

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2022  
(Second Semester)

Branch – BIOTECHNOLOGY

**DISCIPLINE SPECIFIC ELECTIVE – I : 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 helpful in the manufacturing of new biological products?
  - a. Carbohydrates
  - b. Proteins
  - c. Lipids
  - d. Nucleic acids
2. \_\_\_\_\_ Process is also called product recovery stage.
  - a. Upstream processing
  - b. Mid-stream processing
  - c. Downstream processing
  - d. Biological processing
3. Identify the sugar content required for the fermentation medium to produce citric acid.
  - a. 10-15%
  - b. 15-20%
  - c. 20-25 %
  - d. 25-30 %
4. Penicillin is recovered after fermentation as \_\_\_\_\_.
  - a. Potassium penicillin
  - b. Calcium penicillin
  - c. Sodium penicillin
  - d. Penicillin only
5. In \_\_\_\_\_ method of enzyme production, agro-industrial wastes are utilized as substrate that provides both physical support and source of nutrients.
  - a. Submerged fermentation
  - b. Solid state fermentation
  - c. Liquid fermentation
  - d. Semi-solid state fermentation

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Illustrate the types of fermenter.  
OR  
b Explain the sterilization techniques.
- 7 a Analyze the fed batch, batch and continuous fermentation process.  
OR  
b Explain the precipitation and centrifugation operation classified under downstream processing.
- 8 a Discuss the production and purification of amino acid.  
OR  
b Explain the microbial production of Vitamin B12.
- 9 a State the microbial production of lactases and their application.  
OR  
b Discuss the production of Yoghurt.
- 10 a Discuss the medical applications of enzymes.  
OR  
b Appraise the schemes available under MSME to encourage entrepreneurs.

Cont...

**SECTION -C (30 Marks)**

Answer ALL questions  
ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Analyze the strain development methods and the preservation of micro-organisms.  
OR  
b Recommend the natural substrates and agro-wastes for industrial fermentation.
- 12 a Interpret the Microbial Growth Kinetics.  
OR  
b Elucidate the steps involved in downstream processing.
- 13 a Survey the economic importance of organic acids and vitamins.  
OR  
b Evaluate the production and purification of PHB and bioplastics.
- 14 a Formulate the Microbial production of Antibiotics.  
OR  
b Asses the application of pectinases and lipases.
- 15 a Elucidate the formulation of Bio-fertilizer.  
OR  
b Survey on the immobilization techniques used in industries.

Z-Z-Z

END