

**FACULTY OF SCIENCE**

M.Sc. III-Semester Examination, January 2018

Subject : MICROBIOLOGY

Paper : III (A)

Industrial Microbiology

Time : 3 hours

Max. Marks : 80

*Note : Answer all questions from Part-A and Part-B. Each question carries 4 marks in Part-A and 12 marks in Part-B.*

**PART – A (8 x 4 = 32 Marks)**  
(Short Answer Type)

- 1 History of Industrial Microbiology
- 2 Types of fermentors
- 3 Surface vs Submerged fermentations
- 4 Sterilization of fermentation media
- 5 Dual fermentations
- 6 Biological assay of fermentation products
- 7 Advantages of Immobilization methods
- 8 Protoplast fusion

**PART – B (4 x 12 = 48 Marks)**  
(Essay Answer Type)

- 9 a) Write in detail about the Fermentation equipment and its use.  
OR  
b) Give an account of screening of microorganisms having industrial importance.
- 10 a) Write in detail about solid state fermentations.  
OR  
b) Describe the fermentation media used for culturing industrially important microorganisms.
- 11 a) Write in detail about Down stream process.  
OR  
b) Explain the scale-up of fermentations.
- 12 a) Give a detailed account of strain improvement techniques.  
OR  
b) Explain the techniques employed for immobilization of microbial cells.

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