

2 Hours

Total Marks: 50

- 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 calculators** is **allowed**.

Q.1 Attempt any 2 out of 3

10

- a. What is the volumetric mass transfer coefficient? Explain any two methods used to measure it.
- b. Diagrammatically explain foam sensing and control unit.
- c. Write a short note on nitrogen sources used in fermentation media formulation.

Q.2 Attempt any 2 out of 3

10

- a. Describe the principle and working of Airlift bioreactor.
- b. Write a short note on any 5 strategies used to reduce acetate formation during fermentation.
- c. How would you separate out microbial cells from fermentation media on a large scale?

Q.3 Attempt any 2 out of 3

10

- a. In detail discuss various enzymes used in protein modification.
- b. Give an account on enzymes used in production of dairy products. .
- c. Describe fish processing using enzymes.

Q.4 Attempt any 2 out of 3

10

- a. Describe production of any one fermented products from vegetable
- b. Describe production of any one alcoholic beverages
- c. Explain any two products produced by bioconversion of food waste.

Q.5 Attempt any 1 out of 3

10

- a. Write a short note on the physical and chemical mutagens used in strain improvement.
- b. What is plasmid stability? Add note on techniques used to increase plasmid stability.
- c. Discuss use of immobilized cells in Beer manufacturing.
