

(7 pages)

Reg. No. :

Code No. : 6403

Sub. Code : HZOM 13

M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2013.

First Semester

Zoology

DEVELOPMENTAL BIOLOGY

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL the questions.

Choose the correct answer :

1. The inducer causes induction by liberating a chemical substance called
 - (a) Organizer chemical
 - (b) Evocator
 - (c) Belly -piece
 - (d) None of these.

2. A human gamete contains ————
 - (a) Only one allele of a gene
 - (b) All alleles of a gene
 - (c) Both alleles of a gene
 - (d) None of the above.
3. Which plane of cleavage bisects the egg at right angle to the main axis and half way between the animal and vegetal poles?
 - (a) Meridional plane
 - (b) Vertical plane
 - (c) Equatorial plane
 - (d) Latitudinal plane.
4. The spiral pattern of cleavage is seen in
 - (a) Synapta
 - (b) Amphioxus
 - (c) Annelids
 - (d) None of these.
5. Morphogenes are ————
 - (a) Soluble molecules
 - (b) Insoluble molecules
 - (c) Both (a) and (b)
 - (d) Insoluble and crystallized molecules.

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6. Which of the following is/are fundamental aspects development biology?

- (a) Morphogenesis
- (b) Control of cell growth
- (c) Cellular differentiation
- (d) All the above.

7. The origin of digestive tract is from

- (a) Ectoderm (b) Endoderm
- (c) Mesoderm (d) Neuroderm.

8. The edges of neural plate are folded and elevated to form

- (a) Medullary plate (b) Neural fold
- (c) Neural grove (d) Neural tube.

9. The theory of organizer was formulated by

- (a) Tiedmanh (b) Robert Brown
- (c) Spemann (d) None of these.

10. The transparent layer found around the outer surface of a developing ovum, is called —————

- (a) Zona radiata (b) Zona pellucida
- (c) Theca interna (d) Theca externa.

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PART B — (5 × 5 = 25 marks)

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

11. (a) What is the acrosome of the sperm cell? How is it formed?

Or

(b) Describe the structure and function of sperm and spermatogenesis.

12. (a) Write a short note on natural cleavage plane between the placenta and the uterine wall.

Or

(b) Describe the types of cleavage in human reproductive system.

13. (a) Describe the series of normal stages in the development of the sea urchin.

Or

(b) Explain the fate and function of the ventral ectodermal ridge during mammalian development.

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14. (a) Explain the development of ectodermal organs, neurulation in vertebrate development.

Or

- (b) Write a brief notes on development of mesodermal organs.
15. (a) Give an account on embryonic induction in vertebrates.

Or

- (b) Write a brief account on the theory of organizer and inductor.

PART C — (5 × 8 = 40 marks)

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

16. (a) What is the type of cell division that allows sexual reproduction and explain the gametogenesis?

Or

- (b) What is the difference between spermatogonium and spermatocyte? and concerning events during the periods of life how different is the gametogenesis in women and in men?

17. (a) Describe the reproduction and cleavage of sea urchin and explain the law of cleavage and planes of cleavage.

Or

- (b) Describe the blastula formation and blastulation.

18. (a) Describe the geometry and mechanics of teleost gastrulation and the formation of primary embryonic axes.

Or

- (b) Explain the cessation of gastrulation : BMP signaling and EMT during and at the end of gastrulation.

19. (a) Describe the how epidermal derivatives is formed by the epithelium invaginating to form a cavity.

Or

- (b) Describes the formation of the external ear (external auditory meatus) in vertebrate development.



20. (a) Describe the gene activation in neural inductor? Explain the mechanism involved in neural inductor.

Or

- (b) Explain the difference between embryonic growth and cell differentiation.
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