

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

P. Pages : 1

Time : Three Hours



**AW - 3715**

Max. Marks : 80

- Notes :
1. All question carry marks as indicated.
  2. Answer **six** question in all.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Diagrams and chemical 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.

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|-----|---|----|
| 1.  | What is the role of Biochemical Engineering in human development? Explain in detail?                              | 13 |
| 2.  | Explain in detail the factors affecting microbial growth in a microbial culture.                                  | 13 |
| 3.  | With a neat sketch explain the fermenter its working and components.  | 13 |
| 4.  | What is sterilization? What are the methods of sterilization? Explain in detail.                                  | 13 |
| 5.  | What is aerobic and anaerobic fermentation? Explain in detail advantages and disadvantages of both of them.       | 14 |
| 6.  | Explain in detail the process of making choose in the dairy industry.   | 13 |
| 7.  | Explain in detail the scale up and scale down of biochemical process? What precautions you will take in scale up. | 13 |
| 8.  | Explain in detail the process for production of Acetone and Butanol with a neat flow diagram.                     | 13 |
| 9.  | With a neat sketch explain the Activated sludge process as Bioreactor.  | 13 |
| 10. | What are the different packed column bioreactors used in wastewater treatment? Explain them in detail.            | 14 |

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