

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. Explain the following terms: (Any six) 06**
1. Cheddaring
 2. Pasteurisation
 3. Churning
 4. Curing
 5. Rancidity
 6. Fishy taint
 7. Starter culture
 8. Knitting of curd
 9. Low fat yogurt
- Q.1 b. Answer the following questions: (Any Two) 14**
1. Schematically explain Swiss cheese production.
 2. Discuss different methods of milk preservation.
 3. There are different biochemical changes takes place in milk if it is left at room temperature for overnight. Justify!
- Q.2 a. Give any one example of the following (Any Six) 06**
1. Surfactants in foam separation
 2. Driers used in product recovery
 3. Solvents used in precipitation of proteins
 4. Anion exchange resin
 5. Physical methods of cell disruption
 6. Filter aids
 7. Polyelectrolyte's used in aqueous extraction
 8. Continuous filters
 9. Materials used in packing columns in adsorption chromatography.
- Q.2 b. Discuss the following (Any Two) 14**
1. The use of ion exchange and gel permeation chromatography in product recovery.
 2. Batch filtration methods used in downstream processing.
 3. Principle and working of any two types of centrifugation methods used in recovery of product.

Q.3 a. Do as directed (Any six)**06**

1. State True or False:
The culture used to inoculate fermentation must be in a suitable morphological form.
2. State True or False: Methicillin is one of the semisynthetic penicillins.
3. Name the technique described by Parker for production of spores of *Penicillium chrysogenum*.
4. Name the strain used in production of Glutamic acid.
5. Give one example of edible mushroom.
6. Give any one fungal strain used in production of Acid proteases.
7. Fill in the blank:
_____ means increasing the scale of fermentation from the laboratory scale to the pilot scale or from pilot scale to the production scale.
8. Choose the correct alternative and fill in the blank:
Excess of _____ in the growth medium inhibited lysine biosynthesis (Aspartic acid, Glutamic acid, Leucine)
9. Give any one type of steroidal biotransformation.

Q.3 b. Discuss following questions: (Any Two)**14**

1. With Reference to Streptomycin production –
 - a. Culture and composition of the fermentation media.
 - b. Phases of fermentation.
 - c. Schematic postulated pathway from D- glucose to streptomycin.
2. With Reference to Ethanol production –
 - a. Microbial strains and raw materials used.
 - b. Fermentation conditions to be controlled.
3. With reference to Inocula development –
 - a. Baker's yeast.
 - b. Bacterial processes.

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

06

1. Fill in the blank:
_____ is the complete cycle of production of a medical product
2. Define GMP
3. What is Quality assurance?
4. Fill in the blank:
_____ should be used at junctions between walls and floors or ceilings.
5. Fill in the blank:
Packaging of aseptically processed products into a sterile container must be carried out in grade _____ environment
6. Fill in the blank:
Environmental grade _____ area provides a background environment to grade A preparation areas.
7. Fill in the blank:
Air quality in aseptic areas is monitored by _____.
8. What is the orange guide?
9. Name the preferred material for covering the walls in an aseptic area.

Q.4 b. Give an account of the following: (Any Two)

14

1. General requirements of clothing, changing facilities, cleaning and disinfection 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 operation and Isolator technology

Q.5 Write Short notes on the following (Any four)

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- a. Production of plain yogurt
- b. Dye reduction test with respect to quality control of milk.
- c. Drying and crystallization in product recovery.
- d. Chemical methods of cell disruption.
- e. Scale down methods.
- f. QC and documentation
