

3 Hours

Total Marks: 100

1. Attempt all questions.
2. All questions carry equal marks.
3. Draw neat labeled diagrams wherever necessary.
4. Use of log tables and non-programmable calculator is allowed.

- Q.1 a. Give one example of: (Any six)** 06
1. Starter culture used in butter milk production.
  2. Sweeteners used in Yogurt preparation.
  3. Colour used in butter.
  4. Normal microflora present in milk.
  5. Rancidity
  6. Semihard cheese.
  7. Milk enzyme.
  8. Organism used in ripening of Swiss cheese.
  9. Flavour defect in butter.
- Q.1 b. Answer the following questions: (Any Two)** 14
1. Discuss butter production.
  2. How would you preserve milk?
  3. Give a brief account on different types of Yogurt.
- Q.2 a. Give any one example of the following ( any six)** 06
1. Ion exchanger
  2. Surfactants in downstream processing
  3. Continuous filtration method
  4. Centrifuges used in DSP.
  5. Filter aid
  6. Mechanical method of cell disruption.
  7. Salts used in precipitation of proteins.
  8. Solvent recovery method for product purification.
  9. Solvents used in liquid-liquid extraction method.
- Q.2 b. Discuss the following (Any two)** 14
1. Role of Adsorption and Gel permeation chromatography in recovery and purification of product.
  2. Chemical methods of cell disruption.
  3. Batch filtration methods in downstream processing.

Q.3 a. Do as directed (Any six)

06

1. State True or False:  
The culture used to inoculate fermentation must retain its product – forming capabilities.
2. State True or False:  
The new series of semisynthetic Penicillin is due to acylated 6-aminopenicillanic acid.
3. State any one factor affecting the length of lag phase for development of inocula for bacterial processes.
4. Name the strain used in early developmental stages of Penicillin described by Fleming.
5. Name the culture used in Production of Streptomycin.
6. Give one Saccharide raw material used in production of ethyl alcohol.
7. Give an example of a mushroom which can be used for human consumption.
8. Choose the correct alternative and fill in the blank:  
\_\_\_\_\_ is involved in hydroxylation of cortexolone to yield hydrocortisone ( *Curvularia lunata*, *Saccharomyces cerevisiae*, *Candida albicans* )
9. Choose the correct alternative and fill in the blank:  
There are \_\_\_\_\_ enzymes involved in conversion of D- glucose to streptomycin. (28, 35, 10)

Q.3 b. Discuss the following questions: (Any Two)

14

1. With reference to production of proteases –
  - a. Strains employed in proteases and Two types of proteases
  - b. Production method for two types of proteases.
2. Criteria for the transfer of inoculum.
3. Scale Down methods.

Q.4 a. Do as instructed: (Any Six)

06

1. Fill in the blank:  
Test for \_\_\_\_\_ involves taking samples at random and testing for presence of microorganisms
2. Define QC
3. What is In-process control?
4. Fill in the blank:  
\_\_\_\_\_ should be used at junctions between walls and floors or ceilings
5. Water used for parenteral products must be \_\_\_\_\_.
6. Fill in the blank:  
\_\_\_\_\_ sterilization involves the product being sealed in its container and then sterilized.

7. Fill in the blank:  
Recommended limit of viable airborne microorganisms in environmental grade A area is \_\_\_\_\_ cfu/m<sup>3</sup>
8. Fill in the blank:  
Clothing worn in the clean/aseptic area must be of non-shedding fibres like \_\_\_\_\_
9. What is the orange guide? \_\_\_\_\_

- Q.4 b. Give an account of the following: (Any Two) 14**
1. General requirements of premises, Internal surfaces, fittings, floors and Air supply with respect to a sterile products manufacturing unit
  2. Hazard analysis of critical control points
  3. Requirements for operating in aseptic areas with respect to Entry to aseptic areas, Equipment and operation and Isolator and blow/fill/seal technology

- Q.5 Write Short notes on the following (Any four) 20**
- a. Cheese defects
  - b. Factors determining the bacteriological quality of milk
  - c. Precipitation methods in product Recovery.
  - d. Significance of drying in downstream processing.
  - e. Reactions and By-products of ethyl alcohol production.
  - f. Basic operating standards for the manufacture of sterile products