

Total No. of Questions : 8]

[Total No. of Printed Pages : 1

Roll No .....

**CM-8002 (CBGS)**  
**B.E. VIII Semester Examination, June 2020**  
**Choice Based Grading System (CBGS)**  
**Bio-Process Technology**  
*Time : Three Hours*

**Maximum Marks : 70**

- Note:** i) Attempt any five questions.  
ii) All questions carry equal marks.

1. a) Write the role of sterilization in biochemical engineering. Clarify the various methods of sterilization.  
b) Formulate an expression for determination of  $k_{ga}$  and  $k_{la}$ . Also, evaluate role of oxygen transfer rate in biochemical process.
2. Discuss the industrial manufacturing process for any antibiotic OR alcohol.
3. a) Demonstrate and differentiate aerobic and an aerobic fermentation. Also, discuss the basic of classification and characterization of different bio-reactory.  
b) Write the properties of immobilized enzyme. Briefly explain the methods of enzyme immobilization.
4. a) State the importance of growth cycle.  
b) Explain with a diagram various phases of microbial growth. Which phase is the longest?  
c) Illustrate a mathematical model of batch growth. Also, discuss importance of thermal death kinetics of cell in brief.
5. a) Describe the classification criteria of micro-organisms.  
b) Discuss about the prokaryotic cell in details. Also distinguish it from eukaryotic cell.
6. a) What is cell metabolism?  
b) Distinguish between anabolism and catabolism.  
c) What is enzyme? How is regulation of enzyme action is accomplished?
7. a) Reframe cell theory structure of microbial cells.  
b) Write short notes on:
  - i) Proteins and its function
  - ii) RNA and its function
  - iii) Polysaccharides and its function
8. a) Explain in detail classification of enzyme.  
b) What is enzyme kinetics? Derive the Michaelis and Menten equation for enzymatic reaction with a single substrate.

\*\*\*\*\*