

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023  
(Second Semester)

Branch – APPLIED MICROBIOLOGY

**FERMENTATION AND BIOPROCESS TECHNOLOGY**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Which of the following is an example for antifoaming agent?  
(i) oleates (ii) acrylate  
(iii) stearates (iv) polyamide
- 2 Reynold's number is the basic principle of  
(i) Fermentation (ii) Centrifugation  
(iii) Fluid mechanics (iv) Sedimentation
- 3 Which of the following chemical is used in Two phase extraction system?  
(i) Acetone (ii) Poly Ethylene Glycol  
(iii) Ethyl alcohol (iv) Methyl alcohol
- 4 What is the biochemical nature of insulin?  
(i) Glycolipid (ii) Glycoprotein  
(iii) Steroid (iv) Peptide
- 5 ----- is the substance used in enzyme immobilization.  
(i) Calcium alginate (ii) Calcium chloride  
(iii) Sodium carbonate (iv) Sodium chloride

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a List out some industrially important microorganisms with their uses.  
OR  
b What are the various types of Media used in fermentation process? Explain in detail.
- 7 a Illustrate in detail about the temperature and pressure control devices of the fermentor.  
OR  
b How will you construct Tower fermentor? Write it's functions.
- 8 a Evaluate the Two phase extraction system recovery of fermentation products.  
OR  
b Briefly explain the process of submerged fermentation and add a note on it's uses.
- 9 a Briefly explain the microorganisms involved in the production of wine.  
OR  
b Discuss the reactions involved in lactic acid fermentation and add a note on it's uses.
- 10 a How will you produce Amylase by fermentation process? Explain in detail.  
OR  
b Evaluate the role of Biosensors in monitoring the various parameters of fermentation process.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions  
ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a Evaluate in detail about the isolation, preservation and improvement of microbial strains.
- OR
- b Enumerate the various raw materials and sterilization methods used in industrial fermentation process.
- 12 a Analyze the basic components and functions of Air lift fermentor.
- OR
- b Interpret the types of Acetate and lactate fermentation with suitable reactions.
- 13 a Interpret the physical and chemical methods for the disintegration of Microbes.
- OR
- b How will you purify the fermented products by chromatography? Explain the procedure.
- 14 a How will you produce Insulin by recombinant DNA technology? Write the procedure in detail.
- OR
- b Evaluate the process of production of cheese with it's types and uses.
- 15 a What is meant by enzyme immobilization? Explain the various methods of immobilization with suitable diagram.
- OR
- b Analyze in detail about the role of Artificial intelligence and machine learning in fermentation technology.

Z-Z-Z

END