Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.SC. INDUSTRIAL BIOTECHNOLOGY SEMESTER - 1 WINTER 2021 EXAMINATION

Subject Code:1310102 Date:14 Mar 2022

Subject Name:Industrial Microbiology

Time:10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Draw neat and clean diagrams as required**

Q.1 Write a note on following **(Marks-10X2=20)**

1. Actinomycetes and their significance.
2. Cryopreservation.
3. Define fermentation and give examples of four microbes involved in the process of fermentation.
4. Bacterial growth curve with a neat labelled diagram.
5. Advantages and disadvantages of enzyme immobilization.
6. Four support methods and give one example of material used in each support medium for Cell Immobilization.
7. Types of Automatic Control Processes.
8. Characteristics of Solid-State Fermentation.
9. Mutagenesis.
10. What is the significance of Inoculum development?

Q.2 Answer the following (Any 2 out of 3) **(Marks-2X10=20)**

1. Explain how FAME technique can be employed for microbial screening.
2. Write a note on the Oxygen Delivery System in a Small-Scale liquid Bioreactor.
3. Describe application of GMDs to study microbial genomes

Q.3 Answer the following (Any 6 out of 8) **(Marks-6X5=30)**

1. Enlist one specific application of all the different types of Extremozymes.
2. Mention the steps for pilot- scale inoculum development for the production of vitamin B12 from *Pseudomonas denitrificans*
3. Describe available preservation strategies for microbes.
4. Write a note on different types of Batch-fed Cultures.
5. Mention advantages and disadvantages of Solid-State Fermentation.
6. Briefly mention the Growth and Production of Enzymes in Solid-State Fermentation.
7. Draw a neat labelled diagram for the typical structure of a bioreactor and write a short note on the functions of the parts of the bioreactor.
8. What are the applications of Enzyme Immobilization?

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