

INI CET Anatomy

Sample Paper – 3

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.** Dopamine released by the nigrostriatal pathway excites the direct pathway (through D1 receptors) and inhibits the indirect pathway (through D2 receptors). What is its overall net effect on movement?
- (A) It facilitates (promotes) movement
(B) It abolishes all movement
(C) It suppresses (inhibits) movement
(D) It has no net effect on movement
- Q2.** Selective loss of GABAergic medium spiny neurons in which basal ganglia nucleus produces the chorea of Huntington disease?



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

Q3. The lentiform (lenticular) nucleus is formed by the globus pallidus together with which other nucleus?

- (A) Putamen
- (B) Caudate nucleus
- (C) Amygdala
- (D) Claustrum

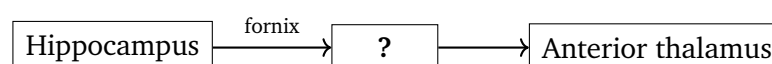
Q4. General sensation from the face, carried by the trigeminal nerve, is relayed to the cerebral cortex by which thalamic nucleus?

- (A) Ventral posterolateral nucleus (VPL)
- (B) Lateral geniculate nucleus
- (C) Ventral posteromedial nucleus (VPM)
- (D) Medial geniculate nucleus

Q5. The anterior limb of the internal capsule, lying between the head of the caudate nucleus and the lentiform nucleus, mainly contains:

- (A) Corticospinal fibres to the limbs
- (B) Frontopontine fibres and the anterior thalamic radiation
- (C) The optic radiation
- (D) The auditory radiation

Q6. In the Papez circuit shown below, the fornix carries the output of the hippocampus to the structure marked ?. This structure is the:



- (A) Mammillary body
- (B) Amygdala
- (C) Caudate nucleus
- (D) Red nucleus

Q7. Symmetrical atrophy and petechial haemorrhage of the mammillary bodies due to thiamine (vitamin B₁) deficiency is the hallmark of:

- (A) Alzheimer disease
- (B) Wernicke-Korsakoff syndrome
- (C) Huntington disease
- (D) Parkinson disease

Q8. The supraoptic and paraventricular nuclei of the hypothalamus send axons to the posterior pituitary, where they release which two hormones?

- (A) Growth hormone and prolactin
- (B) FSH and LH
- (C) ACTH and TSH
- (D) Antidiuretic hormone (ADH) and oxytocin

Q9. Bilateral destruction of the amygdalae produces placidity, hyperorality and hypersexuality, a picture known as:

- (A) Korsakoff psychosis
- (B) Kluver-Bucy syndrome
- (C) Wallenberg syndrome
- (D) Gerstmann syndrome

Head and Neck

Q10. Which extrinsic muscle of the tongue protrudes it and is supplied by the hypoglossal nerve (CN XII)?

- (A) Palatoglossus



- (B) Styloglossus
- (C) Genioglossus
- (D) Hyoglossus

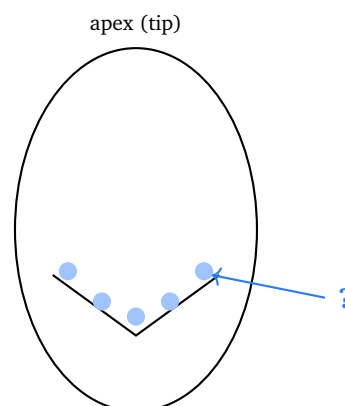
Q11. Taste sensation from the anterior two-thirds of the tongue is carried by which nerve?

- (A) Chorda tympani (a branch of the facial nerve)
- (B) Lingual branch of the mandibular nerve
- (C) Glossopharyngeal nerve
- (D) Hypoglossal nerve

Q12. Both taste and general sensation from the posterior one-third of the tongue are carried by the:

- (A) Chorda tympani
- (B) Glossopharyngeal nerve
- (C) Lingual nerve
- (D) Internal laryngeal nerve

Q13. In the diagram of the tongue dorsum below, the 8 to 12 large papillae arranged in a V just in front of the sulcus terminalis, each ringed by many taste buds, are the:



- (A) Filiform papillae
- (B) Circumvallate (vallate) papillae



- (C) Fungiform papillae
- (D) Foliate papillae

- Q14.** Which muscle of the tongue is NOT supplied by the hypoglossal nerve, being instead supplied by the vagus through the pharyngeal plexus?
- (A) Genioglossus
 - (B) Hyoglossus
 - (C) Styloglossus
 - (D) Palatoglossus
- Q15.** Lymph from the tip of the tongue drains chiefly to which group of lymph nodes?
- (A) Deep cervical nodes only
 - (B) Jugulo-omohyoid node
 - (C) Submental nodes
 - (D) Retropharyngeal nodes
- Q16.** In a lower motor neuron lesion of the hypoglossal nerve, on protrusion the tongue deviates:
- (A) Towards the side of the lesion
 - (B) Away from the side of the lesion
 - (C) Straight ahead, with no deviation
 - (D) Upwards towards the palate

Upper and Lower Limb

- Q17.** Which set of four muscles forms the rotator cuff of the shoulder?
- (A) Deltoid, teres major, coracobrachialis and subscapularis
 - (B) Supraspinatus, infraspinatus, teres major and subscapularis
 - (C) Supraspinatus, deltoid, teres minor and subscapularis

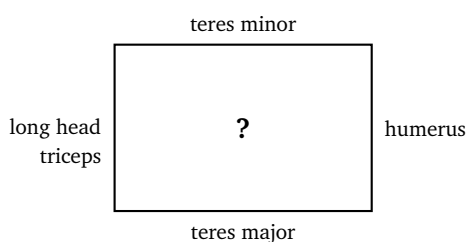


(D) Supraspinatus, infraspinatus, teres minor and subscapularis

Q18. Which rotator cuff muscle initiates the first 15 degrees of arm abduction and is the tendon most commonly torn?

- (A) Subscapularis
- (B) Infraspinatus
- (C) Supraspinatus
- (D) Teres minor

Q19. The quadrangular space of the shoulder, bounded by teres minor above, teres major below, the long head of triceps medially and the humerus laterally (as shown), transmits which nerve?



- (A) Axillary nerve (with the posterior circumflex humeral artery)
- (B) Radial nerve
- (C) Suprascapular nerve
- (D) Musculocutaneous nerve

Q20. Which two rotator cuff muscles act together as the chief lateral (external) rotators of the arm?

- (A) Infraspinatus and teres minor
- (B) Supraspinatus and subscapularis
- (C) Subscapularis and teres minor
- (D) Supraspinatus and infraspinatus

Q21. Which rotator cuff muscle lies on the anterior (costal) surface of the scapula and acts as a medial (internal) rotator of the arm?



- (A) Supraspinatus
- (B) Infraspinatus
- (C) Teres minor
- (D) Subscapularis

Q22. Recurrent anterior dislocation of the shoulder often tears the anteroinferior glenoid labrum. This lesion is known as a:

- (A) Hill-Sachs lesion
- (B) SLAP tear
- (C) Bankart lesion
- (D) Simple rotator cuff tear

Q23. After abduction has been initiated by supraspinatus, which muscle abducts the arm from about 15 up to 90 degrees?

- (A) Supraspinatus
- (B) Deltoid
- (C) Trapezius
- (D) Serratus anterior

Thorax, Abdomen and Pelvis

Q24. How many bronchopulmonary segments are classically described in the right lung?

- (A) Ten
- (B) Eight
- (C) Nine
- (D) Twelve

Q25. An inhaled foreign body most often passes into the right main bronchus because, compared with the left, it is:

- (A) Longer and more horizontal



- (B) Narrower along its whole length
- (C) More curved and directed anteriorly
- (D) Wider, shorter and more vertical

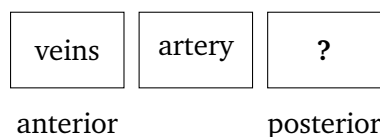
Q26. The right lung is divided into its three lobes by which fissures?

- (A) A single oblique fissure only
- (B) Two horizontal fissures
- (C) A horizontal fissure only
- (D) The oblique and the horizontal fissures

Q27. The deepest pleural recess, where costal pleura meets diaphragmatic pleura and into which the lung expands during deep inspiration, is the:

- (A) Costodiaphragmatic recess
- (B) Costomediastinal recess
- (C) Cupola (dome) of the pleura
- (D) Oblique pericardial sinus

Q28. In the arrangement of structures at the root of the lung shown below (viewed from anterior to posterior), which structure lies most posteriorly, in the box marked ?



- (A) Pulmonary veins
- (B) Pulmonary artery
- (C) Principal (main) bronchus
- (D) Phrenic nerve

Q29. An accessory “azygos lobe” occasionally seen in the right upper lobe is produced by an anomalous course of the:



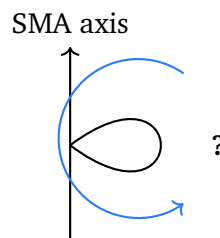
- (A) Right superior pulmonary vein
- (B) Right phrenic nerve
- (C) Azygos vein
- (D) Right vagus nerve

Q30. The double fold of pleura that hangs down from the root of the lung, giving the pulmonary veins room to distend, is the:

- (A) Broad ligament
- (B) Pulmonary ligament
- (C) Falciform ligament
- (D) Suspensory ligament

Embryology

Q31. During its return to the abdominal cavity the midgut loop rotates a total of how many degrees, and in which direction, about the axis of the superior mesenteric artery (as indicated below)?



- (A) 90 degrees clockwise
- (B) 180 degrees counterclockwise
- (C) 270 degrees clockwise
- (D) 270 degrees counterclockwise

Q32. The midgut normally herniates into the extra-embryonic coelom of the umbilical cord (physiological umbilical herniation) during approximately which weeks of development?

- (A) Weeks 6 to 10



- (B) Weeks 3 to 4
- (C) Weeks 12 to 16
- (D) Weeks 20 to 24

Q33. Incomplete rotation of the midgut leaves a narrow mesenteric base and predisposes the bowel to twist around the superior mesenteric vessels. This twisting is called:

- (A) Intussusception
- (B) Meckel's diverticulum
- (C) Midgut volvulus
- (D) Duodenal atresia

Q34. Which anterior abdominal wall defect presents with herniated bowel COVERED by a membrane of peritoneum and amnion at the umbilicus?

- (A) Gastroschisis
- (B) Omphalocele
- (C) Umbilical granuloma
- (D) Patent urachus

Q35. Failure of neural crest cells to migrate into the wall of the distal colon leaves an aganglionic segment with functional obstruction and proximal dilatation. This is:

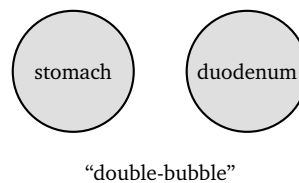
- (A) Duodenal atresia
- (B) Annular pancreas
- (C) Meconium ileus
- (D) Hirschsprung disease

Q36. A ring of pancreatic tissue encircling and obstructing the second part of the duodenum, arising from abnormal migration of the ventral pancreatic bud, is:



- (A) Pancreas divisum
- (B) Annular pancreas
- (C) Ectopic (accessory) pancreas
- (D) Accessory spleen

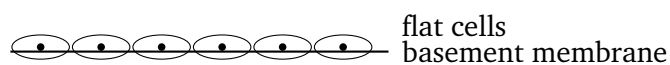
Q37. The “double-bubble” sign on a neonatal abdominal film, shown below and commonly associated with Down syndrome, indicates:



- (A) Duodenal atresia
- (B) Pyloric stenosis
- (C) Hirschsprung disease
- (D) Midgut volvulus

Histology

Q38. The epithelium drawn below, a single layer of thin flattened cells on a basement membrane, lines the pulmonary alveoli and forms the mesothelium of the serous cavities. It is:



- (A) Simple cuboidal epithelium
- (B) Simple squamous epithelium
- (C) Stratified squamous epithelium
- (D) Transitional epithelium

Q39. Branching striated fibres, each with a single central nucleus, joined end to end by intercalated discs, are characteristic of:

- (A) Skeletal muscle



- (B) Cardiac muscle
- (C) Smooth muscle
- (D) Myoepithelial cells

Q40. Which type of cartilage forms the epiglottis and the auricle (external ear)?

- (A) Hyaline cartilage
- (B) Fibrocartilage
- (C) Elastic cartilage
- (D) Calcified cartilage

Q41. The basophilic cells located at the base of the gastric glands that secrete pepsinogen are the:

- (A) Chief (zymogenic) cells
- (B) Parietal (oxyntic) cells
- (C) Mucous neck cells
- (D) Enteroendocrine G cells

Q42. The visceral epithelial cells of the glomerulus, whose interdigitating foot processes form the filtration slit diaphragms, are the:

- (A) Mesangial cells
- (B) Podocytes
- (C) Juxtaglomerular cells
- (D) Macula densa cells

Q43. Hassall's (thymic) corpuscles, whorls of keratinised epithelial reticular cells, are found in which part of the thymus?

- (A) Medulla
- (B) Cortex
- (C) Capsule



(D) Subcapsular sinus

Genetics and Cytogenetics

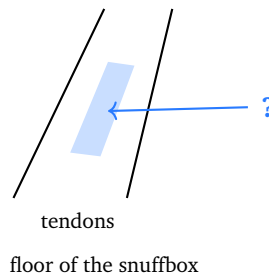
- Q44.** A newborn with holoprosencephaly, cleft lip and palate, and postaxial polydactyly most likely has which trisomy?
- (A) Trisomy 21
 - (B) Trisomy 13
 - (C) Trisomy 18
 - (D) Trisomy 16
- Q45.** Cystic fibrosis follows which inheritance pattern, and the CFTR gene lies on which chromosome?
- (A) X-linked recessive, X chromosome
 - (B) Autosomal dominant, chromosome 7
 - (C) Autosomal recessive, chromosome 4
 - (D) Autosomal recessive, chromosome 7
- Q46.** Leber hereditary optic neuropathy is transmitted only from an affected mother to all of her children, never from an affected father. This indicates which inheritance?
- (A) Autosomal dominant
 - (B) X-linked recessive
 - (C) Autosomal recessive
 - (D) Mitochondrial (maternal) inheritance
- Q47.** A tall, phenotypically normal and usually fertile male is found to have 47 chromosomes with an extra Y chromosome. His karyotype is:
- (A) 47,XXY
 - (B) 45,X
 - (C) 47,XYY



(D) 47,XX,+21

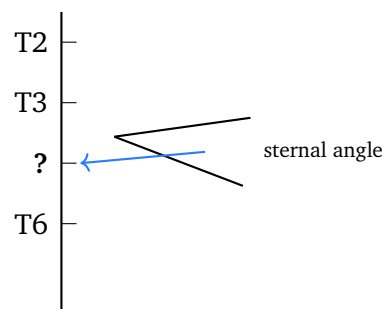
Osteology and Radiological Anatomy

Q48. Tenderness in the anatomical snuffbox (whose floor is marked below) after a fall on the outstretched hand indicates a fracture of which carpal bone, whose proximal pole is prone to avascular necrosis?



- (A) Lunate
- (B) Trapezium
- (C) Scaphoid
- (D) Pisiform

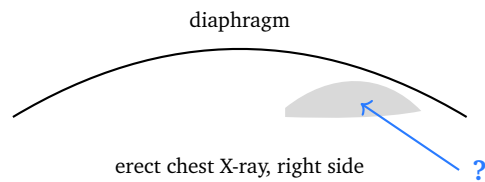
Q49. The sternal angle (of Louis), at the level of the second costal cartilage and the bifurcation of the trachea, lies opposite which vertebral level?



- (A) T2-T3
- (B) T6-T7
- (C) T8-T9
- (D) T4-T5

Q50. Free gas (shown as the shaded crescent) seen under the right dome of the diaphragm on an erect chest radiograph most likely indicates:





- (A) A pleural effusion
- (B) A tension pneumothorax
- (C) Collapse of the right lower lobe
- (D) Perforation of a hollow abdominal viscus



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

Concept – direct and indirect pathways: The basal ganglia balance two opposing loops that pass through the thalamus to the cortex.

Step 1 – read the two receptor actions: Dopamine excites the movement-promoting direct pathway through D1 receptors. At the same time it inhibits the movement-suppressing indirect pathway through D2 receptors.

Step 2 – add the two effects: Both actions push in the same direction, so the net effect is to facilitate (promote) movement.

Why the other options are wrong:

- B, Abolishes all movement: that would follow complete loss of dopamine, not its release.
- C, Suppresses movement: this is the opposite, seen when dopamine is deficient (Parkinsonism).
- D, No effect: dopamine clearly modulates both pathways.

Final Answer: It facilitates movement $\Rightarrow$ **A**

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

Q2.**Solution**

Concept – Huntington disease: An autosomal dominant CAG-repeat disorder that strikes a specific striatal nucleus.

Step 1 – locate the neuronal loss: The GABAergic medium spiny neurons of the **caudate nucleus** degenerate first.

Step 2 – link to the sign: Loss of the indirect pathway releases excess movement, producing chorea.

Why the other options are wrong:

- A, Globus pallidus interna: its lesion gives rigidity or dystonia, not chorea.
- B, Subthalamic nucleus: its lesion causes hemiballismus.
- D, Substantia nigra: its loss causes Parkinsonism.

Final Answer: Caudate nucleus $\Rightarrow$ **C**



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

Q3.

Solution

Concept – the corpus striatum: The deep grey nuclei are grouped by their fibre relations.

Step 1 – define the lentiform nucleus: It is a lens-shaped mass made of the globus pallidus medially and the **putamen** laterally.

Step 2 – separate the caudate: The caudate joins the putamen to form the striatum but is not part of the lentiform nucleus.

Why the other options are wrong:

- B, Caudate nucleus: forms the striatum with the putamen, not the lentiform nucleus.
- C, Amygdala: a limbic nucleus in the temporal lobe.
- D, Claustrum: a thin separate sheet of grey matter lateral to the lentiform nucleus.

Final Answer: Putamen ⇒

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

Q4.

Solution

Concept – somatosensory relay nuclei: The body and the face use different medial-to-lateral parts of the ventral posterior thalamus.

Step 1 – match the face: Trigeminal sensation from the face relays in the **ventral posteromedial nucleus (VPM)**.

Step 2 – contrast the body: Sensation from the trunk and limbs relays in the ventral posterolateral nucleus (VPL).

Why the other options are wrong:

- A, VPL: relays body, not face, sensation.
- B, Lateral geniculate: a visual relay.
- D, Medial geniculate: an auditory relay.

Final Answer: Ventral posteromedial nucleus ⇒



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

Q5.

Solution

Concept – parts of the internal capsule: Each part of the capsule carries a defined set of fibres.

Step 1 – content of the anterior limb: It contains **frontopontine fibres and the anterior thalamic radiation** connecting the thalamus with the frontal lobe.

Step 2 – contrast the posterior limb: Corticospinal, sensory and visual/auditory radiations run in the posterior limb and retrolentiform part.

Why the other options are wrong:

- A, Limb corticospinal fibres: run in the posterior limb.
- C, Optic radiation: lies in the retrolentiform part.
- D, Auditory radiation: lies in the sublenticular part.

Final Answer: Frontopontine fibres and anterior thalamic radiation ⇒ **B**

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

Q6.

Solution

Concept – the Papez circuit: This limbic loop links the hippocampus to the cortex for emotion and memory.

Step 1 – follow the fornix: The fornix carries hippocampal output to the **mammillary body** of the hypothalamus.

Step 2 – complete the loop: The mammillothalamic tract then reaches the anterior thalamus, cingulate gyrus and back to the hippocampus.

Why the other options are wrong:

- B, Amygdala: part of the limbic system but not the fornix relay in this circuit.
- C, Caudate nucleus: a motor basal ganglion.
- D, Red nucleus: a midbrain motor nucleus.

Final Answer: Mammillary body ⇒ **A**

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



Q7.

Solution

Concept – thiamine deficiency: Chronic thiamine lack, often with alcoholism, damages specific diencephalic structures.

Step 1 – name the target: The **mammillary bodies** undergo atrophy and haemorrhage.

Step 2 – name the syndrome: This produces **Wernicke-Korsakoff syndrome**, with confusion, ataxia, ophthalmoplegia and amnesia.

Why the other options are wrong:

- A, Alzheimer disease: hippocampal and cortical atrophy, not mammillary.
- C, Huntington disease: caudate atrophy.
- D, Parkinson disease: substantia nigra loss.

Final Answer: Wernicke-Korsakoff syndrome ⇒ **B**

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

Q8.

Solution

Concept – the hypothalamo-hypophyseal tract: Two magnocellular nuclei make hormones that travel down axons to the posterior pituitary.

Step 1 – identify the nuclei and hormones: The supraoptic nucleus mainly makes ADH and the paraventricular nucleus mainly makes oxytocin.

Step 2 – name the released pair: The posterior pituitary therefore releases **antidiuretic hormone and oxytocin**.

Why the other options are wrong:

- A, GH and prolactin: made by the anterior pituitary.
- B, FSH and LH: anterior pituitary gonadotrophs.
- C, ACTH and TSH: also anterior pituitary hormones.

Final Answer: ADH and oxytocin ⇒ **D**

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



Q9.

Solution

Concept – amygdala and emotion: The amygdala assigns emotional meaning, especially fear, to stimuli.

Step 1 – effect of bilateral loss: Bilateral temporal (amygdala) damage removes fear and normal emotional restraint.

Step 2 – name the picture: The result is **Kluver-Bucy syndrome**: placidity, hyperorality and hypersexuality.

Why the other options are wrong:

- A, Korsakoff psychosis: amnesia from mammillary/thalamic damage.
- C, Wallenberg syndrome: a lateral medullary vascular lesion.
- D, Gerstmann syndrome: a dominant parietal lobe lesion.

Final Answer: Kluver-Bucy syndrome ⇒ **B**

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

Q10.

Solution

Concept – extrinsic tongue muscles: Their names give the action, and all but one share a single nerve.

Step 1 – match protrusion: The **genioglossus** pulls the tongue forward, protruding it.

Step 2 – confirm the nerve: Like the other hypoglossal muscles, it is supplied by the hypoglossal nerve (CN XII).

Why the other options are wrong:

- A, Palatoglossus: elevates the tongue and is supplied by the vagus.
- B, Styloglossus: retracts and elevates the tongue.
- D, Hyoglossus: depresses the tongue.

Final Answer: Genioglossus ⇒ **C**

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



Q11.

Solution

Concept – innervation of the tongue: Taste and general sensation are carried by different nerves in each region.

Step 1 – taste in front: Taste from the anterior two-thirds travels in the **chorda tympani**, a branch of the facial nerve.

Step 2 – separate general sensation: General (touch) sensation there is carried by the lingual nerve (V_3), a different fibre type.

Why the other options are wrong:

- B, Lingual (mandibular) nerve: carries general sensation, not taste.
- C, Glossopharyngeal: serves the posterior third.
- D, Hypoglossal: is purely motor.

Final Answer: Chorda tympani $\Rightarrow$ A

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

Q12.

Solution

Concept – posterior third of the tongue: Here a single nerve carries both sensory modalities.

Step 1 – name the nerve: The **glossopharyngeal nerve** carries both taste and general sensation from the posterior one-third.

Step 2 – note the boundary: This region lies behind the sulcus terminalis, developmentally third-arch tissue.

Why the other options are wrong:

- A, Chorda tympani: taste from the anterior two-thirds.
- C, Lingual nerve: general sensation from the anterior two-thirds.
- D, Internal laryngeal nerve: supplies the epiglottic region, not the tongue proper.

Final Answer: Glossopharyngeal nerve $\Rightarrow$ B

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



Q13.

Solution

Concept – lingual papillae: The four papilla types differ in shape, position and taste-bud content.

Step 1 – read the figure: The large papillae set in a V in front of the sulcus terminalis are the **circumvallate (vallate) papillae**.

Step 2 – note their taste buds: Each is surrounded by a moat lined with numerous taste buds.

Why the other options are wrong:

- A, Filiform: fine, keratinised, and carry no taste buds.
- C, Fungiform: small, mushroom-shaped, scattered over the tip and sides.
- D, Foliate: folds on the posterolateral margin.

Final Answer: Circumvallate papillae ⇒ **B**

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

Q14.

Solution

Concept – the exception among tongue muscles: Almost all tongue muscles share one nerve, but one is different.

Step 1 – name the exception: The **palatoglossus** is supplied by the vagus through the pharyngeal plexus, not the hypoglossal nerve.

Step 2 – explain why: It develops from the fourth-arch (palatal) musculature, not the occipital myotomes.

Why the other options are wrong:

- A, Genioglossus: hypoglossal nerve.
- B, Hyoglossus: hypoglossal nerve.
- C, Styloglossus: hypoglossal nerve.

Final Answer: Palatoglossus ⇒ **D**

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



Q15.

Solution

Concept – lymphatic drainage of the tongue: Each part of the tongue drains to a predictable node group.

Step 1 – drainage of the tip: The apex (tip) drains chiefly to the **submental nodes**.

Step 2 – contrast the rest: The sides drain to submandibular nodes and the posterior third to deep cervical nodes.

Why the other options are wrong:

- A, Deep cervical only: receive from the posterior third and eventually all lymph.
- B, Jugulo-omohyoid node: the main node of the tongue overall, but the tip drains first to submental nodes.
- D, Retropharyngeal nodes: drain the nasopharynx, not the tongue tip.

Final Answer: Submental nodes ⇒

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

Q16.

Solution

Concept – hypoglossal nerve lesion: A lower motor neuron lesion weakens the genioglossus on one side.

Step 1 – work out the mechanism: The healthy genioglossus pushes the tongue forward and towards the opposite side.

Step 2 – state the deviation: With the paralysed side unable to push, the tongue deviates **towards the side of the lesion**.

Why the other options are wrong:

- B, Away from the lesion: this is the pattern of an upper motor neuron lesion, not a nerve lesion.
- C, No deviation: only if both nerves are intact.
- D, Upwards: not a feature of hypoglossal palsy.

Final Answer: Towards the side of the lesion ⇒

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



Q17.

Solution

Concept – the rotator cuff: Four short scapulohumeral muscles blend with the capsule to stabilise the shoulder.

Step 1 – recall the mnemonic SITS: Supraspinatus, Infraspinatus, Teres minor and Subscapularis.

Step 2 – exclude the impostors: Deltoid, teres major and coracobrachialis are not part of the cuff.

Why the other options are wrong:

- A: includes deltoid, teres major and coracobrachialis, none of which are cuff muscles.
- B: substitutes teres major for teres minor.
- C: substitutes deltoid for infraspinatus.

Final Answer: Supraspinatus, infraspinatus, teres minor and subscapularis ⇒ D

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

Q18.

Solution

Concept – initiation of abduction: Abduction is started by one cuff muscle before the deltoid takes over.

Step 1 – name the initiator: The **supraspinatus** starts the first 15 degrees of abduction.

Step 2 – clinical note: Passing under the acromion, its tendon is the most commonly torn part of the cuff.

Why the other options are wrong:

- A, Subscapularis: a medial rotator.
- B, Infraspinatus: a lateral rotator.
- D, Teres minor: a lateral rotator.

Final Answer: Supraspinatus ⇒ C

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



Q19.

Solution

Concept – the quadrangular space: A gap on the back of the shoulder bounded by two teres muscles, triceps and the humerus.

Step 1 – name its contents: It transmits the **axillary nerve** with the posterior circumflex humeral artery.

Step 2 – clinical link: Compression or a surgical-neck fracture here weakens the deltoid and teres minor.

Why the other options are wrong:

- B, Radial nerve: passes through the triangular interval below.
- C, Suprascapular nerve: runs through the suprascapular notch.
- D, Musculocutaneous nerve: pierces coracobrachialis in the arm.

Final Answer: Axillary nerve $\Rightarrow$

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

Q20.

Solution

Concept – lateral rotators of the arm: Two cuff muscles on the back of the scapula share this action.

Step 1 – name the pair: **Infraspinatus and teres minor** are the chief lateral (external) rotators.

Step 2 – contrast the others: Supraspinatus abducts and subscapularis medially rotates.

Why the other options are wrong:

- B, Supraspinatus and subscapularis: one abducts, the other medially rotates.
- C, Subscapularis and teres minor: subscapularis is a medial rotator.
- D, Supraspinatus and infraspinatus: supraspinatus is an abductor, not a rotator.

Final Answer: Infraspinatus and teres minor $\Rightarrow$

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



Q21.

Solution

Concept – the anterior cuff muscle: Only one cuff muscle lies on the front of the scapula.

Step 1 – name it: The **subscapularis** lies on the costal (anterior) surface of the scapula.

Step 2 – state its action: It is the chief medial (internal) rotator of the arm.

Why the other options are wrong:

- A, Supraspinatus: on the posterior surface, an abductor.
- B, Infraspinatus: posterior surface, a lateral rotator.
- C, Teres minor: posterior, a lateral rotator.

Final Answer: Subscapularis ⇒

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

Q22.

Solution

Concept – labral injury: Anterior shoulder dislocation can avulse the front of the glenoid rim.

Step 1 – name the lesion: Tearing of the anteroinferior glenoid labrum is a Bankart lesion.

Step 2 – pair it with its partner: It often accompanies a Hill-Sachs dent on the posterior humeral head.

Why the other options are wrong:

- A, Hill-Sachs lesion: an impaction fracture of the humeral head, not the labrum.
- B, SLAP tear: a superior labral tear from anterior to posterior.
- D, Rotator cuff tear: involves the cuff tendons, not the labrum.

Final Answer: Bankart lesion ⇒

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



Q23.

Solution

Concept – the main abductor: Different muscles cover different arcs of abduction.

Step 1 – name the mid-range abductor: After supraspinatus starts it, the **deltoid** abducts the arm from about 15 to 90 degrees.

Step 2 – note the rest of the arc: Beyond 90 degrees, scapular rotation by trapezius and serratus anterior carries the arm overhead.

Why the other options are wrong:

- A, Supraspinatus: only the first 15 degrees.
- C, Trapezius: rotates the scapula beyond 90 degrees.
- D, Serratus anterior: rotates the scapula, not the humerus, in the mid range.

Final Answer: Deltoid $\Rightarrow$ **B**

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

Q24.

Solution

Concept – bronchopulmonary segments: Each segment is a functionally independent unit with its own segmental bronchus and artery.

Step 1 – count the right lung: The right lung classically has **ten** bronchopulmonary segments.

Step 2 – contrast the left: The left usually has eight to nine after some segments fuse.

Why the other options are wrong:

- B, Eight: closer to the left lung.
- C, Nine: an intermediate figure, not the classic right-lung count.
- D, Twelve: exceeds the described number.

Final Answer: Ten $\Rightarrow$ **A**

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



Q25.

Solution

Concept – the right main bronchus: Its shape decides where aspirated material lodges.

Step 1 – describe its geometry: The right main bronchus is **wider, shorter and more vertical** than the left.

Step 2 – draw the consequence: Inhaled objects follow the more direct path and lodge on the right.

Why the other options are wrong:

- A, Longer and more horizontal: describes the left bronchus.
- B, Narrower: the right is actually wider.
- C, More curved and anterior: not the reason for aspiration.

Final Answer: Wider, shorter and more vertical $\Rightarrow$ D

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

Q26.

Solution

Concept – fissures and lobes: The number of fissures sets the number of lobes.

Step 1 – list the right fissures: The right lung has both an **oblique and a horizontal fissure**.

Step 2 – count the lobes: These divide it into upper, middle and lower lobes.

Why the other options are wrong:

- A, Oblique only: describes the left lung (two lobes).
- B, Two horizontal: there is only one horizontal fissure.
- C, Horizontal only: would not separate the lower lobe.

Final Answer: Oblique and horizontal fissures $\Rightarrow$ D

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



Q27.

Solution

Concept – pleural recesses: Where two pleural surfaces meet, a potential space is left for lung expansion.

Step 1 – name the deepest: The **costodiaphragmatic recess**, between costal and diaphragmatic pleura, is the lowest and deepest.

Step 2 – give its role: The lung slides into it during deep inspiration, and fluid collects there first.

Why the other options are wrong:

- B, Costomediastinal recess: smaller, behind the sternum.
- C, Cupola: the dome of pleura above the first rib.
- D, Oblique pericardial sinus: a pericardial, not pleural, space.

Final Answer: Costodiaphragmatic recess ⇒ **A**

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

Q28.

Solution

Concept – structures at the lung root: Their front-to-back order at the hilum is fixed.

Step 1 – read the figure: From anterior to posterior the order is veins, artery, then the **principal bronchus** most posteriorly.

Step 2 – confirm: The bronchus and its accompanying bronchial vessels lie behind the pulmonary vessels.

Why the other options are wrong:

- A, Pulmonary veins: lie most anteriorly and inferiorly.
- B, Pulmonary artery: lies between the veins and the bronchus.
- D, Phrenic nerve: runs in front of the root, not within the hilar order shown.

Final Answer: Principal bronchus ⇒ **C**

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



Q29.

Solution

Concept – the azygos lobe: An anatomical variant carved out of the right upper lobe.

Step 1 – name the cause: An anomalous, more medial course of the **azygos vein** drags a fold of pleura into the lung.

Step 2 – describe the result: This creates an accessory “azygos lobe” seen on chest films.

Why the other options are wrong:

- A, Superior pulmonary vein: does not create this fissure.
- B, Phrenic nerve: runs on the pericardium, unrelated.
- D, Vagus nerve: not responsible for the lobe.

Final Answer: Azygos vein ⇒

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

Q30.

Solution

Concept – the pulmonary ligament: A pleural fold below the lung root, not a true ligament.

Step 1 – describe it: The **pulmonary ligament** is a double layer of pleura hanging below the hilum.

Step 2 – give its function: It provides dead space that lets the pulmonary veins distend and the root move in respiration.

Why the other options are wrong:

- A, Broad ligament: a peritoneal fold in the female pelvis.
- C, Falciform ligament: attaches the liver to the abdominal wall.
- D, Suspensory ligament: a general term, not the lung fold.

Final Answer: Pulmonary ligament ⇒

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



Q31.

Solution

Concept – midgut rotation: The midgut loop turns about the axis of the superior mesenteric artery as it returns.

Step 1 – total the rotation: It rotates a total of **270 degrees**, made of 90 degrees during herniation and 180 degrees on return.

Step 2 – give the direction: The turn is **counterclockwise** when viewed from the front.

Why the other options are wrong:

- A, 90 degrees clockwise: wrong amount and direction.
- B, 180 degrees counterclockwise: only part of the rotation.
- C, 270 degrees clockwise: correct amount but wrong direction.

Final Answer: 270 degrees counterclockwise ⇒ D

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

Q32.

Solution

Concept – physiological herniation: The fast-growing gut outgrows the abdomen for a time.

Step 1 – give the window: The midgut herniates into the umbilical cord during about **weeks 6 to 10**.

Step 2 – describe the return: It then reduces back into the enlarged abdomen by the tenth week.

Why the other options are wrong:

- B, Weeks 3 to 4: too early, before the loop forms.
- C, Weeks 12 to 16: the gut has already returned.
- D, Weeks 20 to 24: well after reduction.

Final Answer: Weeks 6 to 10 ⇒ A

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



Q33.

Solution

Concept – malrotation and volvulus: A short mesenteric base lets the gut twist on its blood supply.

Step 1 – name the event: Twisting of the bowel around the superior mesenteric vessels is a **midgut volvulus**.

Step 2 – give the danger: It can strangle the blood supply and cause ischaemia, a surgical emergency.

Why the other options are wrong:

- A, Intussusception: one segment telescopes into another, a different mechanism.
- B, Meckel's diverticulum: a vitelline duct remnant.
- D, Duodenal atresia: a lumen recanalization failure, not a twist.

Final Answer: Midgut volvulus ⇒ C

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

Q34.

Solution

Concept – ventral wall defects: Omphalocele and gastroschisis differ chiefly in their covering and site.

Step 1 – identify the covered defect: In **omphalocele** the herniated gut stays covered by peritoneum and amnion at the umbilicus.

Step 2 – contrast gastroschisis: Gastroschisis has uncovered bowel protruding to the right of the umbilicus.

Why the other options are wrong:

- A, Gastroschisis: uncovered and paraumbilical.
- C, Umbilical granuloma: soft tissue overgrowth, not a herniation.
- D, Patent urachus: a bladder-to-umbilicus fistula.

Final Answer: Omphalocele ⇒ B

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



Q35.

Solution

Concept – neural crest and the gut: Enteric ganglia form from migrating neural crest cells.

Step 1 – name the failure: When crest cells fail to reach the distal colon, that segment is aganglionic: **Hirschsprung disease**.

Step 2 – describe the picture: The aganglionic gut cannot relax, so the proximal colon dilates (megacolon).

Why the other options are wrong:

- A, Duodenal atresia: a recanalization defect of the duodenum.
- B, Annular pancreas: a pancreatic bud anomaly.
- C, Meconium ileus: thick meconium obstruction, often in cystic fibrosis.

Final Answer: Hirschsprung disease ⇒ **D**

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

Q36.

Solution

Concept – the pancreatic buds: The pancreas forms from a dorsal and a ventral bud that normally fuse.

Step 1 – name the anomaly: Abnormal migration of the **ventral bud** around the duodenum gives an **annular pancreas**.

Step 2 – give the effect: The ring of tissue can constrict the second part of the duodenum.

Why the other options are wrong:

- A, Pancreas divisum: failure of the two ducts to fuse.
- C, Ectopic pancreas: pancreatic tissue at an abnormal site.
- D, Accessory spleen: splenic, not pancreatic, tissue.

Final Answer: Annular pancreas ⇒ **B**

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



Q37.

Solution

Concept – the double-bubble sign: Two gas-filled bubbles mark obstruction at the duodenum.

Step 1 – read the figure: Gas in the stomach and the proximal duodenum, with none beyond, indicates **duodenal atresia**.

Step 2 – note the association: It results from failed recanalization and is linked with Down syndrome.

Why the other options are wrong:

- B, Pyloric stenosis: gives a single gastric bubble, not two.
- C, Hirschsprung disease: causes distal, colonic obstruction.
- D, Midgut volvulus: a twist, without the classic double bubble.

Final Answer: Duodenal atresia ⇒ A

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

Q38.

Solution

Concept – epithelia for diffusion: Thin flat cells suit sites of rapid exchange.

Step 1 – read the figure: A single layer of flattened cells on a basement membrane is **simple squamous epithelium**.

Step 2 – give its sites: It lines the alveoli, forms the mesothelium of serous cavities and the endothelium of vessels.

Why the other options are wrong:

- A, Simple cuboidal: cube-shaped cells, not flat.
- C, Stratified squamous: many layers, for protection.
- D, Transitional: dome-shaped surface cells in the urinary tract.

Final Answer: Simple squamous epithelium ⇒ B

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



Q39.

Solution

Concept – muscle types: The combination of features points to one tissue.

Step 1 – read the clues: Branching striated fibres with a single central nucleus and intercalated discs identify **cardiac muscle**.

Step 2 – give the role of the discs: Intercalated discs couple the cells electrically and mechanically for a coordinated beat.

Why the other options are wrong:

- A, Skeletal muscle: unbranched, multinucleated, with peripheral nuclei and no discs.
- C, Smooth muscle: spindle cells, single central nucleus, but not striated and no discs.
- D, Myoepithelial cells: contractile epithelial cells around glands, not striated fibres.

Final Answer: Cardiac muscle ⇒

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

Q40.

Solution

Concept – types of cartilage: Each type suits a mechanical need by its fibre content.

Step 1 – match flexibility: The epiglottis and auricle need to spring back, so they are made of **elastic cartilage**.

Step 2 – give the reason: Its matrix is rich in elastic fibres, allowing repeated bending.

Why the other options are wrong:

- A, Hyaline: forms costal cartilage and articular surfaces.
- B, Fibrocartilage: forms intervertebral discs and the pubic symphysis.
- D, Calcified cartilage: a stiff, mineralised zone, not for flexible structures.

Final Answer: Elastic cartilage ⇒

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



Q41.

Solution

Concept – cells of the gastric gland: Different cells occupy different levels of the gland.

Step 1 – name the pepsinogen cell: The basophilic **chief (zymogenic) cells** at the base secrete pepsinogen.

Step 2 – explain the staining: Their abundant rough endoplasmic reticulum makes the cytoplasm basophilic.

Why the other options are wrong:

- B, Parietal cells: eosinophilic, secrete acid and intrinsic factor.
- C, Mucous neck cells: secrete mucus, sit in the neck.
- D, G cells: endocrine cells that secrete gastrin.

Final Answer: Chief cells ⇒ A

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

Q42.

Solution

Concept – the filtration barrier: The glomerular epithelium is specialised for filtration.

Step 1 – name the cell: The **podocytes** wrap the capillaries, and their foot processes leave filtration slits.

Step 2 – give the function: The slit diaphragms between foot processes control what passes into the filtrate.

Why the other options are wrong:

- A, Mesangial cells: support the capillary tuft.
- C, Juxtaglomerular cells: secrete renin in the arteriolar wall.
- D, Macula densa: sense tubular sodium in the distal tubule.

Final Answer: Podocytes ⇒ B

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



Q43.

Solution

Concept – thymic histology: The thymus has an outer cortex and an inner medulla.

Step 1 – locate the corpuscles: Hassall's corpuscles are found in the **medulla**.

Step 2 – describe them: They are whorls of flattened, keratinised epithelial reticular cells, a hallmark of the thymus.

Why the other options are wrong:

- B, Cortex: densely packed with immature T cells, no corpuscles.
- C, Capsule: connective tissue covering only.
- D, Subcapsular sinus: a feature of lymph nodes, not the thymus.

Final Answer: Medulla ⇒

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

Q44.

Solution

Concept – Patau syndrome: A midline-defect trisomy with a recognisable triad.

Step 1 – read the features: Holoprosencephaly, cleft lip and palate, and postaxial polydactyly point to **trisomy 13**.

Step 2 – name the syndrome: This is Patau syndrome, with a poor prognosis.

Why the other options are wrong:

- A, Trisomy 21: Down syndrome, without holoprosencephaly.
- C, Trisomy 18: Edwards syndrome (clenched fists, rocker-bottom feet).
- D, Trisomy 16: usually lethal in early pregnancy, not a live-born syndrome.

Final Answer: Trisomy 13 ⇒

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



Q45.

Solution

Concept – cystic fibrosis genetics: A single gene defect with a classic inheritance and locus.

Step 1 – give the inheritance: Cystic fibrosis is **autosomal recessive**.

Step 2 – give the locus: The CFTR gene lies on **chromosome 7**.

Why the other options are wrong:

- A, X-linked recessive: CF is not sex-linked.
- B, Autosomal dominant: two mutant copies are needed, so it is recessive.
- C, Chromosome 4: that is the Huntington locus, not CFTR.

Final Answer: Autosomal recessive, chromosome 7 $\Rightarrow$ D

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

Q46.

Solution

Concept – maternal inheritance: Transmission only through the mother points to the mitochondrial genome.

Step 1 – read the pattern: An affected mother passes it to all her children, but affected fathers pass it to none.

Step 2 – name the mechanism: This is **mitochondrial (maternal) inheritance**, since sperm contribute no mitochondria.

Why the other options are wrong:

- A, Autosomal dominant: both sexes would transmit it.
- B, X-linked recessive: affected fathers pass carrier status to daughters.
- C, Autosomal recessive: needs two carrier parents and skips generations.

Final Answer: Mitochondrial inheritance $\Rightarrow$ D

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



Q47.

Solution

Concept – sex-chromosome aneuploidy: An extra Y in a phenotypic male gives a specific karyotype.

Step 1 – count the chromosomes: Forty-seven chromosomes with an extra Y is written 47,XYY.

Step 2 – give the phenotype: These men are typically tall, phenotypically normal and usually fertile.

Why the other options are wrong:

- A, 47,XXY: Klinefelter syndrome, with an extra X.
- B, 45,X: Turner syndrome, a female with one X.
- D, 47,XX,+21: a female with Down syndrome.

Final Answer: 47,XYY $\Rightarrow$

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

Q48.

Solution

Concept – the anatomical snuffbox: Its floor overlies a carpal bone with a fragile blood supply.

Step 1 – name the bone: Snuffbox tenderness after a fall on the outstretched hand suggests a **scaphoid** fracture.

Step 2 – explain the risk: The blood supply enters distally, so a waist fracture can cause avascular necrosis of the proximal pole.

Why the other options are wrong:

- A, Lunate: dislocates rather than typically fracturing here.
- B, Trapezium: not the floor of the snuffbox.
- D, Pisiform: a sesamoid on the ulnar side of the wrist.

Final Answer: Scaphoid $\Rightarrow$

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



Q49.

Solution

Concept – the sternal angle of Louis: A key surface landmark that fixes several deep structures.

Step 1 – give the vertebral level: The sternal angle lies opposite the disc between T4 and T5.

Step 2 – list what it marks: It marks the second costal cartilage, the tracheal bifurcation and the start and end of the aortic arch.

Why the other options are wrong:

- A, T2-T3: too high, near the jugular notch region.
- B, T6-T7: below the angle.
- C, T8-T9: the level of the caval opening of the diaphragm, much lower.

Final Answer: T4-T5 ⇒

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

Q50.

Solution

Concept – pneumoperitoneum: Free gas under the diaphragm has a specific meaning on an erect film.

Step 1 – read the sign: A crescent of gas under the right dome of the diaphragm is free intraperitoneal air.

Step 2 – give the cause: It most often means **perforation of a hollow abdominal viscus**, such as a peptic ulcer.

Why the other options are wrong:

- A, Pleural effusion: gives a fluid level and blunted angle, not sub-diaphragmatic gas.
- B, Tension pneumothorax: air in the pleural space, with mediastinal shift.
- C, Lobar collapse: shows volume loss and shift towards the collapse, not free gas.

Final Answer: Perforation of a hollow viscus ⇒

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



Answer Key

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

