

**MODEL QUESTION PAPER**

**MSC III SEM**

**BIOTECHNOLOGY**

**THIRD PAPER**

**BIOPROCESS ENGINEERING AND MICROBIAL TECHNOLOGY**

**TIME: 3 HRS**

**MAXIMUM MARKS: 85**

**MINIMUM MARKS: 29**

*Note: The question paper consists of two sections: A and B. attempt all the questions according to the given instructions.*

**Section A**

**Short Answer Type Questions**

**Note: Attempt all questions. Each question carries five marks (5 X 5 = 25)**

Q1. Explain sterilization.

Or

Explain scope of biochemical engineering.

Q2. Define fermentation with example.

Or

Explain bioreactor.

Q3. Explain removal of microbial cells

Or

Explain crystallization as a product recovery.

Q4. Define antibiotics with an example.

Or

Explain immobilization of enzyme

Q5. Define biofertilizers with example.

Or

Describe microbial production of ethanol.

### **Section B**

#### **Long Answer Type Questions**

**Note: Attempt all questions. Each question carries twelve marks (5 X 12 = 60)**

Q6. Explain the isolation, preservation and strain improvement of industrially important microbes.

Or

What are the methods for the media preparation for industrial fermentation?

Q7. Describe various types of fermentations.

Or

Explain type, design and uses of bioreactors.

Q8. Define various process of product recovery.

Or

Write an essay on down stream processing.

Q9. Describe the industrial production of vitamin B12 or glutamic acid.

Or

Describe the industrial production of penicillin or streptomycin.

Q10. Write an essay on mushroom production.

Or

Describe microbial production of citric acid or acetic acid.