

Code No: 07A60805

**R07****Set No. 2**

III B.Tech II Semester Examinations, December 2010

**BIOCHEMICAL ENGINEERING****Chemical Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Write a note on the following:

- (a) Proximity effect
- (b) Orientation effect
- (c) Allosteric control.

[6+5+5]

2. Write in detail about physico-mechanical methods of Cell disruption?

[16]

3. Explain  $\beta$  oxidation in detail

[16]

4. Write short notes on

- (a) Fluidized bed reactor
- (b) Stirred tank.

[8+8]

5. Discuss how density, viscosity, viscosity field and diffusivity effect the mass transfer effects in immobilized enzyme systems.

[16]

6. What is meant by "specific oxygen uptake rate"? Describe what do you mean by critical oxygen concentration in fermentation broth.

[16]

7. Explain Batch and Continuous cell culture method and discuss their application in obtaining process kinetics data.

[16]

8. Explain briefly:

- (a) DNA
- (b) RNA.

[8+8]

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**R07****Set No. 4**

III B.Tech II Semester Examinations, December 2010

**BIOCHEMICAL ENGINEERING****Chemical Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Define Ideal Bioreactors? What are the conditions that contribute for their ideality, Explain different classes of Ideal bioreactors ? [16]
2. Derive the Michaelis-Menten equation used to describe the relationship between the rate of an enzyme- catalysed reaction and the substrate concentration. And mention its limitations. [16]
3. What are the various steps involved in the transport of gas from gas bubble to the bulk liquid and to the active site in the cell cluster. [16]
4. Explain how the hydrophobicity, ionic groups, functional groups effect the process of immobilization by covalent binding. [16]
5. Write short notes on
  - (a) Degree of reduction
  - (b) Stoichiometric coefficients. [8+8]
6. What is the biological significance of adenosine, adenosine monophosphate (AMP), adenosine diphosphate (ADP), adenosine triphosphate (ATP) .Explain with structures. [16]
7. With the help of typical growth curve, discuss in detail growth cycle phases for batch cultivation and suggest ways of reducing lag times. [16]
8. (a) Write about the process of crystal formation and the geometrical changes associated with it
- (b) Write the significance of crystallization in product recovery. [8+8]

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**R07****Set No. 1**

III B.Tech II Semester Examinations, December 2010

**BIOCHEMICAL ENGINEERING****Chemical Engineering****Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) What are the three types of inhibitors? Explain.  
(b) Write a note on regulators and inhibitors. [8+8]
2. Name the type of bioreactor in which heterogeneous biocatalyst particles are suspended by drag forces exerted by rising liquid and explain in detail about it with a neat diagram ? [16]
3. Explain the "Critical Oxygen concentration" in fermentation broths. [16]
4. List out the important criteria to be followed in medium formulation and explain about the different constituents in media that influence the growth ? [16]
5. Explain the following:  
(a) Microbiology  
(b) Biophysics  
(c) Cell theory. [5+5+6]
6. Explain in detail about the batch sedimentation with neat diagrams? [16]
7. What is Glycolysis? Discuss the sequence of reactions in glycolysis? [16]
8. Discuss about diffusional effects in enzymes immobilized in a porous matrix. [16]

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**R07****Set No. 3**

III B.Tech II Semester Examinations, December 2010

**BIOCHEMICAL ENGINEERING**

Chemical Engineering

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. Write short notes on endogeneous and maintenance metabolism. What are the limitations? [16]
2. Write briefly on power requirement for mixing. [16]
3. Write short notes on the production of:
  - (a) Antibiotics
  - (b) Ethanol. [8+8]
4. Write down the specific or general chemical structure as appropriate for the following substances. Comment on the functional importance of various groups on the molecule.
  - (a) Globular and fibrous proteins Amino acid, Lysine, Tripeptide, Protein
  - (b) Globular and fibrous proteins. [8+8]
5. Explain the design and operation of stirred tank and Air-lift fermentor and its role in fermentation process ? [16]
6. What is meant by enzyme specificity? What are various types of enzyme specificity? [16]
7. Distinguish micro, ultra and hyper filtration according to particle size and pressure difference? [16]
8. Explain the process of derivatization, activation, binding of enzyme in covalent binding mechanism. [16]

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