

(7 pages)

Reg. No. :

Code No. : 5682

Sub. Code : WMBM 33

M.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Third Semester

Microbiology – Core

FERMENTATION TECHNOLOGY AND
PHARMACEUTICAL MICROBIOLOGY

(For those who joined in July 2023 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. The primary goal of upstream processing in biotechnology?
 - (a) To separate and purify the product
 - (b) To develop and optimize the fermentation process
 - (c) To formulate and optimize the media
 - (d) To design and operate the bioreactor
2. Optimization of fermentation media is performed to
 - (a) Improve product yield
 - (b) Reduce contamination
 - (c) Increase microbial resistance
 - (d) Eliminate genetic variations
3. Submerged fermentation is typically used for _____
 - (a) Antibiotic production
 - (b) Solid-state fermentation
 - (c) Lactic acid fermentation
 - (d) Traditional brewing methods
4. What is the purpose of agitation in a fermenter?
 - (a) To control the pH
 - (b) To supply oxygen
 - (c) To mix the broth
 - (d) To control the temperature
5. What is the role of computer applications in fermentation technology
 - (a) To monitor and control the fermentation process
 - (b) To optimize the fermentation conditions
 - (c) To scale up the fermentation process
 - (d) To simulate the fermentation process

6. The economic feasibility of a fermentation process depends on _____.
- (a) Raw material costs (b) Equipment costs
(c) Labor costs (d) Market demand
7. The primary goal of downstream processing
- (a) To enhance microbial growth
(b) To recover and purify the desired product
(c) To maintain sterility in fermentation
(d) To optimize fermentation conditions
8. Which method is commonly used for cell disintegration?
- (a) Physical method
(b) Chemical method
(c) Enzymatic method
(d) Mechanical method
9. Aqueous two-phase extraction is commonly used for
- (a) Separating hydrophobic compounds
(b) Extracting proteins and enzymes
(c) Removing heavy metals
(d) Precipitating salts

10. The presence of microorganisms in pharmaceuticals can lead to:
- (a) Increased product stability
(b) Enhanced drug efficacy
(c) Contamination, spoilage, and potential health risks
(d) Improved drug solubility
11. Which of the following is a potential consequence of contaminated implants?
- (a) Increased product efficacy
(b) Severe infections
(c) Enhanced patient comfort
(d) Improved product stability
12. _____ pharmaceutical products is most susceptible to microbial contamination?
- (a) Solid tablets
(b) Dry powder formulations
(c) Aqueous solutions
(d) Metal implants
13. Which type of immunodiagnostic test is commonly used for detecting antibodies?
- (a) PCR (b) ELISA
(c) Mass spectrometry (d) HPLC

14. _____ organization sets international standards for quality management.

- (a) WHO (b) FDA
(c) ISO (d) ISI

15. What is the primary function of vaccines?

- (a) To treat bacterial infections
(b) To stimulate the immune system
(c) To relieve pain
(d) To reduce fever

PART B — (5 × 4 = 20 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

16. (a) Explain the role of industrial important microorganisms.

Or

(b) Write a short note on the development of inoculams for the fermentation process.

17. (a) Briefly describe Fermentation economics.

Or

(b) Write about yield coefficients.

Page 5 Code No. : 5682

18. (a) Write in detail the steps involved in the purification of industry products.

Or

(b) Make notes on drying and crystallisation in the downstream process.

19. (a) Give a brief account on contamination of pharmaceutical products.

Or

(b) Write short notes on the ecology of microorganisms.

20. (a) Briefly explain quality assurance.

Or

(b) Make short notes on WHO and US certification.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 600 words.

21. (a) Give a detailed account on industrial important microorganisms.

Or

(b) Give an account on formulation and optimization of microorganisms.

Page 6 Code No. : 5682

22. (a) Describe in detailed account on fermenter design.

Or

(b) Write account on Gas exchange and mass transfer.

23. (a) write in detail steps involved in cell disintegration.

Or

(b) Describe in detailed account on aqueous multiphase extraction.

24. (a) Explain in detail about respiratory flora of pharmaceutical workers.

Or

(b) Write an essay on ophthalmologic preparation.

25. (a) Give a brief account of streptokinase and streptodornase.

Or

(b) List out and explain immunodiagnostic technology.