

(6 pages)

Reg. No. : .....

Code No. : 5447

Sub. Code : ZZOM 21

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

Second Semester

Zoology – Core

CELL AND MOLECULAR 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. Who discovered and coined the term “cell”  
(a) Robert Boyle (b) Robert Hooke  
(c) Robert Brown (d) Robert Gallo
2. The functions on the nuclear pores is  
(a) Regulate movement of molecules between the nucleus and cytoplasm  
(b) Package DNA into chromosomes  
(c) Synthesize ribosomes  
(d) Synthesize RNA

3. The Fluid Mosaic Model was proposed by  
(a) James Watson  
(b) Francis Crick  
(c) S.J. Singer and Garth Nicolson  
(d) Rosalind Franklin
4. Which of the following is required for active transport to occur?  
(a) A concentration gradient  
(b) A lipid bilayer membrane  
(c) A high temperature  
(d) ATP
5. Molecules that transmit information with in and between cells is called  
(a) Signal molecules  
(b) Messenger  
(c) Transmitters  
(d) Receptors
6. Oncogenesis means  
(a) A process that leads to the formation of new organs  
(b) A process that leads to the death of cells  
(c) A process that leads to the transformation of normal cells cancer cells  
(d) A process that leads to the formation of new blood vessels

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7. The purpose of the Griffith experiment is
- (a) To study about genetic material of bacteria
  - (b) To study the transformation in bacteria
  - (c) To study the effect of antibiotics on bacteria
  - (d) To study the metabolism of bacteria
8. \_\_\_\_\_ is the name of the process by which DNA makes a copy of itself?
- (a) Replication      (b) Transcription
  - (c) Translation      (d) Transformation
9. \_\_\_\_\_ is a mechanism for regulating gene expression at the transcriptional level
- (a) Alternative splicing
  - (b) miRNA interference
  - (c) DNA methylation
  - (d) RNA editing
10. Conjugation is a process of DNA transfer in bacteria that requires
- (a) Physical contact between two bacterial cells
  - (b) Secretion of DNA into the extracellular environment
  - (c) Transfer of DNA through bacteriophages
  - (d) Random diffusion of DNA into recipient cells

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**PART B — (5 × 5 = 25 marks)**

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

Each answer should not exceed 250 words

11. (a) Describe about animal cell with suitable diagram.

Or

- (b) Quote the nucleus structure with suitable diagram.

12. (a) Distinguish about properties of plasma membrane.

Or

- (b) Explain about Giant chromosomes.

13. (a) Write about cell signaling.

Or

- (b) Compute on cell ageing.

14. (a) Explain the Hershey-Chase experiment that helped establish DNA as the genetic material.

Or

- (b) Explain the types and functions of plasmids in bacteria.

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15. (a) Justify the transcription of mRNA in prokaryotes.

Or

- (b) Write about transformation.

PART C — ( $5 \times 8 = 40$  marks)

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

Each answer should not exceed 600 words.

16. (a) Enumerate about cell theory.

Or

- (b) Describe about mitochondria and Golgi complex

17. (a) Summarize about Fluid mosaic model of plasma membrane with appropriate diagram.

Or

- (b) Illustrate about sodium potassium pump

18. (a) Explain about cell communication and intracellular signaling.

Or

- (b) Determine about oncogenesis.

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19. (a) Evaluate about structure of DNA.

Or

- (b) Explain about DNA replication and its types.

20. (a) Summarize regulation of gene expression.

Or

- (b) Write about conjugation and transduction.
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