

Exam. Code : 107705

Subject Code : 2454

BFST (Hons.) 5th Semester

PRINCIPLES OF FERMENTATION TECHNOLOGY

Paper—FST-501

Time Allowed—3 Hours]

[Maximum Marks—50

Note :— Attempt any **FIVE** questions. All questions carry equal marks.

1. (a) Discuss contributions of Pasteur in Fermentation. 3
- (b) Give the most recent definition of fermentation. Differentiate fermentation from respiration and putrefaction. 2
- (c) How is fermentation classified on the basis of stages of substrate utilization and product formation ? Explain. 5
2. (a) Discuss the potential of fermentation in food and pharmaceutical industry giving suitable examples. 4
- (b) Glycolysis is the primary route of glucose fermentation. Comment. Discuss Pasteur effect and its significance in fermentation. 3
- (c) What is the difference in rate of microbial growth during different phases of growth ? Discuss. 3

3. (a) Discuss the fermentative production of organic acids. Explain acetic acid fermentation by Trickle bed reactor. How much acetic acid (% w/v) will be produced from ethanol (8% w/v) ? 8
- (b) Discuss economic importance of lactic acid fermentation. 2
4. (a) Differentiate between batch and continuous fermentation. How is fed batch fermentation advantageous over batch fermentation ? Discuss. 4
- (b) How do aerobic fermentation differ from anaerobic fermentation ? Discuss acetone-butanol fermentation. 6
5. (a) Give advantages of Solid State Fermentation (SSF) over submerged fermentation. Describe mushroom production as an SSF process. 6
- (b) Describe the importance of Carbon and Nitrogen sources in fermentation. Why complex substrates are preferred over pure chemicals in industrial fermentation ? Discuss. 4
6. (a) Draw well labelled diagram of a cylindrical steel batch fermenter. 4
- (b) "A fermenter is efficient than a typical Erlenmeyer fermentation". Comment. 3
- (c) Why both inlet and exhaust ports are sterilized ? Discuss types of filters used. 3

7. (a) The sterilization of nutrient media follows a first order kinetics. Define design character and methodology. 4
- (b) Define biosensor. Discuss their composition and utility in fermentation monitoring. 6
8. (a) Define physical, chemical and biological parameters used in fermentation monitoring. 3
- (b) Discuss use of computers in monitoring fermentation processes. 5
- (c) Continuous systems are more susceptible to contamination. 2