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May 2026

B.Sc. (LIFE SCIENCE) II SEMESTER

Zoology II Anatomy & Developmental Biology

(BLS–202)

Time : 3 Hours]

[Maximum Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any **four** questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART–A

1. (a) Define aortic arches. (1.5)

   (b) State the evolutionary significance of visceral arches. (1.5)

   (c) Define integumentary derivatives with one example. (1.5)

   (d) Classify receptors based on stimulus type (any two). (1.5)

   (e) What are air sacs in birds? (1.5)

(f) Name the three types of kidneys in vertebrates. (1.5)

(g) Define any two morphogenetic movements. (1.5)

(h) What is vitellogenesis? (1.5)

(i) Classify placenta based on histology (any two types). (1.5)

(j) What is metamorphosis in frog? (1.5)

PART–B

2. (a) Discuss the origin and evolutionary transformation of visceral arches in vertebrates. (10)

   (b) Explain the modifications of integumentary derivatives in vertebrates with special reference to glands. (5)

3. (a) Illustrate the evolution of the heart in fishes and amphibians. (8)

   (b) Elaborate different types of receptors in vertebrates with examples. (7)

4. (a) Describe the evolution of urinogenital ducts in vertebrates. (10)

   (b) Discuss the structure and function of gills in aquatic vertebrates. (5)

5. (a) Explain oogenesis in mammals and highlight its stages. (7)

   (b) Evaluate the process of neurulation in frog embryo. (8)

6. (a) Illustrate the mechanisms that prevent polyspermy. (7)

   (b) Explain the roles of cell movement and programmed cell death in shaping the embryo. (8)

7. (a) Describe the process of implantation in humans in detail. (8)

   (b) Elaborate the formation, structure, and functions of the human placenta. (7)