

(6 pages)

Reg. No. : .....

Code No. : 5552

Sub. Code : ZMBM 42

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2023.

Fourth Semester

Microbiology – Core

FERMENTATION AND INDUSTRIAL  
MICROBIOLOGY

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Downstream process includes
  - (a) Separation
  - (b) Purification
  - (c) Quality control testing
  - (d) Both (a) and (b)
  
6. The aeration is mainly provided to organisms present in \_\_\_\_\_
  - (a) Submerged fermentation
  - (b) Solid state fermentation
  - (c) Surface fermentation
  - (d) Batch culture
7. Which of the following is not a stage of product recovery?
  - (a) Removal of solids
  - (b) Isolation of organisms
  - (c) Purification
  - (d) Cell disruption
8. The HPLC uses the application of?
  - (a) High temperature
  - (b) Low temperature
  - (c) High pressure
  - (d) Low pressure

2. Which of the following is not a carbon source?
  - (a) Blackstrap molasses
  - (b) Corn molasses
  - (c) Beet molasses
  - (d) Yeast extract
3. Full form of ATCC is?
  - (a) American type culture collection
  - (b) American transgenic cell center
  - (c) American type cell collection
  - (d) American type culture cellular
4. The batch culture is a \_\_\_\_\_ culture system.
  - (a) Open
  - (b) Closed
  - (c) Isolated
  - (d) Semi-closed
5. While constructing the fermenter, which of the following is not required?
  - (a) High-speed agitation and aeration system
  - (b) Temperature control system
  - (c) Ph control system
  - (d) Sample facilities

9. Which one of the following is called as the 'brewer' 'syeast'
  - (a) Saccharomyces ludwigi
  - (b) Saccharomyces cerevisiae
  - (c) Saccharomyces boulardii
  - (d) Saccharomyces pastorianus
10. Beer is manufactured from
  - (a) Grape
  - (b) Wheat
  - (c) Barley
  - (d) Rice

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Discuss the processes in upstream processing?  
Or  
(b) What is raw material explain role in industrial fermentation?
12. (a) Apply scaleup the fermentation process?  
Or  
(b) Determine microbial growth kinetics?

13. (a) What are the types in fermentation process?

Or

(b) Design the computer role in fermentation process.

14. (a) Explain whole broth processing and its methods?

Or

(b) Explain the techniques in cell disruptions?

15. (a) Assume the production of amino acids (L-Glutamic acid).

Or

(b) Show principle of immobilization.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) What is media in fermentation process and its types, components, significance?

Or

(b) How strain improvement plays a vital role in fermentation process and what are all the methods to preserve the strains?

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17. (a) Explain inoculum development and production media.

Or

(b) Apply the lab and pilot scale fermentor.

18. (a) Analyse types of fermentor.

Or

(b) Justify the process control in fermentation?

19. (a) Design the stages in downstream processing?

Or

(b) Explain the crystallization lyophilization and drying in downstream process.

20. (a) What is bakers' yeast and its types. production. application?

Or

(b) Formulate penicillin antibiotics production?