

Code No: 09A52305

R09

SET-1

**B. Tech III Year I Semester Examinations, December-2011**  
**FUNDAMENTALS OF ENZYME MECHANISMS & TECHNOLOGY**  
**(BIO-TECHNOLOGY)**

**Time: 3 hours**

**Max. Marks: 75**

**Answer any five questions**  
**All questions carry equal marks**

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1. Explain the role of enzymes in food and pharmaceutical industries. [15]
2. Discuss in detail about various techniques used in purification of enzymes.[15]
- 3.a) What is transition state theory.  
b) Explain the effect of substrate concentration on the rate of an enzyme catalyzed reaction. [5+10]
4. What are non natural amino acids? Explain various techniques used for identification of amino acids with a suitable example. [15]
5. Discuss the following  
a) Briggs -Halder equation.  
b) Lineweaver-burk plot. [6+9]
6. What is isozyme? Describe in detail about various types of enzyme inhibition.[15]
- 7.a) How do you determine the number of active sites in enzyme.  
b) Explain in detail about burst kinetics. [6+9]
8. What is meant by immobilization of enzyme? Describe different methods of immobilization of enzymes. [15]

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SET-2

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- 1.a) Give one example of the reaction catalysed by each of the following classes of enzymes.  
a) Oxido – reductases b) Transferases c) Hydrolases. d) Isomerases.
- b) What is free energy of activation. [10+5]
2. Describe briefly about various techniques used in assay of enzymes. [15]
3. Explain how fluid forces, chemical agents, radiation and temperature affect the enzyme activity. [15]
- 4.a) Give an account of acid – base behaviour of amino acids.
- b) Write about the Zwitter ion form of amino acids. [10+5]
5. Discuss the following:  
a) Quasi steady state hypothesis.  
b) Multiple substrate kinetics. [6+9]
6. What is the effect of the inhibitors on the reaction kinetics of the enzyme. [15]
7. Write briefly on  
a) Burst kinetics of Chymotrysin.  
b) Significance of enzyme kinetics. [10+5]
8. What are the effects of inhibitors, temperature, PH on immobilized enzyme catalytic activity and deactivation. [15]

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SET-3

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1. Write short notes on the following
  - a) Fischer lock and key hypothesis.
  - b) Medical applications of enzymes. [9+6]
  
2. Explain the following
  - a) Enzyme purification by Ammonium sulphate precipitation.
  - b) Enzyme concentration by Ultra filtration. [9+6]
  
3. Describe the factors that influence the activity of enzymes. Why do all enzymes show a PH optimum. [15]
  
4. Explain in detail about the physical and chemical properties of amino acids. [15]
  
5. Comment on the following
  - a) Ping Pong mechanisms.
  - b) Multi substrate reactions. [5+10]
  
6. What are suicide inhibitors. How and Why a substrate and product inhibit the enzyme catalysed reaction. [15]
  
- 7.a) Write in detail about pre-steady state kinetics.
  - b) Describe in detail about the importance of active sites in enzymes. [9+6]
  
8. Discuss the effects of external mass transfer resistance of immobilized enzyme reactions. [15]

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SET-4

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**Time: 3 hours**

**Max. Marks: 75**

**Answer any five questions**  
**All questions carry equal marks**

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1. Write short notes on the following
  - a) Enzyme co-factors
  - b) Important industrial enzymes and their sources. [6+9]
2. Explain in detail about extraction of enzymes by chemical and physical methods. [15]
- 3.a) What are the factors contributing to the catalytic efficiency of enzymes.  
b) What properties of enzymes confer the ability to operate under mild condition and be destroyed by extreme conditions. [12+3]
4. Comment on the following
  - a) Stereochemistry of amino acids.
  - b) Zwitter ion.
  - c) Identification of amino acids by TLC. [15]
5. Write notes on
  - a) Double – reciprocal plot.
  - b) Single substrate reaction. [7+8]
- 6.a) Differentiate between the reversible competitive inhibition and reversible non competitive inhibition.  
b) Explain briefly about uncompetitive inhibition. [10+5]
7. What is burst kinetics. Discuss about the enzyme kinetics at limiting condition. [15]
- 8.a) What type of bioreactors do you suggest for immobilized enzyme system.  
b) Write about the diffusion effects in immobilized enzymes. [7+8]

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