

(6 pages)

Reg. No. : .....

**Code No. : 5448**

**Sub. Code : ZZOM 22**

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023

Second Semester

Zoology-Core

**DEVELOPMENTAL BIOLOGY**

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

**PART A — (10 × 1 = 10 marks)**

Answer ALL questions.

Choose the correct answer :

1. Totipotency means

- (a) The ability of a single cell to differentiate into multiple cell types
- (b) The ability of a single cell to divide and produce all of the differentiated cells in an organism
- (c) The ability of a single cell to regenerate lost tissues
- (d) The ability of a single cell to undergo apoptosis

2. Which of the following is a type of genetic mutation?

- (a) Deletion                      (b) Inversion
- (c) Duplication                (d) All of the above

3. What is the first stage of cleavage?

- (a) Morula                      (b) Blastula
- (c) Gastrula                    (d) Zygote

4. Bilateral symmetry is

- (a) The arrangement of body parts around a central point
- (b) The asymmetrical shape of an organism's body
- (c) The division of the body into identical halves
- (d) The ability of an organism to move in all directions

5. What determines the sex of an individual in humans

- (a) The combination of sex chromosomes inherited from the parents
- (b) The number of X chromosomes inherited from the mother
- (c) The presence of testosterone in the embryo
- (d) The size of the genitalia at birth

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6. Which hormone is responsible for the molting process in insects  
(a) Insulin (b) Ecdysone  
(c) Thyroxine (d) Adrenaline
7. Which animals are able to regenerate entire body parts  
(a) Mammals (b) Fish  
(c) Reptiles (d) Starfish
8. What is a gradient?  
(a) The uniform distribution of a signaling molecule  
(b) The gradual change of a property over a spatial or temporal scale  
(c) The sudden change of a property over a spatial or temporal scale  
(d) The inability of a signaling molecule to diffuse through a tissue
9. Which of the following is a chromosomal disorder?  
(a) Cystic fibrosis  
(b) Down syndrome  
(c) Sickle cell anemia  
(d) Hemophilia

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10. What is azoospermia?

- (a) A condition in which a man produces no sperm  
(b) A condition in which a man produces too few sperm  
(c) A condition in which a man produces abnormally shaped sperm  
(d) A condition in which a man produces dead sperm

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words

11. (a) Visualize about commitment.

Or

- (b) Define genomic equivalence.

12. (a) Explain sperm-egg recognition in animals.

Or

- (b) Discuss about formation of symmetry during embryogenesis.

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13. (a) Explain cell aggregation and differentiation in *Dictyostelium*.

Or

- (b) Report the sex determination in animals

14. (a) Explain about regeneration phenomenon in animals.

Or

- (b) Evaluate about stimulation and suppression.

15. (a) Conclude-Assisted Reproductive Technology (ART).

Or

- (b) Write about Gamete intrafallopian transfer (GIFT)

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words

16. (a) Define-Induction and competence

Or

- (b) Describe Genomic imprinting.

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17. (a) Explain about Spermatogenesis.

Or

- (b) Illustrate about formation of germ layers in animals.

18. (a) Write about axes and pattern formation in Chick.

Or

- (b) Illustrate about metamorphosis during larval formation.

19. (a) Illustrate about significance of neoteny.

Or

- (b) Explain about polarity and gradients.

20. (a) Illustrate about superovulation.

Or

- (b) Write about genetic disorders.

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