

**G-4/406/21**

Roll No. ....

**M.Sc. IV Semester Examination, 2021****BIOTECHNOLOGY****Paper II****(Bioprocess Engineering and Technology)**

Time : 3 Hours ]

[ Max. Marks : 80

**Note :** All questions are compulsory. Question Paper comprises of 3 sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.

**SECTION A****1×8=8****(Objective Type Questions)**

Choose the correct answer :

- Which of the following is not a desired characteristics of the organism used for industrial application ?  
(a) Should produce less amount of product  
(b) Should be readily available  
(c) Should grow readily  
(d) Should be non-pathogenic
- Which of the following is not a nitrogen source ?  
(a) Waste liquor      (b) Corn steep  
(c) Yeast extract      (d) Peptones

P.T.O.

- Which electronic device is used in biosensors ?  
(a) Transmitter      (b) Receptor  
(c) Transducer      (d) Electrolyte
- Which of the following is not the physical method for the cells rupturing ?  
(a) Milling      (b) Homogenization  
(c) Ultrasonication      (d) Enzymatic digestion
- Who observed citric acid as a by product of calcium oxalate produced by penicillium glaucum ?  
(a) Thomas Edison      (b) Carl Widhelm  
(c) Wehmer  
(d) Adam
- High ethanol concentration  
(a) Promotes yeast growth  
(b) Inhibits yeast growth  
(c) Promotes bacterial growth  
(d) Inhibits bacterial growth
- Pasteurization is the process of heating milk :  
(a) above 121°C  
(b) above the boiling point  
(c) below boiling point  
(d) above 150°C

**G-4/406/21**

8. Which of the following methods dehydrates microbial cells by plasmolysis thereby killing them ?

- (a) Sugaring (b) Smoking  
(c) Heating (d) Pasteurization

**SECTION B** **6×4=24**

**(Short Answer Type Questions)**

**Note :** Attempt one question from each unit.

**Unit-I**

1. Discuss the methods of air and media sterilization.

*Or*

Write a note on both fermentation.

**Unit-II**

2. Describe methods for removal of microbial cells and solid matters.

*Or*

Discuss enzyme engineering.

**Unit-III**

3. Discuss industrial production of citric acid.

*Or*

Write a note on single cell protein.

**Unit-IV**

4. Write a note on canning and packing.

*Or*

Discuss technology for production of milk and milk products.

**SECTION C** **12×4=48**

**(Long Answer Type Questions)**

**Note :** Attempt one question from each unit.

**Unit-I**

1. Describe media for industrial fermentation.

*Or*

Discuss specialized bioreactors with example.

**Unit-II**

2. Discuss whole cell immobilization and their applications.

*Or*

Describe steps of downstream processing.

**Unit-III**

3. Discuss use of microbes in minerals beneficiation and oil recovery.

*Or*

Discuss industrial production of antibiotics.

**Unit-IV**

4. Discuss microbial flora of food.

*Or*

Discuss food spoilage and its characteristics and examination.