(6 pages) **Reg. No. :** .....

Code No. : 8779 **Sub. Code : KZOM 13**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2016.

First Semester

Zoology

DEVELOPMENTAL BIOLOGY

(For those who joined in July 2016 onwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Fertilizin is a chemical substance produced from
   (a) Mature eggs
   (b) Acrosome
   (c) Polar bodies
   (d) Middle piece of sperm

2. Fertilization of ova in human take place in
   (a) Ovary (b) Vagina
   (c) Fallopian tube (d) Uterus

3. Third cleavage in frog is
   (a) Vertical and at right angles to the second furrow
   (b) Horizontal and at right angles to the second furrow
   (c) Double, vertical and furrows run into the first or second cleavage furrows
   (d) Latitudinal and at right angles to both the first and second cleavages

4. The central fluid filled cavity of the blastula is known as
   (a) Archenteron (b) Blastocoels
   (c) Blastocyst (d) Morula

5. In gastrulation, cells at the vegetal pole move by using
   (a) Parapodia
   (b) Branchiostegites
   (c) Lamellipodia
   (d) Cephalopodia

6. The heart is derived from

(a) splanchnic mesoderm

(b) somatic mesoderm

(c) Septum transversum

(d) Paraxial mesoderm

7. Insects such as *Drosophila* undergo three molts before becoming a pupa and undergoing metamorphosis. Molting, which is also called 'ecdysis', is controlled by what hormone?

(a) Ecdysone (b) Pituitary

(c) Hypothalamus (d) Embryo

8. Which of the following correctly lists the life stages of an insect with a complete metamorphosis?

(a) Egg, nymph, pupa, adult

(b) Egg, larva, pupa, adult

(c) Egg, pupa, cocoon, adult

(d) Egg, larva, nymph, adult

9. Which of the following factors is NOT considered to be a teratogen?

(a) Sedatives (b) Nicotine

(c) Alcohol (d) Iron

10. Which of the following factors can induce neural tissue in amphibian ectoderm?

(a) Antagonin (b) Follistatin

(c) BMP-4 (d) Frizzled

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Describe in detail process of Oogenesis.

Or

(b) Explain the hormonal control of spermatogenesis.

12. (a) Describe the mechanism and regulation of cleavage cycle.

Or

(b) Describe the holoblastic cleavage with suitable examples.

13. (a) Describe the development of the kidney in frog.

Or

(b) Describe the development of heart in chick with suitable illustrations.

14. (a) Give an account on hormonal regulation of amphibian metamorphosis with suitable illustrations.

Or

(b) Explain the morphological and biochemical changes on amphibian metamorphosis.

15. (a) What is meant by secondary induction? Explain the inductive interactions occurring in eye tissues during lens formation of vertebrates.

Or

(b) Discuss-Cellulose differentiation and their types.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Discuss the process of acrosomal reaction in invertebrates with suitable illustrations.

Or

(b) Give a detailed account on fertilization process in vertebrates.

17. (a) Write an essay about cleavage and their laws, planes and patterns.

Or

(b) The amount and disposition of yolk affects the cleavage pattern and blastula formation – Discuss.

18. (a) Explain the importance of cell-cell recognition, adhesion and cell-sorting in the process of morphogenesis.

Or

(b) Write an essay about skin and its derivatives in organogenesis.

19. (a) "Metamorphosis is a wide spread developmental phenomenon". Explain with suitable examples.

Or

(b) Write an essay about neuroendocrine control of metamorphosis in insects.

20. (a) Enumerate the role of blastopore cells in embryonic induction with suitable illustration.

Or

(b) Write an essay about differentiation.

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