



RAN-2103080602010002

M. Sc. (Sem. - II) Examination September - 2025

Microbiology (Paper - MB-2001) Enzymology and Microbial Physiology

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) Figures to the right indicate full marks of the question.
- (3) Draw neat and labelled diagrams whenever necessary.

Seat No.:

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Student's Signature

Q. 1. Answer the following (any 2):

(18)

- a. Discuss Competitive and Non-competitive inhibitions.
- b. Explain the Lineweaver-Burk plot and its kinetics.
- c. Describe Monomeric and Oligomeric enzymes.

Q. 2. Answer the following (any 2):

(18)

- a. Discuss: Rational design methods for protein engineering.
- b. Elaborate:
 - i. Extremozymes
 - ii. Synzymes
 - iii. Artizymes
- c. Discuss the application of enzymes in: Starch production and Laundry detergents.

Q. 3. Answer the following (any 2):

(18)

- a. Discuss the Physiology and Biochemistry of nutritional stress and starvation stress response in bacteria.
- b. Explain: Phosphorelay and sporulation initiation in *Bacillus subtilis*.
- c. Elaborate: Prototypical Two component regulatory system.

Q. 4. Write short notes on: (any 2):

(16)

- a. Assimilation and Dissimilation of Sulfate in bacteria
- b. Peptidoglycan structure and synthesis
- c. Green sulphur bacteria