RAN-2303080603060001

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M. Sc. (Sem.-III) Examination October - 2025

Microbiology - Bioprocess Engineering (GE 1)

Time: 2 Hours] **[Total Marks: 30**

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 labeled diagrams whenever necessary.

Seat No.:

Student's Signature

Set B

Q.1. Answer the following. (Any One) **7**

a. Outline the core elements involved in the design and operation of a bioreactor.

b. Define viscosity and explain any two viscometers used to measure it.

Q.2. Answer the following. (Any Two) **8**

a. Explain the scale-up of mixing systems.

b. What is a non-Newtonian fluid? Describe the Dilatant type of non- Newtonian fluid with examples.

c. Describe the measurement and control of pressure as a process variable in ongoing fermentation process.

Q.3. Answer the following. (Any Two) **8**

a. Describe the function and types of gassing devices used in fermentation processes.

b. Explain Mass transfer correlations.

c. List the four basic components of a control loop and explain the working of a manual control system.

Q.4. Answer the following. (Any One) **7**

a. Enlist different methods used for measuring the k_La. Explain the dynamic method in detail.

b. Describe the measurement and control of dissolved oxygen (DO) as a process variable in ongoing fermentation process.