

Q.3.b) & Q.5. b) (2 marks each)

1. Heterocercal tail.
2. Gill clefts.
3. Clasper.

Unit No.2 Anatomy- digestive system & its physiology. (8 marks)**Q.1. Multiple choice questions (2 marks each)**

1. The teeth in Scoliodon are adapted for -----.
 a) Holding and tearing. b) Biting.
 c) Chewing. d) Biting,tearing & chewing.
2. Dentition in Scoliodon is -----
 a) Heterodont & diphyodont. b) Heterodont & polyphyodont.
 c) Homodont & diphyodont. d) Homodont & polyphyodont.
3. Scroll valve present in the intestine of Scoliodon takes-----turns.
 a) one & half. b) two & half.
 c) Three & half. d) Five & half.
4. Liver of Scoliodon is -----
 a) Single lobed. b) Bilobed.
 c) Trilobed. d) Four lobed.

Q2. & Q.4. Short notes/sketch and label (4 marks each).

1. Scroll valve of scoliodon.

Q.3. a) Questions for 3 marks (3 marks each).

1. Physiology of digestion in Scoliodon.

Q.5. a) Questions for 6 marks.

1. Alimentary canal of Scoliodon.
2. Digestive glands of Scoliodon.

Q.3.b) & Q.5. b) (2 mark each).

1. Define digestion.
2. Bursa entiana.
3. Food & feeding in Scoliodon.

Unit No.3 Respiratory system, physiology. (4 marks)**Q.1. Multiple choice questions (2 marks each)**

1. -----pairs of gill-slits are present in Scoliodon.
 a) 3 b) 5
 c) 6 d) 7
2. A complete gill is called -----.
 a) Hemibranch. b) Holobranch.
 c) Abranch. d) Lamilliform.

Q2. & Q.4. Short notes/sketch and label (4 marks each).

1. Mechanism of respiration in Scoliodon.
2. Sketch & label the breathing mechanism in Scoliodon.
3. Sketch & label holobranch in Scoliodon.

Q.3. a) Questions for 3 marks (3 marks each).

1. Physiology of respiration.

Q.5. a) Questions for 6 marks.

1. Describe the respiratory system of Scoliodon.

Q.3.b) & Q.5. b) (2 mark each).

1. Holobranch.
2. Vestigial gill pouch.

Unit No.4 Circulatory system, blood, arterial system, venous system, renal portal system, lateral abdominal & cutaneous system. (10 marks)**Q.1. Multiple choice questions (2 marks each).**

1. The heart of Scoliodon receives-----
 - a) Venous blood.
 - b) Both venous and arterial blood.
 - c) arterial blood.
 - d) Blood only from gills.
2. The 'S' shaped heart of Scoliodon is differentiated into-----
 - a) Sinus venosus, auricle & ventricle.
 - b) One auricle & one ventricle.
 - c) Auricle, ventricle & conus arteriosus .
 - d) Sinus venosus, auricle, ventricle & conus arteriosus.
3. The heart of Scoliodon is -----
 - a) Single chambered .
 - b) Two chambered.
 - c) Three chambered.
 - d) Four chambered.
4. Sinus venosus receives blood from-----
 - a) Ductus cuvieri.
 - b) Ductus cuvieri & hepatic sinuses.
 - c) Ventral aorta.
 - d) Hepatic Sinuses.
5. Erythrocytes in Scoliodon are-----
 - a) Circular, enucleated. b) Circular, nucleated.
 - c) Oval, nucleated. d) Oval, enucleated.

Q2. & Q.4. Short notes/sketch and label (4 marks each).

1. Working of heart of Scoliodon.
2. Ventral aorta & afferent branchial arteries.
3. Arteries of head of Scoliodon.
4. Efferent branchial & epibranchial arteries.
5. Hepatic portal system of Scoliodon.
6. Renal portal system of Scoliodon.
7. Sketch & label Heart of Scoliodon.
8. Sketch & label the arterial system of Scoliodon.
9. Sketch & label the venous system of Scoliodon.

Q.3. a) Questions for 3 marks (3 marks each).

1. Hypobranchial blood plexus in Scoliodon.

Q.5. a) Questions for 6 marks.

1. Dorsal aorta & its branches.
2. Heart of Scoliodon.

Q.3.b) & Q.5. b) (2 mark each).

1. Conus arteriosus.
2. Inferior jugular sinus.
3. Orbital sinus.
4. Ductus Cuvieri.

Unit No.5 Nervous system, Central nervous system, peripheral & autonomous nervous system. (8 marks)

Q.1. Multiple choice questions (2 marks each)

1. Cranial nerves arising from the mid brain of Scoliodon-----
 a) III & IV. b) IV & V.
 c) V & VI. d) VI & VII.
2. Corpora restiformia is present in -----
 a) Cerebrum . b) Cerebellum.
 c) Mid brain. d) Medula oblongata.
3. Foramen of Monro in Scoliodon is the opening between-----
 a) Cavities of cerebrum.
 b) I & II ventricle of cerebrum & III ventricle.
 c) III & IV ventricle.
 d) Olfactory sacs.
4. The cranial nerve numbered as '0' in Scoliodon is -----
 a) Optic. b) Olfactory.
 c) Terminal or pre-olfactory. d) Oculomotor.
5. Mid brain encloses a narrow canal called -----
 a) Optic lobes. b) Iter.
 c) Diocoel. d) None of these.
6. Cavities of optic lobe is -----
 a) Paracoel b) Epicoel
 c) Optocoel d) Metacoel
7. The blood of Scoliodon is -----
 a) Bluish. b) Reddish.
 c) Greenish. d) Colourless.
8. Cavities of Medula oblongata is -----
 a) Paracoel. b) Epicoel.
 c) Optocoel. d) Metacoel.

Q2. & Q.4. Short notes/sketch and label (4 marks each)

1. Fore Brain of Scoliodon.
2. Hind Brain of Scoliodon.
3. Cavities of Brain.
4. Sketch & label dorsal view of brain of Scoliodon.
5. Sketch & label Ventral view of brain of Scoliodon.
6. Sketch & label Ventricles of brain of Scoliodon.

Q.3. a) Questions for 3 marks (3 marks each)

1. Autonomic nervous system of Scoliodon.

Q.5. a) Questions for 6 marks

1. Cranial nerves of Scoliodon.

Q.3.b) & Q.5. b) (2 mark each).

1. Cerebrum.
2. Diencephalon.
3. Medulla oblongata.
4. Optic lobes.
5. Cerebellum.
6. Crura cerebri.

Unit No.6 Sense organs, olfactory organs, photoreceptors, statoacoustic organs, lateral line receptors, neuromast & pit organs, ampullae of Lorenzini (6 marks)

Q.1. Multiple choice questions (2 marks each)

- semicircular canals are found in internal Ear of Scoliodon.
 - One.
 - Two.
 - Three.
 - Four.
- Eye of Scoliodon has muscles-----.
 - Five.
 - Six.
 - Eight.
 - Seven.
- Ampullae of Lorenzini are -----.
 - Photoreceptors.
 - Thermoreceptors.
 - Rheoreceptors.
 - Tangoreceptors.
- Stato-acoustic organ is another name of-----.
 - Eye.
 - Pinna.
 - Internal ear.
 - Ear.
- The retina of Scoliodon contains photosensitive cells called-----.
 - Cones.
 - Rods.
 - Rods & cones.
 - None of these.
- Olfactory sacs are -----.
 - Photoreceptors.
 - Thermoreceptors.
 - Rheoreceptors.
 - Chemoreceptors.

Q2. & Q.4. Short notes/sketch and label (4 marks each)

- Membranous labyrinth.
- Olfactory organs.
- Photoreceptors.
- Eye ball muscles.
- Sketch & label Ampullae of Lorenzini.
- Sketch & label T.S. of olfactory sac of Scoliodon.

Q.3. a) Questions for 3 marks (3 marks each)

- Sketch & label Membranous labyrinth of Scoliodon.

Q.5. a) Questions for 6 marks

- Photoreceptors & working of eyes in Scoliodon.

Q.3.b) & Q.5. b) (2 mark each).

- Neuromast organ.
- Lateral line receptor.
- Pit organ.

Unit No.7 Urinogenital system, male & female Urinogenital system, reproduction, copulation, fertilization & development. (8 marks)

Q.1. Multiple choice questions (2 marks each)

- Vagina of Scoliodon is formed by the union of-----.
 - Uteri.
 - Ureters.
 - Vas deferens.
 - Vasa efferentia.
- Spermatozoa in Scoliodon are stored in -----.
 - Apophyle.
 - Testes.
 - Siphon.
 - Seminal vesicle.

- a) Delayed metamorphosis due to ecological or Physiological changes in environment.
- b) Animal fails to hibernate.
- c) Animal remains larval throughout.
- d) Sexual reproduction.

Q2. & Q.4. Short notes/sketch and label (4 marks each)

1. Functions of air bladder.
2. Sketch & label Accessory respiratory organs in Clarias.
3. Axolotl larva.
4. Sketch & label Accessory respiratory organs in Anabas.
5. Sketch & label Accessory respiratory organs in Amphipnous.
6. Sketch & label Accessory respiratory organs in Channa.

Q.3. a) Questions for 3 marks (3 marks each)

1. Arborescent organs
2. Air bladder.
3. Neoteny.
4. Parental care in order Apoda.

Q.5. a) Questions for 6 marks.

1. Air bladder or Swim bladder in bony fishes.
2. Parental care in order Anura.
3. Parental care in order Urodela.

Q.3.b) & Q.5. b) (2 mark each).

1. Labyrinthiform organs.
2. Accessory Branchial chamber.
3. Accessory respiratory organs.
4. Red gland.
5. Rete mirabile.
6. Gular pouch.
7. Parental care.
8. Paedogenesis.
