

RAN-1803080501030001
M.Sc. (Sem. I) Examination November - 2025
Zoology - 1003 : Cell and Molecular Biology
Time: 3 Hours]
[Total Marks: 70
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book.
- (2) Mention below given details in answer book
- (3) Figures to the right indicate full marks.
- (4) Draw neat and labeled diagrams wherever necessary

Seat No.:

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Student's Signature

Q. 1. Answer any Two of the following:
(18)

- A. Write detail notes on: The structural components and organization of biological membranes.
- B. Explain: Pinocytosis and phagocytosis, and explain their roles in cellular uptake and defence mechanisms.
- C. Describe: How adhesion mechanisms contribute to tissue integrity and intercellular communication.

Q. 2. Answer any Two of the following:
(18)

- A. Write detail notes on: The ultrastructure and organization of the centrosome, centromere kinetochore and highlight their roles during cell division.
- B. Explain: Supernumerary chromosomes, describe their structural features and discuss their importance in genetics.
- C. Describe: Explain the chromosomal basis of sex determination and highlight how specific chromosomes influence male and female development.

Q. 3. Answer any Two of the following:
(18)

- A. Write detail notes on : The different types of vectors used in r-DNA technology and their advantages and limitations.
- B. Explain : Step-by-step methodology isolation, cutting, ligation, transformation and selection of r-DNA technology.
- C. Describe: Methodology used to produce transgenic animals, including gene insertion and expression.

Q. 4. Answer any Two of the following:
(16)

- A. Write detail notes on : Explain chromosome painting, its methodology, and its utility in detecting chromosomal abnormalities.
- B. Explain: What is autoradiography? Explain its principle and how it is used to study chromosomes.
- C. Describe: Describe the method and applications of in situ hybridization, with emphasis on fluorescence in Situ Hybridization (FISH).