Exam.Code:0437
Sub. Code: 3482

2022

M. Sc. (Biotechnology) Third Semester

MBIO-304: Bioprocess Engineering and Technology

Time allowed: 3 Hours Max. Marks: 80

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:
   a) Sterilization cycle
   b) Batch culture.
   c) Function of sparger
   d) COD
   e) Gel filtration chromatography
   f) Fed Batch Culture
   g) Filtration efficiency
   h) Bioleaching (2 x 8= 16)

UNIT I

2
   a) Explain significance of preservation and maintenance of industrially important microorganisms. Discuss two methods for preservation.
   b) Why nutrition medium sterilization is required? (10,6)

3.
   a) Derive equation showing relationship between time and temperature for heat sterilization and discuss.
   b) How biomass and substrate concentration varies in internal feedback? Explain. (8,8)

UNIT II

4.
   a) What is a photobioreactor? Explain its working and possible applications.
   b) What is the role of computers in bioprocess control? (10,6)

5.
   a) Draw well labeled diagram of a fermenter and explain functions of different components of fermenter.
   b) What are sensors? Explain type of sensors with examples. (10,6)

UNIT III

6.
   a) Draw flow chart of downstream processing and give significance of various steps involved.
   b) Explain two methods of cell disruption. (8,8)

P.T.O.

7.

Write short note on
a) BOD
b) anaerobic treatment of effluent
c) two phase aqueous extraction (6,6,4)

UNIT IV

8. Write short note on following:
a) Amino acid production
b) Methods of cell immobilization (8,8)

9.

a) Enlist and discuss Important microbes in enhanced oil recovery. (6,6,4)
b) How penicillin is produced commercially?
c) Give advantages of single cell proteins.

x-x-x