

INI CET Anatomy

Sample Paper – 1

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.** Which ascending tract carries pain and temperature sensation from the contralateral half of the body to the thalamus?
- (A) Lateral spinothalamic tract
(B) Fasciculus gracilis
(C) Lateral corticospinal tract
(D) Posterior spinocerebellar tract
- Q2.** The nucleus ambiguus supplies branchiomotor fibres that travel in which set of cranial nerves?



- (A) III, IV and VI
- (B) V and VII
- (C) VII and XII
- (D) IX, X and the cranial part of XI

Q3. Degeneration of which structure produces the resting tremor, rigidity and bradykinesia of Parkinsonism?

- (A) Substantia nigra
- (B) Subthalamic nucleus
- (C) Caudate nucleus
- (D) Red nucleus

Q4. Lateral medullary (Wallenberg) syndrome most classically follows occlusion of which artery?

- (A) Anterior spinal artery
- (B) Anterior inferior cerebellar artery
- (C) Posterior inferior cerebellar artery
- (D) Superior cerebellar artery

Q5. Which thalamic relay nucleus projects visual information to the primary visual cortex?

- (A) Medial geniculate nucleus
- (B) Ventral posterolateral nucleus
- (C) Ventral anterior nucleus
- (D) Lateral geniculate nucleus

Q6. The genu and posterior limb of the internal capsule receive most of their blood supply from the:

- (A) Lenticulostriate branches of the middle cerebral artery
- (B) Anterior cerebral artery



- (C) Posterior cerebral artery
- (D) Basilar artery

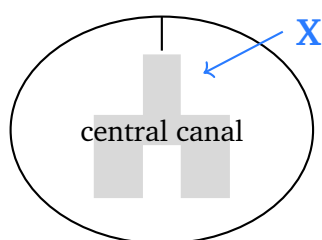
Q7. Contralateral hemiballismus, with violent flinging movements of the limbs, results from a lesion of the:

- (A) Subthalamic nucleus
- (B) Substantia nigra
- (C) Globus pallidus interna
- (D) Dentate nucleus

Q8. In Brown-Sequard syndrome (hemisection of the cord), loss of pain and temperature sensation is found:

- (A) Ipsilateral, at the level of the lesion only
- (B) Ipsilateral, below the lesion
- (C) Contralateral, one or two segments below the lesion
- (D) Bilaterally below the lesion

Q9. In the schematic cross-section of the spinal cord below, the white-matter column labelled **X** carries which sensory modality?



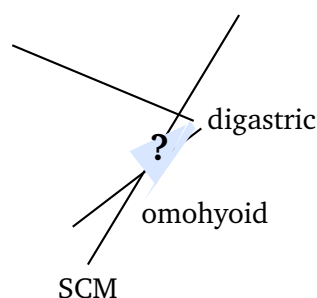
(posterior / dorsal aspect is at the top)

- (A) Fine touch, vibration and conscious proprioception
- (B) Pain and temperature
- (C) Voluntary motor commands to skeletal muscle
- (D) Unconscious proprioception to the cerebellum

Head and Neck



- Q10.** Which muscle of mastication is the chief depressor of the mandible, opening the jaw?
- (A) Lateral pterygoid
 - (B) Medial pterygoid
 - (C) Masseter
 - (D) Temporalis
- Q11.** Which structure passes through the foramen ovale of the sphenoid bone?
- (A) Maxillary nerve
 - (B) Mandibular nerve
 - (C) Middle meningeal artery
 - (D) Internal carotid artery
- Q12.** Which nerve runs within the carotid sheath, in the angle between the common carotid artery and the internal jugular vein?
- (A) Hypoglossal nerve
 - (B) Vagus nerve
 - (C) Glossopharyngeal nerve
 - (D) Accessory nerve
- Q13.** In the diagram of the anterior triangle of the neck below, the shaded region bounded by the superior belly of omohyoid, the posterior belly of digastric and the anterior border of sternocleidomastoid is the:



- (A) Submental triangle



- (B) Muscular triangle
- (C) Submandibular (digastric) triangle
- (D) Carotid triangle

Q14. All intrinsic muscles of the larynx except the cricothyroid are supplied by the:

- (A) External laryngeal nerve
- (B) Recurrent laryngeal nerve
- (C) Internal laryngeal nerve
- (D) Glossopharyngeal nerve

Q15. Frey's syndrome (gustatory sweating over the cheek after parotid surgery) results from aberrant regeneration of fibres in the:

- (A) Facial nerve
- (B) Great auricular nerve
- (C) Lesser petrosal nerve within the middle ear
- (D) Auriculotemporal nerve

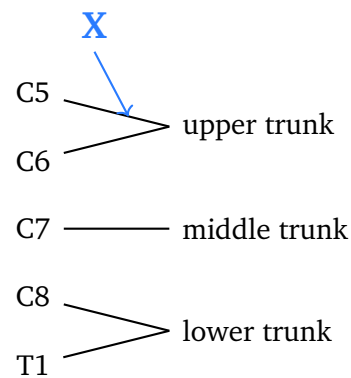
Q16. Parasympathetic secretomotor fibres to the parotid gland relay (synapse) in which ganglion?

- (A) Otic ganglion
- (B) Submandibular ganglion
- (C) Pterygopalatine ganglion
- (D) Ciliary ganglion

Upper and Lower Limb

Q17. In the schematic of the brachial plexus below, the “waiter’s tip” deformity of Erb’s palsy follows injury at the region marked X, which represents the roots:



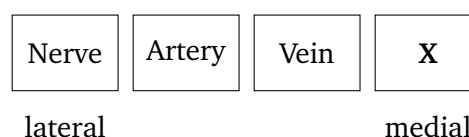


- (A) C8 and T1
- (B) C7 only
- (C) C5 and C6
- (D) C3 and C4

Q18. A fracture of the mid-shaft of the humerus most commonly injures which nerve as it lies in the spiral groove?

- (A) Median nerve
- (B) Radial nerve
- (C) Ulnar nerve
- (D) Axillary nerve

Q19. The diagram shows the structures under the inguinal ligament from lateral to medial. The medial-most compartment marked X (the femoral canal) normally contains:



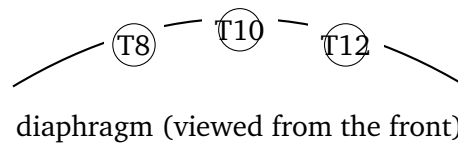
- (A) The femoral nerve
- (B) The femoral artery
- (C) The femoral vein
- (D) Lymphatics, areolar tissue and a lymph node



- Q20.** The “unhappy triad” of a lateral blow to the knee classically injures the anterior cruciate ligament, the tibial (medial) collateral ligament and the:
- (A) Lateral meniscus
 - (B) Posterior cruciate ligament
 - (C) Medial meniscus
 - (D) Fibular (lateral) collateral ligament
- Q21.** Foot drop, with loss of dorsiflexion and eversion, most often results from injury to which nerve as it winds around the neck of the fibula?
- (A) Tibial nerve
 - (B) Femoral nerve
 - (C) Superficial fibular nerve alone
 - (D) Common fibular (peroneal) nerve
- Q22.** Which nerve is most at risk in a fracture of the surgical neck of the humerus or an inferior shoulder dislocation?
- (A) Radial nerve
 - (B) Axillary nerve
 - (C) Musculocutaneous nerve
 - (D) Median nerve
- Q23.** Which muscle, supplied by the musculocutaneous nerve, flexes the elbow and is the chief supinator of the flexed forearm?
- (A) Brachialis
 - (B) Brachioradialis
 - (C) Biceps brachii
 - (D) Supinator

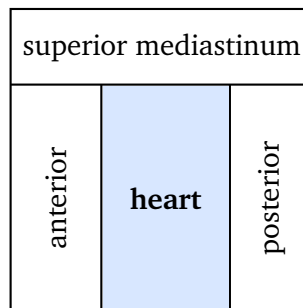


Q24. The schematic below shows the three major openings of the diaphragm at their vertebral levels. Which structure passes through the opening at the **T10** level?



- (A) Inferior vena cava
 - (B) Oesophagus
 - (C) Descending aorta
 - (D) Thoracic duct
- Q25.** The inferior vena cava pierces the central tendon of the diaphragm at which vertebral level?
- (A) T8
 - (B) T10
 - (C) T12
 - (D) T6
- Q26.** The hepatic portal vein is formed behind the neck of the pancreas by the union of the splenic vein and the:
- (A) Inferior mesenteric vein
 - (B) Left gastric vein
 - (C) Superior mesenteric vein
 - (D) Left renal vein
- Q27.** In the diagram of the mediastinum, the heart and its pericardium occupy the shaded region. This region is the:





- (A) Superior mediastinum
- (B) Middle mediastinum
- (C) Anterior mediastinum
- (D) Posterior mediastinum

Q28. The epiploic foramen (of Winslow) connects the greater sac of the peritoneum with the:

- (A) Lesser sac (omental bursa)
- (B) Right paracolic gutter
- (C) Pelvic cavity
- (D) Retroperitoneal space

Q29. The surface point at the junction of the lateral and middle thirds of a line from the right anterior superior iliac spine to the umbilicus, marking the base of the appendix, is called:

- (A) Murphy's point
- (B) Lanz point
- (C) McBurney's point
- (D) Boas point

Q30. In the female pelvis the ureter passes below ("water under the bridge") which artery about 2 cm lateral to the cervix?

- (A) Ovarian artery
- (B) Internal iliac artery



- (C) Vaginal artery
- (D) Uterine artery

Embryology

Q31. The muscles of mastication are derived from the mesoderm of which pharyngeal (branchial) arch?

- (A) Second arch
- (B) Third arch
- (C) First arch
- (D) Fourth arch

Q32. The flow chart maps each pharyngeal arch to its cranial nerve. Which nerve belongs in the box marked ? for the second arch?

Arch 1	→	V ₃
Arch 2	→	?
Arch 3	→	IX
Arch 4	→	X (SLN)

- (A) Trigeminal (V₃)
- (B) Glossopharyngeal (IX)
- (C) Facial (VII)
- (D) Vagus (X)

Q33. A tracheo-oesophageal fistula arises from defective partitioning of the foregut by the:

- (A) Tracheo-oesophageal (respiratory) septum
- (B) Urorectal septum
- (C) Aorticopulmonary septum
- (D) Septum transversum

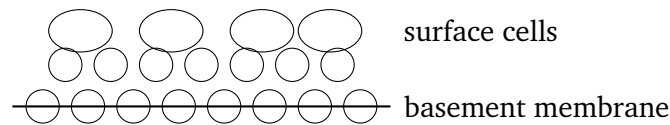


- Q34.** A Meckel's diverticulum, found on the antimesenteric border of the ileum, is a persistent remnant of the:
- (A) Urachus
 - (B) Ductus venosus
 - (C) Vitellointestinal (omphalomesenteric) duct
 - (D) Allantois
- Q35.** A patent ductus arteriosus keeps open the fetal connection between the pulmonary trunk and the:
- (A) Superior vena cava
 - (B) Arch of the aorta
 - (C) Left atrium
 - (D) Coronary sinus
- Q36.** Failure of fusion of the two palatine shelves with each other and the primary palate produces:
- (A) Isolated cleft lip
 - (B) Macroglossia
 - (C) Micrognathia
 - (D) Cleft palate
- Q37.** The central tendon of the diaphragm develops chiefly from which embryonic structure?
- (A) Pleuroperitoneal membranes
 - (B) Dorsal mesentery of the oesophagus
 - (C) Septum transversum
 - (D) Body-wall myotomes

Histology



Q38. The schematic shows a lining epithelium with large dome-shaped superficial cells over several deeper layers, able to stretch. This epithelium, typical of the urinary bladder, is:



- (A) Stratified squamous keratinised epithelium
 - (B) Transitional epithelium (urothelium)
 - (C) Simple columnar epithelium
 - (D) Pseudostratified ciliated columnar epithelium
- Q39.** The zonula occludens, which seals the apical intercellular space and controls paracellular transport, is which type of junction?
- (A) Tight junction
 - (B) Desmosome
 - (C) Gap junction
 - (D) Hemidesmosome
- Q40.** Which fibre predominates in a tendon and provides its great tensile strength?
- (A) Type II collagen
 - (B) Elastin
 - (C) Type IV collagen
 - (D) Type I collagen
- Q41.** Kupffer cells lining the hepatic sinusoids are functionally:
- (A) Resident macrophages
 - (B) Endothelial cells
 - (C) Fat-storing (hepatic stellate) cells
 - (D) Bile-duct epithelial cells

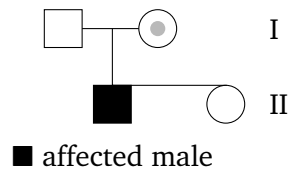


- Q42.** The basic structural and secretory unit of the thyroid gland, storing colloid, is the:
- (A) Acinus
 - (B) Islet
 - (C) Follicle
 - (D) Nephron
- Q43.** Which epithelium lines the lumen of the trachea and larger bronchi?
- (A) Simple squamous epithelium
 - (B) Pseudostratified ciliated columnar epithelium with goblet cells
 - (C) Transitional epithelium
 - (D) Stratified squamous epithelium

Genetics and Cytogenetics

- Q44.** The most common cytogenetic cause of Down syndrome (about 95% of cases) is:
- (A) Robertsonian translocation of chromosome 21
 - (B) Trisomy 21 from meiotic non-disjunction
 - (C) Mosaicism
 - (D) Monosomy 21
- Q45.** A 45,X karyotype with short stature and a webbed neck is characteristic of:
- (A) Klinefelter syndrome
 - (B) Down syndrome
 - (C) Edward syndrome
 - (D) Turner syndrome
- Q46.** The pedigree below shows a disorder with no male-to-male transmission, in which affected males appear in each generation through unaffected carrier mothers. This inheritance pattern is:





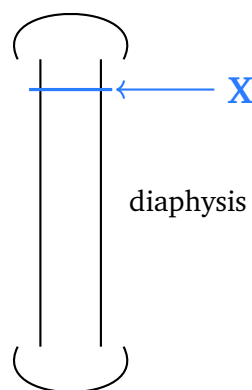
- (A) Autosomal dominant
- (B) X-linked recessive
- (C) Autosomal recessive
- (D) Mitochondrial (maternal)

Q47. The karyotype of a tall, infertile male with gynaecomastia and small testes (Klinefelter syndrome) is:

- (A) 45,X
- (B) 47,XX,+21
- (C) 46,XY
- (D) 47,XXY

Osteology and Radiological Anatomy

Q48. In the diagram of a growing long bone, the region marked X, where longitudinal (lengthwise) growth occurs, is the:



- (A) Diaphysis
- (B) Epiphyseal (growth) plate
- (C) Periosteum
- (D) Medullary cavity



- Q49.** On a normal chest radiograph the right dome of the diaphragm sits higher than the left mainly because of the underlying:
- (A) Liver
 - (B) Spleen
 - (C) Heart
 - (D) Stomach
- Q50.** Of the three normal constrictions of the ureter, the narrowest and commonest site for a calculus to impact is the:
- (A) Pelvi-ureteric junction
 - (B) Mid-ureter
 - (C) Point where it crosses the pelvic brim over the iliac vessels
 - (D) Vesico-ureteric junction



Detailed Solutions**Q1.****Solution**

Concept – anterolateral system: Pain and temperature fibres enter the cord, synapse in the dorsal horn, and cross within one or two segments to ascend on the opposite side.

Step 1 – name the crossed pain pathway: The crossed fibres form the **lateral spinothalamic tract**, carrying pain and temperature from the contralateral body.

Step 2 – confirm it reaches the thalamus: It terminates in the ventral postero-lateral nucleus of the thalamus.

Why the other options are wrong:

- B, Fasciculus gracilis: carries fine touch and proprioception, uncrossed until the medulla.
- C, Lateral corticospinal tract: a descending motor tract.
- D, Posterior spinocerebellar tract: carries unconscious proprioception, uncrossed.

Final Answer: Lateral spinothalamic tract ⇒ A

Answer: (A) [Go Back to Q1](#)

Q2.**Solution**

Concept – nucleus ambiguus: This branchiomotor column in the medulla supplies muscles of the pharynx and larynx.

Step 1 – list its outflow: Its fibres leave in the **glossopharyngeal (IX)**, **vagus (X)** and the **cranial part of the accessory (XI)** nerves.

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

Why the other options are wrong:

- A: III, IV, VI are purely somatic motor to eye muscles.
- B and C mix in V, VII and XII, which do not arise from the nucleus ambiguus.

Final Answer: IX, X and cranial XI ⇒ D

Answer: (D) [Go Back to Q2](#)



Q3.

Solution

Concept – basal ganglia and dopamine: Parkinsonism follows loss of dopaminergic neurons projecting to the striatum.

Step 1 – locate those neurons: They lie in the **substantia nigra pars compacta** of the midbrain.

Step 2 – link to the signs: Their loss produces resting tremor, rigidity and bradykinesia.

Why the other options are wrong:

- B, Subthalamic nucleus: its lesion causes hemiballismus, not Parkinsonism.
- C, Caudate nucleus: degenerates in Huntington disease (chorea).
- D, Red nucleus: linked to certain tremors but not Parkinsonism.

Final Answer: Substantia nigra ⇒

Answer: (A) [Go Back to Q3](#)

Q4.

Solution

Concept – brainstem vascular syndromes: The lateral medulla is supplied largely by the PICA and vertebral artery.

Step 1 – name the artery: Wallenberg syndrome classically follows occlusion of the **posterior inferior cerebellar artery (PICA)**.

Step 2 – recall the deficit: It gives crossed sensory loss, Horner syndrome, vertigo and dysphagia.

Why the other options are wrong:

- A, Anterior spinal artery: causes medial medullary syndrome.
- B, AICA: causes a lateral pontine syndrome.
- D, Superior cerebellar artery: affects the upper pons and cerebellum.

Final Answer: PICA ⇒

Answer: (C) [Go Back to Q4](#)



Q5.

Solution

Concept – thalamic relay nuclei: Each sensory modality has a dedicated thalamic relay.

Step 1 – match vision: The **lateral geniculate nucleus** relays retinal input to the primary visual cortex via the optic radiation.

Step 2 – eliminate the others: The medial geniculate is for hearing.

Why the other options are wrong:

- A, Medial geniculate: auditory relay.
- B, VPL: body somatosensation.
- C, Ventral anterior: motor circuits.

Final Answer: Lateral geniculate nucleus $\Rightarrow$ D

Answer: (D) [Go Back to Q5](#)

Q6.

Solution

Concept – blood supply of the internal capsule: The bulk of the capsule is fed by small perforators from the middle cerebral artery.

Step 1 – name them: The **lenticulostriate branches of the middle cerebral artery** supply the genu and posterior limb.

Step 2 – clinical link: Rupture of these “arteries of stroke” causes a classic capsular haemorrhage with hemiplegia.

Why the other options are wrong:

- B, ACA: mainly the anterior limb (via the recurrent artery of Heubner).
- C and D, PCA and basilar: supply the brainstem and occipital lobe, not the capsule.

Final Answer: Lenticulostriate branches of the MCA $\Rightarrow$ A

Answer: (A) [Go Back to Q6](#)



Q7.

Solution

Concept – subthalamic nucleus: It normally restrains movement through the indirect pathway.

Step 1 – effect of a lesion: Damage to the **subthalamic nucleus** releases the opposite limbs into violent flinging (hemiballismus).

Step 2 – note the side: The signs are contralateral to the lesion.

Why the other options are wrong:

- B, Substantia nigra: Parkinsonism.
- C, Globus pallidus interna: rigidity or dystonia.
- D, Dentate nucleus: cerebellar ataxia.

Final Answer: Subthalamic nucleus $\Rightarrow$

Answer: (A) [Go Back to Q7](#)

Q8.

Solution

Concept – cord hemisection: Different tracts decussate at different points, so signs split across the two sides.

Step 1 – trace pain and temperature: These fibres cross near their entry, so their tract carries information from the **opposite** side.

Step 2 – state the deficit: Hence pain and temperature loss is **contralateral**, beginning one or two segments below the lesion.

Why the other options are wrong:

- A and B, Ipsilateral: describe dorsal column and motor loss, which are on the same side.
- D, Bilateral: would need a complete transection.

Final Answer: Contralateral, below the lesion $\Rightarrow$

Answer: (C) [Go Back to Q8](#)



Q9.

Solution

Concept – reading a cord cross-section: The label X points to the posterior (dorsal) white column.

Step 1 – identify the column: The dorsal columns (fasciculus gracilis and cuneatus) sit here.

Step 2 – recall their modality: They carry **fine touch, vibration and conscious proprioception**, ascending uncrossed to the medulla.

Why the other options are wrong:

- B, Pain and temperature: run in the lateral (anterolateral) column.
- C, Motor: the lateral corticospinal tract lies laterally.
- D, Unconscious proprioception: spinocerebellar tracts are lateral.

Final Answer: Fine touch, vibration and proprioception ⇒ A

Answer: (A) [Go Back to Q9](#)

Q10.

Solution

Concept – muscles of mastication: Three muscles close the jaw; one opens it.

Step 1 – identify the depressor: The **lateral pterygoid**, aided by the digastric, protracts the condyle and opens the mouth.

Step 2 – contrast the closers: Masseter, temporalis and medial pterygoid all elevate (close) the mandible.

Why the other options are wrong:

- B, C, D: medial pterygoid, masseter and temporalis are all elevators.

Final Answer: Lateral pterygoid ⇒ A

Answer: (A) [Go Back to Q10](#)



Q11.

Solution

Concept – foramina of the skull base: Each foramen transmits a defined set of structures.

Step 1 – content of foramen ovale: The **mandibular nerve (V_3)** passes here, with the accessory meningeal artery and lesser petrosal nerve.

Step 2 – separate the neighbours: The maxillary nerve uses foramen rotundum.

Why the other options are wrong:

- A, Maxillary nerve: foramen rotundum.
- C, Middle meningeal artery: foramen spinosum.
- D, Internal carotid artery: carotid canal.

Final Answer: Mandibular nerve $\Rightarrow$ **B**

Answer: (B) [Go Back to Q11](#)

Q12.

Solution

Concept – carotid sheath: It encloses the common/internal carotid artery, the internal jugular vein and one nerve.

Step 1 – name the enclosed nerve: The **vagus nerve** lies in the posterior angle between artery and vein, inside the sheath.

Step 2 – place the others: The hypoglossal and accessory nerves lie outside, and the sympathetic trunk is behind the sheath.

Why the other options are wrong:

- A, C, D: hypoglossal, glossopharyngeal and accessory nerves are related to, but not within, the sheath.

Final Answer: Vagus nerve $\Rightarrow$ **B**

Answer: (B) [Go Back to Q12](#)



Q13.

Solution

Concept – subdivisions of the anterior triangle: The named boundaries define one specific triangle.

Step 1 – match the boundaries: Superior belly of omohyoid, posterior belly of digastric and the anterior border of SCM bound the **carotid triangle**.

Step 2 – note its contents: It contains the carotid bifurcation, internal jugular vein and vagus.

Why the other options are wrong:

- A, Submental: below the chin, between the anterior bellies of digastric.
- B, Muscular: bounded by omohyoid, SCM and the midline.
- C, Submandibular: between the two bellies of digastric and the mandible.

Final Answer: Carotid triangle $\Rightarrow$ **D**

Answer: (D) [Go Back to Q13](#)

Q14.

Solution

Concept – laryngeal nerve supply: Motor supply splits between two branches of the vagus.

Step 1 – rule for the intrinsic muscles: All intrinsic muscles except cricothyroid are supplied by the **recurrent laryngeal nerve**.

Step 2 – the exception: Cricothyroid is supplied by the external laryngeal nerve.

Why the other options are wrong:

- A, External laryngeal: only cricothyroid.
- C, Internal laryngeal: sensory above the vocal cords.
- D, Glossopharyngeal: supplies stylopharyngeus, not the larynx.

Final Answer: Recurrent laryngeal nerve $\Rightarrow$ **B**

Answer: (B) [Go Back to Q14](#)



Q15.

Solution

Concept – Frey’s syndrome: Parasympathetic secretomotor fibres regrow into cut sweat-gland pathways.

Step 1 – name the nerve: The **auriculotemporal nerve** carries parotid secretomotor fibres; after parotid surgery they reinnervate skin sweat glands.

Step 2 – result: Eating triggers facial sweating and flushing over the cheek.

Why the other options are wrong:

- A, Facial nerve: injury gives facial paralysis, not gustatory sweating.
- B, Great auricular: sensory to the ear region.
- C, Lesser petrosal: carries the fibres proximally but the misdirection is in the auriculotemporal branch.

Final Answer: Auriculotemporal nerve ⇒ D

Answer: (D) [Go Back to Q15](#)

Q16.

Solution

Concept – parotid secretomotor relay: The pathway runs glossopharyngeal → lesser petrosal → ganglion → auriculotemporal.

Step 1 – name the relay ganglion: Fibres synapse in the **otic ganglion**.

Step 2 – confirm the destination: Postganglionic fibres then travel with the auriculotemporal nerve to the parotid.

Why the other options are wrong:

- B, Submandibular ganglion: submandibular and sublingual glands.
- C, Pterygopalatine ganglion: lacrimal gland and nasal glands.
- D, Ciliary ganglion: sphincter pupillae and ciliary muscle.

Final Answer: Otic ganglion ⇒ A

Answer: (A) [Go Back to Q16](#)



Q17.

Solution

Concept – Erb’s palsy: Excess separation of head and shoulder tears the upper trunk of the plexus.

Step 1 – identify the roots at X: The upper trunk forms from **C5 and C6**.

Step 2 – explain the posture: Loss of abductors and lateral rotators gives the adducted, medially rotated, pronated “waiter’s tip” arm.

Why the other options are wrong:

- A, C8–T1: lower trunk injury (Klumpke, claw hand).
- B, C7 alone: does not give the classic Erb posture.
- D, C3–C4: supply the diaphragm, not the plexus trunks shown.

Final Answer: C5 and C6 ⇒

Answer: (C) [Go Back to Q17](#)

Q18.

Solution

Concept – nerve in the spiral groove: The radial nerve runs directly on the humeral shaft.

Step 1 – name the nerve: A mid-shaft fracture injures the **radial nerve**.

Step 2 – recall the deficit: This produces wrist drop and loss of extension.

Why the other options are wrong:

- A, Median: injured at the wrist or supracondylar region.
- C, Ulnar: injured at the medial epicondyle.
- D, Axillary: injured at the surgical neck.

Final Answer: Radial nerve ⇒

Answer: (B) [Go Back to Q18](#)



Q19.

Solution

Concept – femoral sheath compartments: From lateral to medial: nerve (outside the sheath), artery, vein, and femoral canal.

Step 1 – identify X: The medial femoral canal contains lymphatics, loose areolar tissue and the lymph node of Cloquet.

Step 2 – clinical note: Its weakness allows a femoral hernia.

Why the other options are wrong:

- A, Nerve: lies lateral and outside the sheath.
- B and C, Artery and vein: occupy the two lateral compartments, not X.

Final Answer: Lymphatics and areolar tissue $\Rightarrow$ D

Answer: (D) [Go Back to Q19](#)

Q20.

Solution

Concept – the unhappy triad: A lateral force to a planted knee stresses medial structures.

Step 1 – list the three: ACL, tibial (medial) collateral ligament and the medial meniscus (attached to the MCL).

Step 2 – reason it out: The medial meniscus tears because it is tethered to the injured MCL.

Why the other options are wrong:

- A, Lateral meniscus: mobile and spared.
- B, PCL: resists posterior, not valgus, force.
- D, LCL: on the side of impact, usually compressed not torn.

Final Answer: Medial meniscus $\Rightarrow$ C

Answer: (C) [Go Back to Q20](#)



Q21.

Solution

Concept – foot drop: Dorsiflexors and evertors are supplied by the common fibular nerve.

Step 1 – name the nerve: The **common fibular (peroneal) nerve** is vulnerable at the fibular neck.

Step 2 – recall the gait: Its loss gives foot drop and a high-stepping gait.

Why the other options are wrong:

- A, Tibial: supplies plantar flexors (calcaneal gait if injured).
- B, Femoral: knee extension.
- C, Superficial fibular alone: spares dorsiflexion (deep branch), so no true foot drop.

Final Answer: Common fibular nerve $\Rightarrow$ D

Answer: (D) [Go Back to Q21](#)

Q22.

Solution

Concept – surgical neck of the humerus: The axillary nerve winds around it with the posterior circumflex humeral vessels.

Step 1 – name the nerve: The **axillary nerve** is injured, weakening the deltoid.

Step 2 – recall the signs: Loss of abduction beyond the first 15 degrees and a patch of sensory loss over the deltoid (“regimental badge”).

Why the other options are wrong:

- A, Radial: mid-shaft injury.
- C, Musculocutaneous: rare, from anterior shoulder trauma.
- D, Median: wrist and elbow injuries.

Final Answer: Axillary nerve $\Rightarrow$ B

Answer: (B) [Go Back to Q22](#)



Q23.

Solution

Concept – biceps brachii: It crosses two joints and has a supinating action.

Step 1 – name the muscle: Biceps brachii, supplied by the musculocutaneous nerve, flexes the elbow and is the powerful supinator of the flexed forearm.

Step 2 – distinguish it: Brachialis flexes but does not supinate; supinator supinates but does not flex.

Why the other options are wrong:

- A, Brachialis: pure elbow flexor.
- B, Brachioradialis: radial nerve, flexes in mid-pronation.
- D, Supinator: supinates only.

Final Answer: Biceps brachii ⇒

Answer: (C) [Go Back to Q23](#)

Q24.

Solution

Concept – diaphragmatic openings: Remember “I 8, egg 10, aorta 12” for the vertebral levels.

Step 1 – read the figure at T10: The T10 opening transmits the **oesophagus** with the vagal trunks.

Step 2 – confirm the others: IVC at T8, aorta (with thoracic duct) at T12.

Why the other options are wrong:

- A, IVC: passes at T8.
- C and D, Aorta and thoracic duct: pass behind the diaphragm at T12.

Final Answer: Oesophagus ⇒

Answer: (B) [Go Back to Q24](#)



Q25.

Solution

Concept – caval opening: The IVC pierces the central tendon high up.

Step 1 – state the level: The IVC passes through the diaphragm at **T8**.

Step 2 – reasoning: Being in the central tendon, it stays open during contraction to aid venous return.

Why the other options are wrong:

- B, T10: oesophageal level.
- C, T12: aortic level.
- D, T6: too high; no major opening here.

Final Answer: T8 ⇒

Answer: (A) [Go Back to Q25](#)

Q26.

Solution

Concept – formation of the portal vein: Two large veins unite behind the pancreatic neck.

Step 1 – name the tributaries: The **superior mesenteric vein** joins the splenic vein to form the portal vein.

Step 2 – note the third vein: The inferior mesenteric vein usually drains into the splenic vein first.

Why the other options are wrong:

- A, IMV: a tributary of the splenic vein, not a direct former.
- B, Left gastric: drains into the portal vein but does not form it.
- D, Renal vein: part of the systemic, not portal, system.

Final Answer: Superior mesenteric vein ⇒

Answer: (C) [Go Back to Q26](#)



Q27.

Solution

Concept – divisions of the mediastinum: Below the sternal angle the mediastinum splits into anterior, middle and posterior parts.

Step 1 – locate the heart: The pericardium and heart lie in the **middle mediastinum**.

Step 2 – read the shaded box: The shaded central compartment in the figure is the middle mediastinum.

Why the other options are wrong:

- A, Superior: above the sternal angle (arch of aorta, trachea).
- C, Anterior: thymic remnants and fat.
- D, Posterior: oesophagus and descending aorta.

Final Answer: Middle mediastinum ⇒ B

Answer: (B) [Go Back to Q27](#)

Q28.

Solution

Concept – epiploic foramen: It is the sole natural communication of the lesser sac.

Step 1 – name what it connects: The foramen of Winslow links the greater sac to the **lesser sac (omental bursa)**.

Step 2 – recall its borders: Anterior boundary is the free edge of the lesser omentum (portal triad).

Why the other options are wrong:

- B, C, D: the paracolic gutter, pelvic cavity and retroperitoneum are not connected to the greater sac through this foramen.

Final Answer: Lesser sac ⇒ A

Answer: (A) [Go Back to Q28](#)



Q29.

Solution

Concept – surface anatomy of the appendix: The base projects to a fixed surface landmark.

Step 1 – name the point: It lies at **McBurney's point**, one-third along the spino-umbilical line from the ASIS.

Step 2 – clinical use: Maximal tenderness here suggests appendicitis.

Why the other options are wrong:

- A, Murphy's point: gallbladder sign.
- B, Lanz point: on the interspinous line, a different appendicular landmark.
- D, Boas point: referred tenderness in cholecystitis.

Final Answer: McBurney's point $\Rightarrow$

Answer: (C) [Go Back to Q29](#)

Q30.

Solution

Concept – ureter and uterine artery: The relationship is remembered as “water under the bridge”.

Step 1 – name the bridge: The **uterine artery** crosses above (anterior to) the ureter near the cervix.

Step 2 – surgical relevance: The ureter is at risk during hysterectomy when clamping the uterine artery.

Why the other options are wrong:

- A, Ovarian artery: crosses the ureter higher, at the pelvic brim.
- B, Internal iliac: gives origin to, but is not, the crossing vessel.
- C, Vaginal artery: lies below the ureter.

Final Answer: Uterine artery $\Rightarrow$

Answer: (D) [Go Back to Q30](#)



Q31.

Solution

Concept – pharyngeal arch derivatives: Each arch gives specific muscles and a nerve.

Step 1 – match mastication: The muscles of mastication come from the **first (mandibular) arch**, supplied by V_3 .

Step 2 – cross-check: The second arch gives muscles of facial expression (VII).

Why the other options are wrong:

- A, Second arch: facial expression muscles.
- B, Third arch: stylopharyngeus.
- D, Fourth arch: pharyngeal and soft-palate muscles.

Final Answer: First arch $\Rightarrow$

Answer: (C) [Go Back to Q31](#)

Q32.

Solution

Concept – nerves of the arches: Arch 1 = V_3 , arch 2 = VII, arch 3 = IX, arch 4 = X.

Step 1 – fill the box: The second arch nerve is the **facial nerve (VII)**.

Step 2 – confirm the pattern: This matches the derivatives (muscles of facial expression).

Why the other options are wrong:

- A, V_3 : first arch.
- B, IX: third arch.
- D, X: fourth and sixth arches.

Final Answer: Facial (VII) $\Rightarrow$

Answer: (C) [Go Back to Q32](#)



Q33.

Solution

Concept – foregut partitioning: A longitudinal septum separates the respiratory tube from the oesophagus.

Step 1 – name the septum: The **tracheo-oesophageal (respiratory) septum**; incomplete formation leaves a fistula.

Step 2 – clinical picture: Neonates present with drooling, choking on feeds and an inability to pass a nasogastric tube.

Why the other options are wrong:

- B, Urorectal septum: divides the cloaca (anorectal anomalies).
- C, Aorticopulmonary septum: divides the truncus arteriosus.
- D, Septum transversum: forms the diaphragm.

Final Answer: Tracheo-oesophageal septum ⇒ A

Answer: (A) [Go Back to Q33](#)

Q34.

Solution

Concept – vitelline duct remnants: The yolk-stalk normally regresses; persistence gives Meckel's diverticulum.

Step 1 – name the remnant: Meckel's diverticulum is a remnant of the **vitellointestinal (omphalomesenteric) duct**.

Step 2 – recall the rule of 2s: About 2% of people, 2 feet from the ileocaecal valve, 2 inches long.

Why the other options are wrong:

- A, Urachus: allantoic remnant, gives bladder-umbilical anomalies.
- B, Ductus venosus: becomes the ligamentum venosum.
- D, Allantois: forms the urachus.

Final Answer: Vitellointestinal duct ⇒ C

Answer: (C) [Go Back to Q34](#)



Q35.

Solution

Concept – ductus arteriosus: It shunts blood from the pulmonary trunk to the aorta in fetal life.

Step 1 – name the two ends: It connects the pulmonary trunk to the **arch of the aorta**; failure to close leaves a PDA.

Step 2 – clinical sign: A continuous “machinery” murmur.

Why the other options are wrong:

- A, SVC; C, Left atrium; D, Coronary sinus: none is the aortic end of the ductus.

Final Answer: Arch of the aorta ⇒

Answer: (B) [Go Back to Q35](#)

Q36.

Solution

Concept – palate development: The secondary palate forms by fusion of the two palatine shelves.

Step 1 – name the defect: Failure of shelf fusion gives a **cleft palate**.

Step 2 – separate it from cleft lip: Cleft lip is failure of the maxillary and medial nasal prominences to fuse, a different event.

Why the other options are wrong:

- A, Cleft lip: anterior lip defect, not palatal shelves.
- B and C, Macroglossia and micrognathia: not caused by shelf non-fusion.

Final Answer: Cleft palate ⇒

Answer: (D) [Go Back to Q36](#)



Q37.

Solution

Concept – diaphragm development: Four elements build the diaphragm; the tendon has one main source.

Step 1 – name the source: The central tendon derives chiefly from the **septum transversum**.

Step 2 – list the other three: Pleuroperitoneal membranes, dorsal oesophageal mesentery and body-wall myotomes complete it.

Why the other options are wrong:

- A, B, D: these contribute to the periphery and crura, not the central tendon.

Final Answer: Septum transversum ⇒ **C**

Answer: (C) [Go Back to Q37](#)

Q38.

Solution

Concept – transitional epithelium: Its surface cells change shape as the organ distends.

Step 1 – read the figure: Dome-shaped surface (umbrella) cells over several layers indicate **transitional epithelium (urothelium)**.

Step 2 – link to function: It lets the bladder stretch while staying watertight.

Why the other options are wrong:

- A, Stratified squamous keratinised: found in skin.
- C, Simple columnar: a single tall layer (gut).
- D, Pseudostratified columnar: airway lining with cilia.

Final Answer: Transitional epithelium ⇒ **B**

Answer: (B) [Go Back to Q38](#)



Q39.

Solution

Concept – cell junctions: The zonula occludens is the most apical junction of the junctional complex.

Step 1 – name it: The zonula occludens is a **tight junction**, sealing the paracellular space.

Step 2 – contrast: Desmosomes give mechanical anchorage; gap junctions allow ionic coupling.

Why the other options are wrong:

- B, Desmosome: spot adhesion (macula adherens).
- C, Gap junction: communicating channel.
- D, Hemidesmosome: anchors cells to the basement membrane.

Final Answer: Tight junction $\Rightarrow$ **A**

Answer: (A) [Go Back to Q39](#)

Q40.

Solution

Concept – collagen types: Different tissues use different collagens.

Step 1 – match the tendon: Tendons are rich in **type I collagen**, giving high tensile strength.

Step 2 – contrast: Type II is in cartilage, type IV in basement membranes.

Why the other options are wrong:

- A, Type II collagen: hyaline cartilage.
- B, Elastin: elastic arteries and ligamenta flava.
- C, Type IV collagen: basement membrane meshwork.

Final Answer: Type I collagen $\Rightarrow$ **D**

Answer: (D) [Go Back to Q40](#)



Q41.

Solution

Concept – liver sinusoidal cells: The sinusoid wall carries a resident phagocyte.

Step 1 – name them: Kupffer cells are the liver's **resident macrophages**, part of the mononuclear phagocyte system.

Step 2 – their role: They clear worn red cells and gut-derived bacteria.

Why the other options are wrong:

- B, Endothelial cells: line the sinusoid but are not phagocytic Kupffer cells.
- C, Stellate (Ito) cells: store fat and vitamin A.
- D, Bile-duct epithelium: lines the ducts, not the sinusoids.

Final Answer: Resident macrophages ⇒ A

Answer: (A) [Go Back to Q41](#)

Q42.

Solution

Concept – thyroid histology: The gland is built of colloid-filled spheres.

Step 1 – name the unit: The **follicle**, lined by follicular cells and filled with thyroglobulin colloid, is the functional unit.

Step 2 – add the other cell: Parafoallicular (C) cells lie between follicles and secrete calcitonin.

Why the other options are wrong:

- A, Acinus: exocrine gland unit (e.g., pancreas).
- B, Islet: endocrine pancreas.
- D, Nephron: kidney unit.

Final Answer: Follicle ⇒ C

Answer: (C) [Go Back to Q42](#)



Q43.

Solution

Concept – respiratory epithelium: The conducting airway has a ciliated, mucus-trapping lining.

Step 1 – name it: The trachea is lined by **pseudostratified ciliated columnar epithelium with goblet cells**.

Step 2 – function: The mucociliary escalator sweeps trapped particles upward.

Why the other options are wrong:

- A, Simple squamous: found in alveoli.
- C, Transitional: urinary tract.
- D, Stratified squamous: found at the true vocal cords and skin.

Final Answer: Pseudostratified ciliated columnar $\Rightarrow$ **B**

Answer: (B) [Go Back to Q43](#)

Q44.

Solution

Concept – Down syndrome cytogenetics: Most cases are due to an extra whole chromosome 21.

Step 1 – name the mechanism: About 95% result from **trisomy 21 caused by meiotic non-disjunction**, giving 47 chromosomes.

Step 2 – note the minority: Translocation (about 4%) and mosaicism (about 1%) make up the rest.

Why the other options are wrong:

- A, Translocation: about 4%, and does not raise the count to 47.
- C, Mosaicism: about 1%.
- D, Monosomy 21: not viable as Down syndrome.

Final Answer: Trisomy 21 from non-disjunction $\Rightarrow$ **B**

Answer: (B) [Go Back to Q44](#)



Q45.

Solution

Concept – sex-chromosome monosomy: A single X with no second sex chromosome defines one syndrome.

Step 1 – read the karyotype: 45,X is Turner syndrome.

Step 2 – recall features: Short stature, webbed neck, streak ovaries and coarctation of the aorta.

Why the other options are wrong:

- A, Klinefelter: 47,XXY.
- B, Down: trisomy 21.
- C, Edward: trisomy 18.

Final Answer: Turner syndrome $\Rightarrow$ **D**

Answer: (D) [Go Back to Q45](#)

Q46.

Solution

Concept – reading a pedigree: No father-to-son transmission points to an X-linked trait.

Step 1 – interpret the pattern: Affected males through carrier mothers, with no male-to-male passage, indicates **X-linked recessive** inheritance.

Step 2 – example: Haemophilia and Duchenne muscular dystrophy follow this pattern.

Why the other options are wrong:

- A, Autosomal dominant: would show male-to-male transmission.
- C, Autosomal recessive: usually needs two carrier parents and affects both sexes equally.
- D, Mitochondrial: passed from mothers to all children, sons and daughters alike.

Final Answer: X-linked recessive $\Rightarrow$ **B**

Answer: (B) [Go Back to Q46](#)



Q47.

Solution

Concept – Klinefelter syndrome: An extra X in a male gives the phenotype.

Step 1 – read the karyotype: 47,XXY defines Klinefelter syndrome.

Step 2 – recall features: Tall stature, small firm testes, gynaecomastia and infertility.

Why the other options are wrong:

- A, 45,X: Turner syndrome.
- B, 47,XX,+21: Down syndrome.
- C, 46,XY: a normal male karyotype.

Final Answer: 47,XXY $\Rightarrow$ **D**

Answer: (D) [Go Back to Q47](#)

Q48.

Solution

Concept – long-bone growth: Lengthwise growth happens at a cartilaginous plate.

Step 1 – identify X: The marked line is the **epiphyseal (growth) plate**, between epiphysis and metaphysis.

Step 2 – mechanism: Cartilage proliferates and is replaced by bone (endochondral ossification).

Why the other options are wrong:

- A, Diaphysis: the shaft, already ossified.
- C, Periosteum: adds width (appositional growth), not length.
- D, Medullary cavity: houses marrow.

Final Answer: Epiphyseal plate $\Rightarrow$ **B**

Answer: (B) [Go Back to Q48](#)



Q49.

Solution

Concept – diaphragmatic domes on a chest film: The abdominal organ beneath each dome sets its height.

Step 1 – name the organ: The bulky **liver** pushes the right dome higher than the left.

Step 2 – confirm: The left dome is a little lower, partly from the cardiac impression.

Why the other options are wrong:

- B, Spleen: too small to raise the dome.
- C, Heart: sits above the left dome, slightly depressing it.
- D, Stomach: its gas bubble lies under the left dome.

Final Answer: Liver ⇒ **A**

Answer: (A) [Go Back to Q49](#)

Q50.

Solution

Concept – ureteric constrictions: The ureter narrows at three points; stones lodge at the tightest.

Step 1 – name the narrowest: The **vesico-ureteric junction**, where the ureter enters the bladder, is the narrowest and commonest impaction site.

Step 2 – list the three: Pelvi-ureteric junction, crossing of the pelvic brim, and the vesico-ureteric junction.

Why the other options are wrong:

- A, PUJ: a constriction, but wider than the VUJ.
- B, Mid-ureter: not a normal constriction.
- C, Pelvic brim: a constriction, but not the narrowest.

Final Answer: Vesico-ureteric junction ⇒ **D**

Answer: (D) [Go Back to Q50](#)



Answer Key

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

