

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 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 Metabolites produced during stationary phase of growth is called
(i) Pyrogen (ii) Worts
(iii) Primary metabolites (iv) Secondary metabolites
- 2 Which of the fermentor lacks an agitating device?
(i) CSTF (ii) Fluidized bed fermentor
(iii) Air lift fermentor (iv) Batch fermentor
- 3 Solvent extraction is employed for which kind of product extraction?
(i) Antibiotics (ii) Enzymes
(iii) Ethanol (iv) Amino acids
- 4 The bacterium employed for ethanol production is
(i) *Bacillus subtilis* (ii) *Zymomonas mobilis*
(iii) *Lactobacillus sp.* (iv) *E.coli*
- 5 Which medium is used for the screening of amylase producing organisms?
(i) Skim milk agar (ii) Starch agar
(iii) Casein agar (iv) Muller Hinton agar

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

- 6 a Explain microbial metabolites.
OR
b Describe the characteristics of an ideal production medium.
- 7 a Differentiate Newtonian and non Newtonian fluids.
OR
b Write the principal and applications of photobioreactor.
- 8 a Discuss in detail about merits and demerits of submerged fermentation.
OR
b Give short note of drying in downstream processing.
- 9 a How will you produce wine industrially? Explain.
OR
b Draw the flow chart explaining the process cheese production.
- 10 a Describe the industrial production and purification of vitamin B₁₂.
OR
b Illustrate the concept of ISO certification.

Cont...

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks

(5 x 6 = 30)

11 a Describe the essential criteria for industrial organisms and inoculums for fermentation.

OR

b Demonstrate the secondary screening of industrial important microorganisms.

12 a How is aeration achieved in basic fermentor? What are the different modes of injecting air?

OR

b Discuss the working principle of Air lift fermenters.

13 a Explain the concentration of microbial products by precipitation technique.

OR

b State about centrifugation in product recovery. Add a note on its type.

14 a Give a brief on microbial alcoholic fermentation.

OR

b Discuss the process of industrial production of recombinant insulin.

15 a Write an essay on enzyme immobilization.

OR

b Discuss the advantages of computer based control process in fermentation.

Z-Z-Z

END