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( 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. Centrolecithal eggs are found in

- (a) insects ( )
- (b) molluscs ( )
- (c) sea urchins ( )
- (d) marsupials ( )

2. When only males are produced in parthenogenesis, it is known as

- (a) amphitoky ( )
- (b) thelytoky ( )
- (c) arrhenotoky ( )
- (d) None of the above ( )

- 3.** Regarding blastocoels, which of the following statements is true?
- (a) It gives rise to mesodermal tissue. ( )
  - (b) It forms cells of the central nervous system. ( )
  - (c) It forms the future alimentary canal. ( )
  - (d) It permits cell migration during gastrulation. ( )
- 4.** The vertebrates which are having extraembryonic membranes are called
- (a) amniotes ( )
  - (b) anamniotes ( )
  - (c) protostomes ( )
  - (d) eucoelomates ( )
- 5.** During gastrulation, as the cells involute, a cavity is formed that forms the future alimentary canal. This cavity is known as
- (a) blastocoel ( )
  - (b) mesoderm ( )
  - (c) hemocoel ( )
  - (d) archenteron ( )
- 6.** Cell fates can also be specified by specific amounts of soluble molecules secreted at a distance from the target cells. Such a soluble molecule is called
- (a) morphogen ( )
  - (b) lactogen ( )
  - (c) pepsinogen ( )
  - (d) hormones ( )
- 7.** Moulting hormone in insect is
- (a) ecdysone ( )
  - (b) juvenile hormone ( )
  - (c) thyroxine ( )
  - (d) prolactin ( )

8. How many Hox genes are found in *Drosophila* ?

(a) 4 ( )

(b) 8 ( )

(c) 6 ( )

(d) 2 ( )

9. During IVF, which of the following hormones is used for the hyperstimulation of ovary?

(a) Growth hormone ( )

(b) Prolactin ( )

(c) Testosterone ( )

(d) Gonadotropin ( )

10. The unfortunate condition in which children attain the symptoms of old age is called

(a) Down syndrome ( )

(b) Cat's cry syndrome ( )

(c) Hutchinson-Gilford progeria ( )

(d) phocomelia ( )

**( SECTION : B—SHORT NOTE )**

( Marks : 15 )

Write short notes on the following :

3×5=15

UNIT—I

1. External and internal fertilization

**OR**

2. Acrosomal reaction

UNIT—II

3. Placenta

**OR**

4. Blastocoel

UNIT—III

5. Morphogen

**OR**

6. Invagination

UNIT—IV

7. Juvenile hormone

**OR**

8. Hox genes

UNIT—V

9. Transgenesis

**OR**

10. Pluripotent stem cell

**( SECTION : C—DESCRIPTIVE )**

( Marks : 50 )

UNIT—I

1. Discuss the different types of eggs based on the amount of yolk and distribution of yolk with at least one example of each.

10

**OR**

2. What do you mean by *in vitro* fertilization? Discuss the different steps involved in the process of *in vitro* fertilization. 2+8=10

UNIT—II

3. Discuss the process of gastrulation in frog with suitable diagram. 10

**OR**

4. What do you mean by extraembryonic membrane? Discuss the different types of extraembryonic membranes with their physiological significance. 2+8=10

UNIT—III

5. Write a note on the concept of organizer and induction. 10

**OR**

6. Describe the different types of gastrulation movements with suitable diagram. 10

UNIT—IV

7. What do you mean by metamorphosis? Discuss the different types of insect metamorphosis and its hormonal control. 2+8=10

**OR**

8. Define regeneration. Write a note on the process of regeneration in vertebrates. 2+8=10

UNIT—V

9. Discuss the different types of stem cells. What is the medical importance of stem cells in medical biology? 8+2=10

**OR**

10. What do you mean by congenital disorders? Discuss the cleft palate, Foetal Alcohol Syndrome (FAS) and phocomelia in brief. 2+8=10

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