

KAMARAJ COLLEGE (Autonomous)

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(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(4 Pages)

Reg. No:.....

Question Code: 26E01608

Course Code : 24PMMB33

PG Degree - End Semester Examinations, April 2026

Third Semester

M.Sc., MICROBIOLOGY

Fermentation Technology and Pharmaceutical Microbiology

(For those who joined in July 2024 onwards)

Time : 3Hours

Maximum : 75 Marks

PART - A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

- CO:1 1. Which of the following is an example of a common nitrogen source
K:1 in industrial fermentation?
- (a) Cellulose (b) Glucose
(c) Corn steep liquor (d) Lactose
- CO:1 2. A period during which the growth rate of cells gradually increases
K:1 is known as ____
- (a) Lag phase (b) Log phase
(c) Stationary phase (d) Deceleration phase
- CO:2 3. Which material is most preferable for the construction of small-
K:1 scale fermenters?
- (a) Glass (b) Copper
(c) Plastic (d) Iron steel
- CO:2 4. Which of the following is a major advantage of using computer
K:1 applications in fermentation?
- (a) Increased human labor (b) Reduced data accuracy
(c) Slower response to process deviations (d) Real-time optimization of yield and consistent product quality
- CO:3 5. The primary objective of downstream processing is
K:2
- (a) Product recovery and purification (b) Cell multiplication
(c) Media sterilization (d) Inoculum development

- CO:3 6. Ultrafiltration is primarily used to remove
K:2 (a) Dissolved ions (b) Bacteria and viruses
(c) Dissolved gases (d) Salt
- CO:4 7. Which of the following is the most common source of airborne
K:2 microorganisms in a pharmaceutical cleanroom?
(a) Raw materials (b) Water systems
(c) Human shedding (d) Filtration systems
- CO:4 8. Which type of contamination is responsible for causing infections
K:2 and, if non-sterile, is highly undesirable?
(a) Physical contamination (b) Environmental contamination
(c) Chemical (d) Biological contamination
contamination
- CO:5 9. Penicillin acts as an antibiotic by inhibiting
K:2 (a) Cell wall synthesis (b) Protein synthesis
(c) Nucleic acid synthesis (d) Cytoplasmic membrane
permeability
- CO:5 10. According to WHO guidelines, Quality Control (QC) is a part of
K:2 (a) ICH guidelines (b) Regulatory Audit
(c) Good Manufacturing (d) Total Quality Management
Practice

PART - B (5 X 5 = 25 Marks)

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

Answer should not exceed 250 words.

- CO:1 11. (a) Organize the development of inoculums for fermentation
K:3 process.

(OR)

- (b) Build the methods involved in improvement of industrially important strains.

- CO:2 12. (a) Analyze the basic design of a fermenter with neat sketch.

K:4

(OR)

- (b) Categorize the various types of fermenter.

- CO:3 13. (a) Construct the centrifugation process for biomass product
K:3 recovery.

(OR)

(b) Organize the process involved in purification of intracellular products.

CO:4 14. (a) Describe the importance of aseptic techniques in a
K:4 pharmaceutical industries.

(OR)

(b) Examine the ecology of microorganisms in water.

CO:5 15. (a) Identify the significance of WHO and BIS.

K:3

(OR)

(b) Develop the production of pharmaceutical products and quality assurance for vaccine.

PART - C (5 X 8 = 40 Marks)

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

Answer should not exceed 600 words.

CO:1 16. (a) Examine the ingredients of media for industrial fermentation
K:4 with suitable examples.

(OR)

(b) Analyse the various stages of upstream process.

CO:2 17. (a) Explain the computer applications in fermentation
K:5 technology.

(OR)

(b) Assess the gas exchange and mass transfer in fermentation process.

CO:3 18. (a) Categorize and explain the various types of extraction.

K:4

(OR)

(b) Analyse the mechanism involved in downstream stream process with any one example.

CO:4 19. (a) Build the design and layout of sterile manufacturing unit.

K:6

(OR)

(b) Elaborate the contamination and spoilage of pharmaceutical products.

CO:5 20. (a) Evaluate the quality assurance and quality management in pharmaceuticals of final product.

- (b) Discuss the mode of action of antibiotics – Penicillin and Griseofulvin.