

FUNCTIONAL ANATOMY OF CHORDATES**Unit No.1 Systematic position, habit and habitat, ext. characters, skin, locomotion & coelom of Scoliodon. (4 marks)****Q.1. Multiple choice questions (2 marks each)**

1. Scoliodon is -----.
 - a) Marine, herbivorous.
 - b) Fresh water, carnivorous.
 - c) Marine, carnivorous & predator.
 - d) Fresh water, omnivorous.
2. Scoliodon is member of class-----.
 - a) Osteichthyes.
 - b) Chondrichthyes.
 - c) Amphibia.
 - d) None of these.
3. Scoliodon is -----.
 - a) Viviparous.
 - b) Oviparous.
 - c) Ovoviviparous.
 - d) None of these.
4. The body of Scoliodon is divided into -----.
 - a) Head and Trunk.
 - b) Head, trunk & tail.
 - c) Head, neck, trunk & tail.
 - d) Head, neck & tail.
5. The skin of scoliodon is covered with -----
 - a) Dermal scales.
 - b) Cycloid scales.
 - c) Ctenoid scales.
 - d) Placoid scales.
6. Tail of Scoliodon is -----.
 - a) Homocercal.
 - b) Heterocercal.
 - c) Hypocercal.
 - d) Hypercercal.
7. The pericardial and abdominal cavity in the Scoliodon communicate with one another through -----.
 - a) Peritoneal canal.
 - b) Pericardio-peritoneal canal.
 - c) Abdominal canal.
 - d) Pericardio-periabdominal canal.
8. The pericardial and abdominal cavity in Scoliodon is separated by -----.
 - a) Septum transversum.
 - b) Septum longitudinum.
 - c) Diagonal septum.
 - d) Muscle sheath.
9. Scoliodon is commonly called as -----.
 - a) Dog fish.
 - b) Lung fish.
 - c) Marine fish.
 - d) Flying fish.

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

1. Systematic position, habits & habitat of Scoliodon.
2. Functions of skin of Scoliodon.
3. Placoid scales of Scoliodon.
4. Locomotion in Scoliodon.
5. Coelom in Scoliodon.
6. Sketch & label- Scoliodon.

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

1. Sketch & label - Placoid scales of Scoliodon.
2. Sketch & label - Coelomic body cavities of Scoliodon.

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 -----.
 - Apopyle.
 - Testes.
 - Siphon.
 - Seminal vesicle.

- 3. Accessory pans of male reproductive system comprises-----
 - a) Oviduct.
 - b) Epigonal organ.
 - c) Mesovarium.
 - d) Siphon.
- 4. Clasper bears a dorsal groove with anterior opening known as-----
 - a) Apopyle.
 - b) Sperm sac.
 - c) Hypopyle.
 - d) Siphon.

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

- 1. Sketch and label the Male urinogenital system of Scoliodon.
- 2. Sketch and label the Female Reproductive system of Scoliodon.
- 3. Sketch and label the Scoliodon Embryo with placenta.
- 4. Sketch and label the mermaids purse of Scoliodon.
- 5. Development of Scoliodon.
- 6. Male reproductive organs of Scoliodon.
- 7. Female reproductive organs of Scoliodon.

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

- 1. Sketch and label the mermaids purse of Scoliodon.
- 2. Development of Scoliodon.

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

- 1. Mermaid’s purse.
- 2. Yolk sac placenta.
- 3. Copulation in Scoliodon.
- 4. Shell gland.
- 5. Mullerian duct.

Unit No.8 General Topics - Accessory respiratory organs in fishes, Air bladder in bony fishes, Parental care in amphibians, Neoteny & Paedogenesis. (12 marks)

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

- 1. Accessory Respiratory organs in fishes help in -----
 - a) Respiration.
 - b) Metabolism.
 - c) Spawning.
 - d) None of these.
- 2. Which of the following is not a function of air bladder-----
 - a) Respiration.
 - b) Sound production.
 - c) Reproduction.
 - d) Hydrostasis.
- 3. Which of the following is not an accessory respiratory organ in fishes?
 - a) Pectoral fins.
 - b) Pelvic fins.
 - c) Skin or integument.
 - d) Gut epithelium.
- 4. Paedogenesis refers to -----
 - a) Precocious development of gonads.
 - b) Retogressive metamorphosis.
 - c) Retentation of larval characters by adults.
 - d) Retention of rudimentary characters in adults.
- 5. Neoteny refers to -----
 - a) Reproduction in larval forms.
 - b) Metamorphosis.
 - c) Retention of rudimentary organs.
 - d) Retention of larval characteristics in adults.
- 6. Partial neoteny refers to -----.

- 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.
