

28/6/22 (M)  
4th Jan

Exam.Code:0908  
Sub. Code: 6704

2061

B.E. (Biotechnology) Fourth Semester  
BIO-414: Industrial Bio-Technology

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. a) What is corn steep liquor and its source for fermentation. (2)
- b) Write the applications of lactic acid. (2)
- c) What is the role of baffles in a fermenter? (1)
- d) Write the names of cryoprotectants used for preservation of microbes. (1)
- e) Write the name of an acid produced by fermentation method and its organism. (1)
- f) Write the name of organisms used for production of amylases and proteases (1)
- g) List the products obtained from *actinomycetes*. (2)

#### SECTION A

2. a) Discuss in detail the various types of medias used for microbial fermentation.
- b) Discuss the role of *E. coli* in industrial biotechnology (7,3)
3. a) Describe in detail the process of random mutagenesis.
- b) What are auxotrophs? (8,2)
4. a) Discuss the design and components of a fermenter. Draw a diagram
- b) Describe one method of microbial culture preservation. (8,2)

#### SECTION B

5. a) Describe in detail the microbial fermentation for production of streptomycin.
- b) Write applications of citric acid (7,3)
6. a) Discuss the microbial production process of amylase enzyme.
- b) Write the types and applications of proteases. (7,3)
7. Describe the various methods of immobilization of enzymes. What are the Advantages and disadvantages of immobilization. (7,3)

x-x-x