(8 pages)

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M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

First Semester

Zoology — Core

COMPARATIVE ANATOMY OF VERTEBRATES

(For those who joined in July 2023 onwards)

Time : Three hours Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. According to Johannes Muller's theory, what is the proposed evolutionary relationship between echinoderms and chordates?
   (a) Echinoderms evolved directly from chordates
   (b) Chordates evolved directly from echinoderms
   (c) Echinoderms and chordates share a common ancestor
   (d) Echinoderms and chordates have no evolutionary relationship

2. Which of the following is a defining characteristic of amphibians?
   (a) Dry, scaly skin
   (b) Ectothermic metabolism
   (c) Internal fertilization
   (d) Larval stage with gills

3. In Urochordata, the notochord is present in _____
   (a) Larval (b) Adult
   (c) Nymph (d) Embryo

4. What is the primary function of keratinized or cornified skin in terrestrial verbetrates?
   (a) Facilitating gas exchange
   (b) Enhancing sensory perception
   (c) Preventing water loss
   (d) Promoting heat retention

5. What is the primary function of goblet cells in the body?
   (a) Regulation of blood glucose levels
   (b) Production of mucus
   (c) Synthesis of digestive enzymes
   (d) Secretion of hormones

6. Which animals typically posses dermal scales?

(a) Mammals (b) Amphibians

(c) Reptiles (d) Birds

7. What is a characteristic feature of the circulatory system in fishes?

(a) A four-chambered heart

(b) Double circulation

(c) Closed circulation

(d) Presence of lymphatic vessels

8. What is the primary function of the hemocoel in certain invertebrates?

(a) Gas exchange

(b) Circulation of nutrients

(c) Digestion

(d) Storage of waste products

9. What is the primary function of surfactant-secreting cells in the respiratory system?

(a) Absorption of oxygen

(b) Protection against pathogens

(c) Facilitation of gas exchange

(d) Regulation of blood pH

10. The primary function of articular cartilage in joints is

(a) Absorption of shock

(b) Production of synovial fluid

(c) Regulation of blood flow

(d) Protection against infection

11. A characteristic feature of a cranoistylic jaw suspension is

(a) Direct attachment of the palatoquadrate to the neurocranium

(b) Attachment of the hyomandibula to the quadrate bone

(c) Attachment of the hyomandibula to the mandible

(d) Absence of any connection between the jaw and the skull

12. The characteristic feature of an amphicoelous vertebra is

(a) The vertebral body is flat on both the anterior and posterior sides

(b) The vertebral body is irregularly shaped

(c) The vertebral body is convex on both the anterior and posterior sides

(d) The vertebral body is concave on both the anterior and posterior sides

13. The primary function of electroreception in aquatic animal is

(a) To detect changes in temperature

(b) To locate prey and navigate in murky waters

(c) To maintain osmotic balance

(d) To produce electrical signals for communication

14. Which of the following is a function of the peripheral nervous system?

(a) Integration of sensory information

(b) Transmission of signals between the central nervous system and the rest of the body

(c) Regulation of involuntary functions such as heartbeat and digestion

(d) Perception of pain and temperature

15. The primary function of the autonomic nervous system is to

(a) Voluntary control of skeletal muscles

(b) Regulation of unconscious bodily functions such as heart rate and digestion

(c) Transmission of sensory information to the brain

(d) Control of higher cognitive functions such as memory and learning

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

16. (a) Explain the origin of chordates.

Or

(b) Define the body plan of a typical chordate.

17. (a) Explain the structure and functions skin.

Or

(b) Summarize the Sweat Glands of humans with suitable diagram.

18. (a) Explain about the Amphibian Heart with a suitable diagram.

Or

(b) Describe the mechanism of respiration in vertebrates.

19. (a) Focus on the types of jaw suspension.

Or

(b) Explain features of pectoral girdles frog with suitable diagram.

20. (a) Evaluate the electroreception in lateral line systems of fishes.

Or

(b) Briefly write about autonomic nervous system.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b)
Each answer should not exceed 600 words.

21. (a) Enumerate the features and classification of chordata.

Or

(b) Describe the importance of study of vertebrate morphology.

22. (a) Illustrate the structure of mammalian skin with suitable diagram.

Or

(b) Explain in detailed about feathers of vertebrates.

23. (a) Explain in detail about the evolutionary significance of aortic arches of vertebrates with any one of the example.

Or

(b) Explain the internal and external respiration.

24. (a) Classify the supporting tissues for the skeletal system in animals.

Or

(b) Justify the evolutionary significance of male urino genital system with suitable diagram.

25. (a) Summarize the Olfactory receptors of vertebrate with a suitable diagram.

Or

(b) Write in detail about comparative anatomy of spinal cord.

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