

**Model Question Paper**

**SIXTH SEMSTER B.TECH DEGREE EXAMINATION**

**13.606.1BIOPROCESS TECHNOLOGY AND FERMENTATION ENGINEERING (H)**

**(ELECTIVE II)**

**CHEMICAL ENGINEERING BRANCH (2013 Scheme)**

**Part A**

*(Answer **all** questions. **All** questions carry equal marks)*

1. Distinguish between primary and secondary metabolites. Give one example for each.
2. List the industrially useful microorganisms.
3. Write the commercial uses of amino acids
4. Enumerate the industrial problems associated with the production of organic acids
5. Write a note on the commercial production of vitamins.
6. Write a short note on microbial production of amylases.
7. Compare biopesticides with conventional pesticides. Give an example for each.
8. Discuss in brief about microbes used in bioremediation.
9. Write a short note on biopreservatives.
10. Write a short note on single cell protein.

*(10x 2=20Marks)*

**Part B**

*(Answer **any one full** question from each module)*

**Module 1**

11. Explain industrial fermentation. Write in detail about the raw materials and medium requirements for fermentation process.  
*(20 Marks)*
12. a. Explain traditional and modern biotechnology giving a few examples.  
*(10 Marks)*  
b. Give examples of microbial products and write short notes on the processes relating to modern biotechnology.  
*(10 Marks)*

**Module II**

13. a. Describe the industrial process for manufacture of citric acid with a neat flowsheet.  
*(15 Marks)*  
b. Write a note on the microbial groups producing antibiotics.  
*(5 Marks)*
14. a. Explain the industrial process for the production of beta-lactams-penicillin and cephalosporin.  
*(15 Marks)*

b. Write a note on steroids and list a few applications.

*(5Marks)*

### **Module III**

15. List the commercially prepared enzymes and explain the microbial production of proteases.

*(20 Marks)*

16. Explain the manufacture, formulation and production of biofertilizers.

*(20 Marks)*

### **Module IV**

17. Explain the isolation and purification of commercially important enzymes.

*(20 Marks)*

18. a. Write a note on recombinant proteins and discuss the production of recombinant proteins having therapeutic and diagnostic applications.

*(15 Marks)*

b. Write a note on monoclonal antibodies.

*(5 Marks)*