



FS22203 Fermentation Technology (Compulsory)

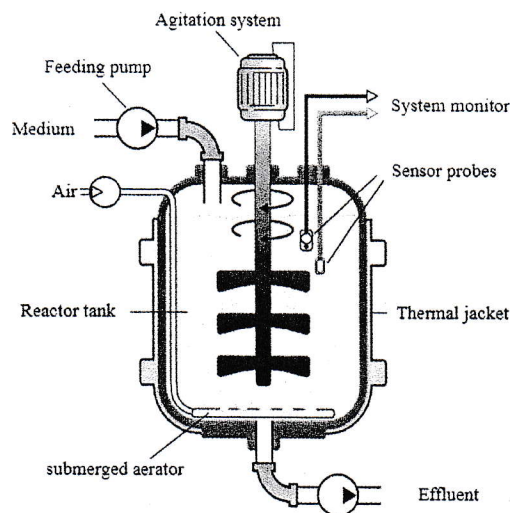
Paper info.	Total number of Questions: 13 Number of Pages: 2	INSTRUCTIONS Structured-Essay - Answer all questions. Essay – Answer for only TWO (02) questions. Mobile phones are NOT permitted. Date: July 9, 2026
Duration	2 (two) Hours	
Index No.		

PART A - Structured Essay

Answer all questions.

(10 marks for each)

1. List **five (05)** industrial importance of fermentation technology. (10 marks)
2. List **five (05)** criteria to be considered when selecting a microorganism in fermentation of a food. (10 marks)
3. **Differentiate primary and secondary metabolites** produced during fermentation and provide **one (01)** example for each. (10 marks)
4. Differentiate between **aerobic and anaerobic fermentation** with suitable examples and industrial applications. (10 marks)
5. Distinguish between
 - a) Fermenter and Bioreactor (05 marks)
 - b) Solid state Fermentation and Submerged Fermentation (05 marks)
6. a) Name the following picture. (02 marks)



- b) Explain the main functions of following parts in the picture. (02 marks each)
- i. Sensor probes
 - ii. Thermal jacket
 - iii. Submerged aerator
 - iv. Agitation System

7. Compare between Batch fermentation and fed-batch fermentation. (10 marks)
8. Briefly discuss the role of yeast in the production of bread and fermented beverages. (10 marks)
9. Briefly discuss the factors affecting the growth and fermentation activity of yeast. (10 marks)
10. Differentiate between *Saccharomyces* and non-*Saccharomyces* yeasts with respect to their characteristics and applications in food fermentation. (10 marks)

PART B – Essay

Answer for only TWO (02) questions.

1. a) **Compare and contrast homofermentative and heterofermentative lactic acid bacteria** with respect to their metabolic pathways, end products, microorganisms involved, and industrial applications. (25 marks)
b) Briefly discuss the importance of **acetic acid bacteria** in food industry. (25 marks)
2. Using your knowledge on downstream processing, explain the steps how you would extract alpha-amylase enzyme from the genetically modified bacterial culture. (50 marks)
3. Discuss the role of yeast in food fermentation and explain its applications in the food industry. (50 marks)