

[ 4 ]

Or

Describe fermentative production of vitamin B2 and Vitamin B12.

4. Give a detail account on alcohol production in the industry.

Or

Describe fermentative production of amino acids and uses.

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### III Semester Examination, April-2021

M.Sc.

MICROBIOLOGY

Paper IV

(Industrial Microbiology and Fermentation  
Technology)

Time : 3 Hours ]

[Maximum 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'

(Objective Type Questions)

Choose the correct answer :

1 × 8 = 8

- The agitator is required to :  
(a) Provide air (b) Mixing objectives  
(c) Purify the product (d) Sterilize the media
- Which of the following is not an industrial product made by the fungus *Aspergillus niger* ?  
(a) Galactosidase (b) Citric acid  
(c) Gluconic acid (d) Lysine
- Which of the following parameter cannot be measured by a computer system ?  
(a) Temperature (b) pH  
(c) Foam (d) Sterility

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4. Which of the operation does not come under upstream processing ?

- (a) Media preparation (b) Inoculum development  
(c) Effluent treatment (d) Storage of raw material

5. Pectinase, an enzyme used for increasing yield and for clarifying juice is obtained by :

- (a) *A. oryzae* (b) *A. niger*  
(c) *A. flavus* (d) all of these

6. Which of the following product utilizes whey as its raw material ?

- (a) Lactic acid (b) Acetic acid  
(c) Glutamic acid (d) Lysine

7. Alcohol production from starch and raw sugar utilizes selected strains of :

- (a) *Saccharomyces cerevisiae*  
(b) *Candida pseudotropicalis*  
(c) *Candida utilis* (d) none of these

8. Bacitracin, an antibiotic similar to penicillin, is produced by :

- (a) *Bacillus polymyxa* (b) *Streptomyces erythreus*  
(c) *Bacillus licheniformis* (d) *Aspergillus fumigatus*

### SECTION 'B'

6 × 4 = 24

#### (Short Answer Type Questions)

**Note :** Answer the following questions in 250 words.

1. Give a brief description on fermentation equipment and its use.

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Or

Write a note on antifoam.

2. Describe the role of genetic material for strain improvement.

Or

Describe role of computer in fermenter operation.

3. Describe lactic acid production.

Or

Describe recovery process in microbial enzyme production.

4. Describe commercial production of streptomycin.

Or

Describe industrial production of alcoholic beverages.

### SECTION 'C'

12 × 4 = 48

#### (Long Answer Type Questions)

**Note :** Answer the following questions in 500 words.

1. Give an account on design and types of fermenter.

Or

Describe direct, dual or multiple fermentations.

2. Give a detail account on types of fermentation process.

Or

Describe fermentation media and sterilization.

3. Describe Industrial production of citric acid and glutamic acid.

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P.T.O.