RAN-2003080601020002

RAN-2003080601020002

M.Sc. (Sem. I) Examination November - 2025

Microbiology (Paper MB - 1002) Molecular Biology and Genetic Engineering

Time: 2 Hours] **[Total Marks: 70**

સૂચના : / Instructions

(1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book.

Seat No.:

Student's Signature

Q. 1. Answer any 2 of the following **(18)**

A. Discuss about DNA topology and write in detail about linking number.

B. Define a nucleosome and discuss its structural components and biological significance in eukaryotic cells.

C. Describe the processes of origin recognition, DNA unwinding, and termination during DNA replication in prokaryotes.

Q. 2. Answer any 2 of the following **(18)**

A. Explain the structure and function of ribosomes in prokaryotic translation.

B. Justify why the genetic code is considered a fundamental component of molecular biology.

C. Describe the elongation phase of protein synthesis in prokaryotic cells.

Q. 3. Answer any 2 of the following **(18)**

A. Explain the importance of restriction endonuclease enzymes, DNA ligase and polymerases in genetic engineering.

B. Enlist the different types of vectors used in genetic engineering and explain any two types with their applications in gene cloning.

C. Elaborate on genomic and cDNA libraries.

Q. 4. Answer any 2 of the following **(16)**

A. Explain pathways of RNAi with details of each processing components.

B. Explain the Retroviral vector method for the transgenesis in mice.

C. Describe the concept and applications of plants as bioreactors.

———