

B.Sc. Semester-5 Examination**CC 302****Bio-Technology****March-2024****Time : 2-30 Hours]****[Max. Marks : 70**

Q.1. Explain Air-lift and Perfusion Bioreactor in detail. (14)

OR

Q.1.A. Distinguish between Batch, Fed-Batch and Continuous processes at Industrial level. (7)

Q.1.B. Briefly discuss basic design of STR with diagrammatic representation. (7)

Q.2. Discuss various physical control parameters and their importance. (14)

OR

Q.2.A. Write a note on PID controller with suitable diagram. (7)

Q.2.B. Explain Flow microfluorometry in detail. (7)

Q.3. What is mass transfer of heat? Discuss various heat transfer equipments used in bioprocess technology. (14)

OR

Q.3.A. Define Rheology? Discuss rheological properties of fluid with its significance. (7)

Q.3.B. What is $K_L a$? Explain methods for its determination. (7)

Q.4. Discuss the step wise procedure for the recovery of an intracellular bio-product. Explain the significance of designing downstream process. (14)

OR

Q.4.A. Explain physical and enzymatic methods of cell disruption. (7)

Q.4.B. Discuss importance of chromatographic techniques in the product recovery with suitable example. (7)

Q.5. Short Questions (Attempt any 7) (14)

1. Enlist any two significance of Scale-up process.
2. What is Mass transfer coefficient?
3. Write characteristics of Pseudoplastics?
4. What are the full form of AISI and GILSP ?
5. Define Convection and its significance at large scale.
6. What is the purpose of using check valves in bioreactor?
7. Define containment? Write its importance.
8. What is the role of centrifugation in downstream process?
9. Define Multiple internal reflectance
10. What is antifoam? Give its example.
11. Give any two application of biosensors is process control.
12. Define liquid membranes.