22BTP423

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2024
(Fourth Semester)

Branch – **BIOTECHNOLOGY**

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 In World War II, fermentation was used for the production of _____.
(i) Alcohol (ii) Antibiotics (iii) Wine (iv) Beer

2 Hybridoma technology is used in the production of _____.
(i) Polyclonal Antibodies (ii) Antigens
(iii) Monoclonal Antibodies (iv) Insulin

3. Which of the following is downstream processing?
(i) Cell breakdown (ii) Media formulation
(iii) Product recovery (iv) Product formation

4. Which of the following time is not included in continuous sterilization?
(i) Heating time (ii) Cooling time
(iii) Holding time (iv) Sterilization time

5. Who employed the term 'Chromatography'?
(i) Tsvet (ii) Archer (iii) Richard (iv) Erika

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a) Briefly explain Design and operation of Tower Fermenter.
OR
b) Give the Scope and Concept of Bioprocess Technology.

7 a) What are the different types of sterilization techniques?
OR
b) Explain Bacterial growth curve.

8 a) Compare Newtonian and non-Newtonian fluids.
OR
b) How will you measure the volumetric mass transfer coefficient in fermentation process?

9 a) What are the methods adopted for downstream processing?
OR
b) Describe the principle of Crystallization and Drying.

10 a) Write briefly on Enzymatic Bioconversions.
OR
b) Discuss briefly on production of Metabolites.

Cont...

SECTION -C (30 Marks)

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

11 a) Explain the basic design, parts and functions of a Fermentor.

OR

b) Give the major unit operations strategies for control of Bioreactors.

12 a) Write an essay on preservation techniques of microorganisms in Bioprocess industries.

OR

b) Explain the steps involved in upstream processing.

13 a) Analyze the oxygen transfer in Bioreactors.

OR

b) Discuss the nutrient availability and continuous supply of medium in scale-up of fermentation.

14 a) Explain in detail about the filtration and precipitation techniques for production process.

OR

b) Explain the working principle and applications of Affinity chromatography.

15 a) Describe the various mechanism of Enzyme function and reaction in process techniques.

OR

b) Discuss in detail about the production of HBsAg using yeast cultures.

Z-Z-Z END