

2122

M. Sc. (Biotechnology) Third Semester
MBIO-304: Bioprocess Engineering and Technology

Max. Marks: 80

Time allowed: 3 Hours

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.

x-x-x

1. Explain the following:

- Fed Batch culture
- Del factor
- Sterilization cycle
- Significance of Photo bioreactor
- cross flow filtration
- Function of baffles
- Derivative control system
- Two microorganism used for alcohol production

(2 x 8)

UNIT I

2

- Enlist various methods of preservation of microorganisms. Discuss one method in detail for long term preservation.
- How biomass and substrate concentration varies in continuous culture system.

(8,8)

3. Write short note on following:

- Air sterilization
- External feedback culture system
- Significance of preservation of microbes.

(4,8,4)

UNIT II

4. Write short note on following

- Working and application of airlift fermenter
- pH probe for fermenter

(8,8)

5.

- Draw well labeled diagram of fermenter and explain functions of its major components.
- What are sensors. Explain various types of sensors used in fermentation along with example

(8,8)

UNIT III

6.

- What is downstream processing. Draw flow chart of downstream processing and Explain the significance of various steps involved.
- Describe any two methods of cell disruption.

(10,6)

7.

- Explain and give significance of BOD and COD
- How liquid liquid extraction help in recovery of product during downstream processing

(8,8)

UNIT IV

8. Write short note on following:

- Whole cell immobilization
- Microbial enhanced oil recovery.

(8,8)

9. Discuss industrial production of lysine using *Corynebacterium* sp.

- Discuss mass cultivation algal single cell protein and give their advantages

(8,8)