

(A-86) SARDAR PATEL UNIVERSITY
 M. Sc. Integrated Biotechnology (IGBT) 5th Semester
 Theory Exam – April, 2015
 PS05CIGB01 – Enzymology
 18th April 2015 (Saturday), 2:30 pm to 5:30 pm

Maximum Marks: 70

Note: 1) All the Questions are compulsory.
 2) Figures on the right indicate marks.

Q.1 Choose the correct option.

1x8= 8

(i) In 1878, the term ferment was replaced by the name ENZYME, which was first proposed by -----

- a. Kuhne b. Buchner c. Pasteur d. Liebig

(ii) Ping-Pong mechanism of enzyme catalysis is ----- in nature.

- a. sequential b. non- sequential
 c. complementary d. b&c

(iii) Region that contains both binding and catalytic sites is termed as ----- of the enzyme

- a. active site b. prosthetic group
 c. reacting group d. None of these

(iv) Human Lactate dehydrogenase has _____ isoenzymes.

- a. 2 b. 3 c. 4 d. 5

(v) Coenzyme FAD has been derived from which Vitamin?

- a. B1 b. A
 c. B2 d. D

(vi) The biocatalyst decreases

- a. activation energy b. specificity
 c. free energy d. none of these

vii) One of the following salts is preferred for protein precipitation

- a. NaCl b. Sodium sulphate
 c. Ammonium sulphate d. Potassium sulphate

viii) Induced fit hypothesis of enzyme-substrate interaction was given by

- a. Koshland b. Fischer c. both a and b d. none of these

Q.2. Attempt any Seven of the following:

2x7= 14

- (i) Briefly explain ultrafiltration method of enzyme purification.
 (ii) What is K_m ? Explain its relationship with V_{max} .
 (iii) Define isoenzymes with suitable examples.
 (iv) Write the industrial applications of immobilized enzymes.
 (v) Give a brief note on metal activated enzymes.
 (vi) Discuss 'feedback inhibition' with examples.
 (vii) Define first order reaction with mathematical expression.

- (viii) Elaborate ping-pong bi-bi mechanism of enzyme catalysis.
- (ix) What are coenzymes? Give 2 examples.
- Q. 3.** (a) Describe any two hypotheses for enzyme-substrate interaction with diagrams. 6
(b) What is "active site"? Explain three point interaction model of enzyme-substrate reaction at active site. 6
- OR**
- (b) Describe the classification of enzymes with examples. 6
- Q. 4.** (a) Enumerate various enzyme purification methods based on polarity of the molecules and explain any 2 methods in detail. 6
(b) Discuss the method of affinity chromatography for enzyme purification. 6
- OR**
- (b) Describe the process of homogenization for mammalian, plant, fungal and bacterial cells. 6
- Q. 5.** (a) Give derivations for Michaelis-Menten equation and MM plot for enzyme catalyzed reactions. 6
(b) Derive the Lineweaver-Burk equation for uncompetitive enzyme inhibition. 6
- OR**
- (b) Differentiate biocatalysts and chemical catalysts. Enlist the factors affecting rate of enzyme catalyzed reaction. 6
- Q. 6.** (a) What is 'immobilization'? Write down advantages, drawbacks and applications of immobilized enzymes. 6
(b) Give a brief note on Lactate dehydrogenase and Creatine kinase enzymes. 6
Discuss their clinical significance with suitable examples.
- OR**
- (b) Describe entrapment method of immobilization. Write advantages of enzyme immobilization. 6
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