the other options are wrong:

- A, Decidua basalis: the maternal part of the placenta.
- C, Chorion laeve: smooth and non-villous, not the placenta.
- D, Decidua capsularis: covers the conceptus, later degenerates.

Final Answer: Chorion frondosum $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q31

Q32.

Solution

Concept – the placental membrane: The barrier thins as pregnancy advances but retains defined layers.

Step 1 – list the mature layers: In late pregnancy it is made of **syncytiotrophoblast, a thin discontinuous cytotrophoblast, villous connective tissue and fetal capillary endothelium**.

Step 2 – functional point: This thin membrane allows efficient gas and nutrient exchange while keeping the two circulations separate.

Why the other options are wrong:

- A: maternal endothelium is not part of the barrier (maternal blood bathes the villi directly).
- B: omits the connective tissue and fetal endothelium.
- C: amnion and chorion form the fetal membranes, not the exchange barrier.

Final Answer: Four-layered fetal barrier $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q32

Q33.

Solution

Concept – umbilical cord vessels: The cord contains two arteries and one vein, with a counter-intuitive oxygen pattern.

Step 1 – state the correct arrangement: The **two umbilical arteries carry deoxygenated blood from the fetus to the placenta**, and the **single umbilical vein carries oxygenated blood back to the fetus**.

Step 2 – why the reversal: The cord is defined by direction of flow (arteries lead away from the fetal heart), so here the artery is the deoxygenated vessel.

Why the other options are wrong:

- A: the arteries carry deoxygenated, not oxygenated, blood.
- C: there are two arteries and one vein, not the reverse.
- D: the vein carries oxygenated blood towards the fetus.

Final Answer: Two arteries (deoxygenated), one vein (oxygenated) $\Rightarrow$ $\boxed{\text{B}}$

Answer: (B) Go Back to Q33

Q34.

Solution

Concept – single umbilical artery: Normally the cord has two arteries; one may be absent.

Step 1 – state the association: A single umbilical artery is linked to an **increased incidence of congenital anomalies**, particularly cardiac and renal defects.

Step 2 – clinical action: Its detection prompts a careful anomaly scan of the fetus.

Why the other options are wrong:

- A: outcome is not invariably normal, which is the reason for concern.
- B: it is not specific to twins.
- D: it is not linked to post-term delivery.

Final Answer: Increased congenital anomalies $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q34

Q35.

Solution

Concept – placenta previa: The site of implantation determines this complication.

Step 1 – define it: Placenta previa is **implantation in the lower uterine segment**, over or close to the internal os.

Step 2 – clinical hallmark: It causes painless, bright-red bleeding in the third trimester.

Why the other options are wrong:

- A, Premature separation: describes abruptio placentae (painful bleeding).
- C, Deep myometrial invasion: describes placenta accreta/percreta.
- D, Tubal implantation: describes an ectopic (tubal) pregnancy.

Final Answer: Low uterine (over the os) implantation $\Rightarrow$ B

Answer: (B) Go Back to Q35

Q36.

Solution

Concept – timing of monozygotic twinning: The membranes shared by identical twins depend on the day of splitting.

Step 1 – link mono/mono to timing: Monochorionic, monoamniotic twins arise when the inner cell mass splits **after the amniotic cavity has formed, about days 8–13**.

Step 2 – complete the rule: Split before day 3 gives di/di; days 4–8 gives mono/di; after day 13 gives conjoined twins.

Why the other options are wrong:

- B, Days 0–3: gives dichorionic, diamniotic twins.
- C, At fertilisation: produces separate placentas (di/di).
- D, After day 13: produces conjoined twins.

Final Answer: Split about days 8–13 $\Rightarrow$ A

Answer: (A) Go Back to Q36

Q37.

Solution

Concept – the amniotic sac: Two fetal membranes surround the embryo; one holds the fluid.

Step 1 – name the membrane: Amniotic fluid lies within the sac formed by the **amnion**, the innermost membrane.

Step 2 – its function: The fluid cushions the fetus, allows movement and prevents adhesions.

Why the other options are wrong:

- A, Chorion: the outer membrane, later fuses with the amnion.
- B, Decidua: the maternal endometrial layer.
- D, Yolk sac: an early nutritive/haematopoietic structure, not the fluid sac.

Final Answer: Amnion $\Rightarrow$ $\boxed{\text{C}}$

Answer: (C) Go Back to Q37

Q38.

Solution

Concept – vascular endothelium: Blood vessels are lined by a single flat layer of specialised cells.

Step 1 – classify the lining: The flattened single-cell lining is **simple squamous epithelium**, specifically called endothelium.

Step 2 – the clue: Its cells store von Willebrand factor in rod-shaped Weibel–Palade bodies, a hallmark of endothelium.

Why the other options are wrong:

- B, Simple cuboidal: cube-shaped cells, seen in ducts and tubules.
- C, Stratified squamous: many layers, as in skin.
- D, Transitional: multilayered, in the urinary tract.

Final Answer: Simple squamous (endothelium) $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q38

Q39.

Solution

Concept – brown adipose thermogenesis: Brown fat produces heat instead of ATP.

Step 1 – name the protein: Its mitochondria are rich in **uncoupling protein-1 (thermogenin)**, which uncouples oxidation from ATP synthesis, releasing energy as heat.

Step 2 – why it matters: This non-shivering thermogenesis keeps the newborn warm.

Why the other options are wrong:

- B, Myoglobin: an oxygen store in muscle.
- C, Surfactant: reduces alveolar surface tension in the lung.
- D, Melanin: a skin pigment.

Final Answer: Uncoupling protein-1 $\Rightarrow$ $\boxed{\text{A}}$

Answer: (A) Go Back to Q39

Q40.

Solution

Concept – saltatory conduction: The action potential jumps between gaps in the myelin.

Step 1 – locate the sodium channels: Voltage-gated sodium channels are clustered densely at the **nodes of Ranvier**.

Step 2 – explain the speed: The impulse regenerates only at these nodes, "jumping" from node to node and greatly increasing conduction velocity.

Why the other options are wrong:

- A, Axon hillock: where the impulse begins, not where saltation occurs.
- B, Internode: insulated by myelin, few channels.
- C, Schmidt–Lanterman clefts: cytoplasmic pockets within the myelin, not conduction sites.

Final Answer: Nodes of Ranvier $\Rightarrow$ $\boxed{\text{D}}$

Answer: (D) Go Back to Q40

Q41.

Solution

Concept – white pulp of the spleen: The white pulp is the lymphoid tissue arranged around arterioles.

Step 1 – identify the PALS cells: The periarteriolar lymphoid sheath is populated mainly by **T lymphocytes**.

Step 2 – contrast the B zone: B cells occupy the adjacent lymphoid follicles with their germinal centres.

Why the other options are wrong:

- A, Red blood cells: fill the red pulp sinusoids.
- B, Red-pulp macrophages: remove old erythrocytes in the cords of Billroth.
- D, Megakaryocytes: reside in bone marrow, not splenic white pulp.

Final Answer: T lymphocytes $\Rightarrow$ C

Answer: (C) Go Back to Q41

Q42.

Solution

Concept – the macula densa: Part of the juxtaglomerular apparatus senses tubular sodium.

Step 1 – locate it: The macula densa is a plaque of closely packed cells in the wall of the **distal convoluted tubule (early distal tubule)**, where it touches its own glomerulus.

Step 2 – its role: It senses luminal NaCl and adjusts renin release and afferent arteriolar tone (tubuloglomerular feedback).

Why the other options are wrong:

- A, Proximal tubule: reabsorbs the bulk of filtrate, no macula densa.
- B, Thin descending limb: water-permeable, no sensing plaque.
- D, Collecting duct: responds to ADH and aldosterone, not the sensor site.

Final Answer: Distal convoluted tubule $\Rightarrow$ C

Answer: (C) Go Back to Q42

Q43.

Solution

Concept – Merkel cells: These epidermal touch cells sit deep in the epidermis.

Step 1 – name the layer: Merkel cells lie in the **stratum basale**, the deepest epidermal layer, next to a sensory nerve terminal.

Step 2 – their function: Together with the nerve they form a slowly-adapting (type I) mechanoreceptor for fine touch and texture.

Why the other options are wrong:

- B, Stratum corneum: dead, keratin-filled surface cells.
- C, Stratum lucidum: a clear layer of thick (palmar/plantar) skin.
- D, Stratum granulosum: keratohyalin-granule cells, not touch receptors.

Final Answer: Stratum basale $\Rightarrow$ A

Answer: (A) Go Back to Q43

Q44.

Solution

Concept – inheritance of tuberous sclerosis: A single mutant allele is enough to cause this multisystem disorder.

Step 1 – state the pattern: Tuberous sclerosis is **autosomal dominant** (TSC1 or TSC2 genes), with variable expression.

Step 2 – recall the features: Ash-leaf macules, facial angiofibromas, cortical tubers and cardiac rhabdomyomas are typical.

Why the other options are wrong:

- B, Autosomal recessive: would need two mutant alleles; not the pattern here.
- C, X-linked recessive: would spare most females; tuberous sclerosis affects both sexes.
- D, Mitochondrial: shows maternal transmission only, not seen here.

Final Answer: Autosomal dominant $\Rightarrow$ A

Answer: (A) Go Back to Q44

Q45.

Solution

Concept – inheritance of haemochromatosis: Classic HFE-related iron overload needs two mutant alleles.

Step 1 – state the pattern: Hereditary haemochromatosis is **autosomal recessive**, usually from a homozygous C282Y mutation in the HFE gene.

Step 2 – the consequence: Excess iron deposits in liver, pancreas, heart and skin, causing cirrhosis, diabetes and pigmentation.

Why the other options are wrong:

- A, X-linked dominant: does not fit the equal-sex, recessive pattern.
- C, Autosomal dominant: a single allele is generally insufficient.
- D, Mitochondrial: would be maternally inherited, which is not the case.

Final Answer: Autosomal recessive ⇒ B

Answer: (B) Go Back to Q45

Q46.

Solution

Concept – reading the pedigree: The transmission pattern points to a gene on the X chromosome with a dominant effect.

Step 1 – interpret the clues: An affected father passing the trait to **all daughters but no sons**, with no carrier state, is the signature of **X-linked dominant** inheritance.

Step 2 – apply to the disease: Vitamin-D-resistant (hypophosphatemic) rickets is the classic X-linked dominant condition.

Why the other options are wrong:

- A, Autosomal recessive: would need carrier parents and affect both sexes equally.
- B, X-linked recessive: affected fathers do not pass it to daughters as affected (they become carriers).
- D, Autosomal dominant: would allow male-to-male transmission, absent here.

Final Answer: X-linked dominant ⇒ C

Answer: (C) Go Back to Q46

Q47.

Solution

Concept – timing of amniocentesis: The procedure samples amniotic fluid for fetal cells.

Step 1 – give the window: Amniocentesis for karyotyping is usually done at **15–18 weeks** of gestation.

Step 2 – reason for the timing: By this stage there is enough fluid and viable fetal cells, while still allowing time for results and decisions.

Why the other options are wrong:

- A, 6–8 weeks: far too early, insufficient fluid.
- B, 11–13 weeks: the window for chorionic villus sampling, not amniocentesis.
- D, 30–32 weeks: too late for routine karyotyping decisions.

Final Answer: 15–18 weeks $\Rightarrow$ C

Answer: (C) Go Back to Q47

Q48.

Solution

Concept – the elbow fat-pad (sail) sign: A joint effusion lifts the normally hidden fat pad into view.

Step 1 – interpret X: The triangular elevation of the anterior fat pad is the **"sail sign"**, indicating a joint effusion, usually from an **occult fracture** (supracondylar in children, radial head in adults).

Step 2 – clinical action: Even if no fracture line is seen, the effusion warrants treating the elbow as fractured.

Why the other options are wrong:

- A, Normal: a raised anterior (or any posterior) fat pad is abnormal.
- C, Osteoarthritis: gives joint-space narrowing and osteophytes, not an acute sail sign.
- D, Dislocated shoulder: a different joint entirely.

Final Answer: Occult fracture with effusion $\Rightarrow$ B

Answer: (B) Go Back to Q48

Q49.

Solution

Concept – normal spinal curvatures: The adult column has four curves of two developmental types.

Step 1 – classify them: The **cervical and lumbar curves are lordotic and secondary**, developing after birth, while the **thoracic and sacral curves are kyphotic and primary**, present from fetal life.

Step 2 – link to development: Holding up the head forms the cervical curve; walking forms the lumbar curve.

Why the other options are wrong:

- A: cervical and lumbar curves are lordotic, not kyphotic.
- B: the thoracic curve is primary, not secondary.
- D: only the thoracic and sacral curves are primary, not all four.

Final Answer: Cervical/lumbar lordosis (secondary), thoracic/sacral kyphosis (primary) $\Rightarrow$ C

Answer: (C) Go Back to Q49

Q50.

Solution

Concept – ureteric course on a KUB film: The ureter follows predictable bony landmarks on a plain radiograph.

Step 1 – trace the course: The ureter runs down over the **tips of the lumbar transverse processes**, then crosses the **sacroiliac joint**, curves laterally near the ischial spine, and turns medially to the bladder.

Step 2 – clinical use: This pathway helps distinguish a ureteric calculus from other calcifications (such as phleboliths) on the film.

Why the other options are wrong:

- A: the ureter does not end at the pubic symphysis; it enters the bladder.
- C: it lies lateral to the vertebral bodies, not in the midline.

- D: it does not pass through the greater sciatic notch.

Final Answer: Transverse process tips, then over the sacroiliac joint ⇒ B

Answer: (B) Go Back to Q50

Answer Key

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	B	2	A	3	A	4	D	5	A
6	C	7	B	8	D	9	C	10	D
11	D	12	B	13	B	14	C	15	A
16	D	17	D	18	A	19	D	20	B
21	D	22	B	23	C	24	C	25	B
26	D	27	B	28	A	29	A	30	C
31	B	32	D	33	B	34	C	35	B
36	A	37	C	38	A	39	A	40	D
41	C	42	C	43	A	44	A	45	B
46	C	47	C	48	B	49	C	50	B