

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

P. Pages : 1

Time : Three Hours



**AW - 3444**

Max. Marks : 80

- Notes :
1. All question carry marks as indicated.
  2. Solve **any six**.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Assume suitable data wherever necessary.
  5. Diagrams and chemical equations should be given wherever necessary.
  6. Retain the construction lines.
  7. Illustrate your answer necessary with the help of neat sketches.
  8. Discuss the reaction, mechanism wherever necessary.
  9. Use of pen Blue/Black ink/refill only for writing the answer book.

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| 1.  | What are the factors affecting the growth of cells in a medium? Explain in detail the different phases of growth for a substrate limited batch culture.                                | 13 |
| 2.  | Explain in detail Batch, fed Batch & chemostat for growth of cell cultures.  | 13 |
| 3.  | Which types of sterilization method is most popular in bioprocess industry? Why it is popular? Discuss its advantages and disadvantages.   | 13 |
| 4.  | Explain in detail 'Aerobic Fermentation and 'Anaerobic Fermentation'. Explain the advantages and disadvantages of both of them.  | 13 |
| 5.  | Explain in detail the different parameters affecting the process efficiency of fermentation process. What is product purification? Explain the steps involved in product purification. | 14 |
| 6.  | Explain in detail the different applications of Bioreactors in industry. Explain the advantages and disadvantages of Bio – reactors.   | 13 |
| 7.  | Explain in detail the production of Lactic Acid by Bio – process in detail. Why it is important to increase the Lactic Acid production.  | 13 |
| 8.  | What are the mechanical and Non – mechanical methods of cell disruption discuss in detail.   | 13 |
| 9.  | Explain the ' Activated sludge process' & Biogas process as Bio – Reactors.  | 13 |
| 10. | What is contamination of environment for a Bio – process? What are the effects of contamination? How will you control contamination.   | 14 |

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