

(6 pages)

Reg. No. :

Code No. : 7097

Sub. Code : KMBM 42

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2019.

Fourth Semester

Microbiology

FERMENTATION AND INDUSTRIAL
MICROBIOLOGY

(For those who joined in July 2016 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. Basic principle in industrial microbiology is
- (a) suitable growth conditions
 - (b) fermentation
 - (c) providing aseptic conditions
 - (d) all of these

2. Soyameal, peptone and tryptone are used as the source of
- (a) carbon source
 - (b) carbon and nitrogen source
 - (c) nitrogen source
 - (d) mineral source
3. Protected fermentations uses
- (a) sterilized media
 - (b) pasteurized media
 - (c) pasteurized media with low pH
 - (d) unsterilized media
4. Spore inoculum is better than vegetative inoculum due to
- (a) more metabolic activity
 - (b) more number of organisms
 - (c) both (a) and (b)
 - (d) none of the above
5. A continuous bioreactor in which only the flow rate is used to control the rate of cell or product productivity is called
- (a) Turbido stat
 - (b) Eyeostat
 - (c) Chromostat
 - (d) pH

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

Each answer should not exceed 250 words.

6. Which type of fermentor is used in laboratory scale?
- (a) stirred tanks (e) bubble columns
(c) shake-flask (d) air-lift fermenter
7. _____ is an operation designed to force agitation in the fluid and induce coagulation.
- (a) Sedimentation (b) Disinfection
(c) Flocculation (d) Aeration
8. Solvent extraction is more good if repeated extractions are done using
- (a) large solvent (b) small solvent
(c) extra solvent (d) none
9. Beverage are classified as
- (a) carbonated
(b) non-carbonated mildy alcohol
(c) non-carbonated stimulating beverages
(d) all of these
10. The first person to discover vitamins was
- (a) Jenner (e) Funk
(c) Calyin (d) Mellanby

11. (a) What is meant by strain development in industrial fermentation?

Or

- (b) Write notes on primary screening.

12. (a) Write notes on basic components and functions of fermenter.

Or

- (b) Describe the inoculum development for fermentation.

13. (a) Write notes :
- (i) submerged fermentation
(ii) solid-state fermentation.

Or

- (b) Write the process control in fermentation.

14. (a) Differentiate cell aggregation and flocculation.

Or

- (b) Write notes on cell disruption.

15. (a) Describe the industrial production of penicillin.

Or

- (b) Describe the production and recovery of 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) Explain the method of sterilization of equipment in fermentation industry.

Or

- (b) Write in detail about the screening methods of industrially important microorganisms.

17. (a) Explain microbial growth kinetics.

Or

- (b) What is a fermentor? Explain the principle and basic components present in the fermentor.

18. (a) Write any three types of fermentor.

Or

- (b) Write the advantages and disadvantages of fermentation process.

19. (a) Write in detail about the drying, crystallization and Lyophilization techniques in recovery process.

Or

- (b) Explain in detail about the different filtration methods that are used in product recovery.

20. (a) Explain any three microbial fermentation products of commercial use.

Or

- (b) Discuss about the whole cell immobilization technique and its uses.