

M.Tech. First Semester (Chemical Engg.) (CBS)  
**13002 : Advance Biochemical Engineering**  
**1 CE 2**

P. Pages : 1

Time : Three Hours



**AV - 3384**

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
  2. Answer in all **sex** questions.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Diagrams and chemicals equations should be given wherever necessary.
  5. Illustrate your answer necessary with the help of neat sketches.
  6. Discuss the reaction, mechanism wherever necessary.
  7. Use of pen Blue/Black ink/refill only for writing the answer book.

1. What is the role of Biodomical Engineering in the development of pharmaceutical Industry? Explain in detail. **13**
2. With a neat sketch explain the phases of growth in a microbial batch culture. **13**
3. What are the different types of Bioreactors used for fermentation? Explain them in brief. **13**
4. What is foaming? What are the methods to control foaming? Explain them in brief. **13**
5. What are the different methods of fermentation explain them in brief. **14**
6. Explain in detail the process of fermentation in a brewery industry. **13**
7. how does the  $k_L a$  of a fermenter describe its aeration efficiency? Discuss in detail. **13**
8. Explain in detail the process for production of penicillin G. How is the final product Obtained in the process? **13**
9. With a neat sketch explain the Rotating Biological contractors as Bio-reactors. **13**
10. Explain the trickling filters as packed column reactors in detail. **14**

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