

(2 ½ Hours )

[Total Marks : 60]

**N.B. : (1) All questions are compulsory.**

**(2) All questions carry equal marks.**

**(3) Draw neat labeled diagrams wherever necessary.**

1. Answer any **two** of the following: **12**
  - a) Elaborate the factors that affect the KLa values in a fermentation vessel.
  - b) Describe the two types of heat exchangers used in continuous sterilizers for the treatment of fermentation media.
  - c) Explain the principal mechanisms of fermenter agitation.
  - d) Discuss the advantages of solid- state fermentation over submerged liquid fermentation.
2. Answer any **two** of the following: **12**
  - a) Describe the factors that determine the appropriate recovery and purification of product
  - b) Elaborate on the mechanical methods used for cell disruption.
  - c) Explain the role of reverse osmosis and ultrafiltration for recovery of product
  - d) Discuss the methods of effluent disposal methods.
3. Answer any **two** of the following: **12**
  - a) Schematically explain unit operations in preparation of protein hydrolysates.
  - b) Describe the production of sweetener's from starch and give its uses.
  - c) Discuss the role of Glucose Oxidase in deoxygenation and desugaring of food products
  - d) Elaborate on the different enzymes used in cheese making.
4. Answer any **two** of the following: **12**
  - a) Comment on: Algae as promising source of food colour.
  - b) Explain the main difference between LAB and conventional antibiotics.
  - c) Describe the role of microbes in the preservation of vegetables
  - d) Discuss the commercial production of vinegar by quick process.
5. Write short notes on any **three** of the following: **12**
  - a) Media optimisation
  - b) Approaches for separation of soluble products
  - c) Lipase catalyzed interesterification of edible oils and fats
  - d) Properties and application of Xanthan gum
  - e) Malt and malting process
  - f) Biologically aerated filter system ( BAFS)