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SARDAR PATEL UNIVERSITY
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M.Sc. (II Sem) Biochemistry
PS02C BIC03 – Enzymology
5 Dec 2012, Wednesday,2.30p.m. to 5.30 p.m.

Total Marks: 70

QI **(1x8)**

1. The active site of an enzyme
   a. remains rigid and does not change shape
   b. is found at the center of globular enzymes
   c. is complementary to the rest of the molecule
   d. contains amino acids without side chains

2. A competitive inhibitor of an enzyme is usually
   a. a highly reactive compound
   b. a metal ion such as Hg2+ or Pb2+
   c. structurally similar to the substrate
   d. a poison

3. An uncompetitive inhibitor of an enzyme catalyzed reaction
   a. binds to the Michaelis complex (ES).
   b. decreases Vmax.
   c. is without effect at saturating substrate concentration
   d. The first and second choices are both correct

4. Which statement about enzyme catalyzed reactions is NOT true?
   a. enzymes form complexes with their substrates.
   b. enzymes lower the activation energy for chemical reactions
   c. enzymes change the K eq for chemical reactions
   d. many enzymes change shape slightly when substrate binds

5. Unit of enzyme activity is :
   a. µg of product/min
   b. µg of product/ml of substrate/min
   c. µmoles of product/ml of substrate/min
   d. µmoles of product/ml of enzyme/min

6. Which of the following is Eadie-Hofstee equation :
   a. 1/v = km/[S]. 1/Vmax + 1/Vmax
   b. [S]/v = [S]/Vmax + km/Vmax
   c. v/[S] = Vmax/km – v/km
   d. v= Vmax[S]/ k+ [S]

7. The aim of a purification procedure is to obtain enzyme of :
   a. Maximum stability
   b. Maximum possible purity
   c. Maximum catalytic activity
   d. all the three

8. km is expressed in units of concentration :
   a. µmoles/ml
   b. mol/dm3
   c. µmoles/mg
   d. µmolesdm-3

QII Answer any seven questions from the following (2x7 =14)

a. What is active site and catalytic site of enzyme?
b. Define Michelis Menton constant
c. Major difference of competitive and non competitive inhibition
d. What is IpH of amino acid and protein
e. Differentiate the MM curve of nonregulatory enzyme from allosterically regulatory enzyme
f. Define specific activity of enzyme and its application
g. How do you differentiate the monomeric enzyme from homomultimeric enzyme
h. Define abzymes
i. Coupled enzyme assays

QIII Explain (2x6)

a. Factors effecting catalytic efficiency of enzyme.
b. Coordinated activation of pancreatic proteases

OR

b.Give a brief account on methods used in molecular weight determination of proteins in native and denatured proteins (6)

QIV

Short notes on : (Any three) (4x3)

a. enzyme assay
b. Isoenzyme
c. Factors effecting mechanism of enzyme action
d. Site directed mutagenesis
e. Microenvironment of immobilized enzyme
f. MWC model of enzyme regulation

QV

a. How do you distinguish ternary complex mechanism from ping pong mechanism of two substrate reaction (6)

b. An enzyme preparation containing 6000 units are required for a reaction system. How much weight of its partially purified enzyme with specific activity 32 will be required for the reaction system. (6)

OR

b.Why NADP+ cannot replace NAD+ for LDH reaction (6)

QVI

With suitable example for each case discuss any two (2x6)

a. Concerted acid base catalysis
b. Covalent catalysis
c. Metal ion catalysis
