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M.Sc. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2020.

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. The term fermentation is derived from the Latin verb 'fervere' which means _____
 - (a) air
 - (b) to boil
 - (c) soil
 - (d) atmosphere

2. Corn – steep liquor, soya meal, peanut meal, cotton seed meal serving as _____ sources.
- (a) Nitrogen (b) Carbon
(c) Minerals (d) None
3. What you mean by trophophase?
- (a) Production of waste materials
(b) Production of topical products
(c) Production of Primary metabolites
(d) Production of secondary metabolites
4. Which of the following is not a product of fermentation?
- (a) Oxygen (b) CO₂
(c) Lactate (d) ethanol
5. Alcoholic fermentation is carried by yeast known as _____
- (a) *Saccharomyces cerevisiae*
(b) *Lactobacillus*
(c) *E.coli*
(d) *Aspergillus niger*

6. Yield coefficient represents _____
- (a) Total biomass
 - (b) Conversion efficiency of a substrate in to product
 - (c) Conversion rate of a substrate in product
 - (d) Production time of Biomass
7. Filtration is one of the most Common Process used to separate suspended Particles from a _____
- (a) liquid
 - (b) gas
 - (c) both (a) and (b)
 - (d) none
8. Detergents will damage the _____ of the microbial cell membrane and lead to release of intracellular components.
- (a) Lipoprotein
 - (b) Indole
 - (c) amines
 - (d) mercaptans
9. Vinegar typically contains _____ by volume acetic acid.
- (a) 30 to 40%
 - (b) 50 to 60%
 - (c) 5 to 20%
 - (d) 70 to 80%

10. _____ is top yeast
- (a) *Saccharomyces Cerevisiae*
 - (b) *Debaryomces*
 - (c) *Hanseniaspora*
 - (d) *Pichia*

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) How will you differentiate primary and secondary screening?

Or

- (b) Discuss the chronological development of the Fermentation industry.

12. (a) Write short notes on Batch culture.

Or

- (b) Differentiate internal feedback and external feed back system.

13. (a) Write short notes on air lift bioreactor.

Or

- (b) Describe role of computer in process control of Fermentation industry.

14. (a) Write notes on Lyophilization.

Or

(b) Discuss about cell disruption method used in down stream processing.

15. (a) Write about industrial production of amylase enzyme.

Or

(b) Narrate the production procedure for Vitamin -B₁₂.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Write short notes on the following

(i) Molasses

(ii) Cellulose

(iii) Corn steep liquor

Or

(b) Write a detailed notes on strain improvement.

17. (a) Explain the basic functions of a Fermenter for microbial cell culture.

Or

(b) How do the achievement and maintenance of aseptic conditions are possible in a Fermenter?

18. (a) Write short notes on the following.

- (i) Tower fermentor
- (ii) Shake flask fermentor

Or

(b) Write a detail notes on solid state fermentation.

19. (a) Write a essay on 'Chromatography used in down stream process'.

Or

(b) Write short note on the following.

- (i) Whole broth processing
- (ii) Membrane processing

20. (a) Discuss about the immobilization principle, types and its significance.

Or

(b) Out line the production of streptomycin antibiotics.