2025

(CBCS)

(6th Semester)

ZOOLOGY

TENTH PAPER

(Developmental Biology)

Full Marks : 75

Time : 3 hours

The figures in the margin indicate full marks for the questions

(SECTION : A—OBJECTIVE)

(*Marks* : 10)

Tick (✓) the correct answer in the brackets provided : 1×10=10

1. Pattern of cleavage in an egg of frog is
   (a) meroblastic ( )
   (b) holoblastic unequal ( )
   (c) holoblastic equal ( )
   (d) superficial ( )
2. Which hormone is the basis for pregnancy test?
   (a) Estrogen ( )
   (b) Prolactin ( )
   (c) HCG ( )
   (d) Prostaglandins ( )

3. Which of the following organs is formed during gastrulation?
   (a) Gills ( )
   (b) Vitelline membrane ( )
   (c) Heart ( )
   (d) Archenteron ( )

4. Which compound cannot pass the placental barrier?
   (a) Hemoglobin ( )
   (b) Amino acid ( )
   (c) Glucose ( )
   (d) Water ( )

5. Ingression is
   (a) the first process of gastrulation ( )
   (b) the movement of epiblastic mesenchymal cells down the primitive streak ( )
   (c) expansion of one sheet of cells over another sheet of cells ( )
   (d) the process that leads to the development of the central nervous system ( )

6. Morphogenetic movement takes place during
   (a) formation of morula ( )
   (b) blastulation ( )
   (c) gastrulation ( )
   (d) organogenesis ( )

7. The repair by cell division in the damaged tissue is
   (a) exponential growth ( )
   (b) morphallaxis regeneration ( )
   (c) epimorphosis regeneration ( )
   (d) deaccelerating growth ( )

8. The complete metamorphosis of insects consists of how many stages?
   (a) 3 ( )
   (b) 4 ( )
   (c) 5 ( )
   (d) 6 ( )

9. The process by which adult stem cells lose their specialized characteristics and revert to stem cell state is known as

(a) pluripotency ( )

(b) regeneration ( )

(c) reprogramming ( )

(d) dedifferentiation ( )

10. The most common chronic disorder in late adulthood is

(a) hypertension ( )

(b) heart condition ( )

(c) diabetes ( )

(d) arthritis ( )

(SECTION : B—SHORT ANSWERS)

(*Marks* : 15)

Write short notes on the following : 3×5=15

UNIT—I

1. Natural parthenogenesis

OR

2. In vitro fertilization

UNIT—II

3. Functions of placenta

OR

4. Gastrula of frog

UNIT—III

5. Delamination

OR

6. Gradient theory

UNIT—IV

7. Hormonal regulation in insect metamorphosis

OR

8. Hox genes

UNIT—V

9. Models of ageing

OR

10. Types of stem cells

(SECTION : C—DESCRIPTIVE)

(*Marks* : 50)

Answer the following : 10×5=50

UNIT—I

1. Describe the structure of spermatozoon.

OR

2. Explain with diagram the different patterns of cleavage.

UNIT—II

3. What is blastula? Describe blastulation in frog.

OR

4. Define fate map and discuss the different methods for the construction of fate map.

UNIT—III

5. Describe the concept of organizer and induction with Spemann's experiment.

OR

6. Explain different types of morphogenetic movement.

UNIT—IV

7. Write an account on the process of metamorphosis in insects. Add a note on hormonal regulation.

OR

8. What is regeneration? Explain the mechanisms and examples of regeneration in different vertebrate groups.

UNIT—V

9. Describe different types of congenital disorders, their causes and methods of diagnosis.

OR

10. Explain the concept of transgenesis and discuss the techniques used to generate a transgenic organism.

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