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M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2021.

Fourth Semester

Microbiology - Core

**FERMENTATION AND INDUSTRIAL
MICROBIOLOGY**

(For those who joined in July 2017 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Carbon sources used in media formulation are following except
 - (a) Carbohydrates
 - (b) Peptones
 - (c) Lipids
 - (d) Fats

2. Antifoam agent is
 - (a) Corn oil
 - (b) Soybean oil
 - (c) Both (a) and (b)
 - (d) Protein

3. The microorganisms useful fermentation are
- (a) Yeast
 - (b) Virus
 - (c) Fungi
 - (d) None
4. Batch fermentation is also called
- (a) Submerged system
 - (b) Batch system
 - (c) Open system
 - (d) Closed system
5. Bubble column bioreactor is extensively designed for
- (a) Gaseous reaction
 - (b) Bioreactions
 - (c) Oxidation
 - (d) All of these
6. The purification and recovery of the production after fermentation is called
- (a) Fermentation process
 - (b) Upstream process
 - (c) Downstream process
 - (d) Centrifugation process

7. Precipitation process is done by
- (a) Aluminium
 - (b) Silicon
 - (c) PED (Polyethylene glycol)
 - (d) None
8. Plate and frame filter is a type of
- (a) Open filtration
 - (b) Continuous filtration
 - (c) Batch filtration
 - (d) None
9. L-lysine is produced from
- (a) *Mycobacterium sps*
 - (b) *Salmonella sps*
 - (c) *Corynebacterium sps*
 - (d) *Clostridium sps*
10. Methods used for immobilization is
- (a) Binding
 - (b) Microinjection
 - (c) Encapsulation
 - (d) Injection

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Write note on industrial microbes

Or

(b) Describe preservation of microbes and its types.

12. (a) What are the stages of fermentation?

Or

(b) Write about inoculum development and media preparation.

13. (a) Describe about continuous bioreactor.

Or

(b) Write about submerged fermentation process.

14. (a) Write note on flocculation and sedimentation.

Or

(b) Describe about solvent extraction.

15. (a) Write about the production of Penicillin antibiotic using microorganisms.

Or

- (b) Describe Immobilization process.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Briefly discuss about secondary screening.

Or

- (b) Describe about media and raw materials and its roles in industrial fermentation.

17. (a) Write about the scale up fermentation.

Or

- (b) Draw fermenter and write basic components, function of fermenter.

18. (a) What are fermenter types and its process?

Or

- (b) Write about the process control in fermentation.

19. (a) Explain the stages of Downstream process.

Or

(b) Write about an overview on the process of upstream.

20. (a) Explain production of beverage beer and wine.

Or

(b) Explain organic production using microorganisms
