

AP-480

B.Sc. (Part-II) Semester-IV Examination
4S : BIOCHEMISTRY
(Enzymology)

Time : Three Hours]

[Maximum Marks : 80

Note :—(1) All questions are compulsory and carry equal marks except question No. 1 which carries 8 marks.

(2) Draw neat and labelled diagram wherever necessary.

1. (A) Fill in the blanks :

- (i) Cofactor for hexokinase is _____. $\frac{1}{2}$
- (ii) Inhibitors which are substrate analog are known as _____. $\frac{1}{2}$
- (iii) Cobamide contains a Vitamin which is _____. $\frac{1}{2}$
- (iv) A pH point at which activity of enzyme is maximum is known as _____. $\frac{1}{2}$

(B) Choose correct alternative :

(i) The following is a hydrolytic enzyme :

- (a) Pepsin
- (b) Trypsin
- (c) Amylase
- (d) All of the above ½

(ii) The following enzyme is Lyase :

- (a) Fumarase
- (b) Amylase
- (c) Maltase
- (d) Invertase ½

(iii) When the velocity of an enzymatic reaction equals $V_{\max}$ substrate concentration is _____.

- (a) Half of K_m
- (b) Equal to K_m
- (c) Twice the K_m
- (d) Far above the K_m ½

(r) Explain with example role of Pyridoxal phosphate as cofactor. 4

6. (a) Explain with example Acid-base catalysis. 4

(b) Explain with example strain and distortion thesis. 4

(c) Write about proximity and orientation effect. 4

OR

(p) Write about Lock and Key Model. 4

(q) Explain induced fit model. 4

(r) Explain Covalent catalysis. 4

7. (a) Explain application of immobilised enzymes. 4

(b) Write about production of glucose-fructose syrup from Sucrose. 4

(c) Explain application of Proteases in various industries. 4

OR

(p) Write about medical application of enzymes. 4

(q) Explain production of glucose from starch. 4

(r) Write about use of Lactose in dairy industry. 4

(iv) Non-competitive inhibitors :

(a) Increase the K_m

(b) Increase the V_{max}

(c) Decrease the K_m

(d) Decrease the V_{max} $\frac{1}{2}$

(C) Answer in **one** sentence :

Define the following :

(i) Coenzyme. 1

(ii) Covalent Catalysis. 1

(iii) Allosteric enzyme. 1

(iv) Immobilized Enzyme. 1

2. (a) Explain with example enzyme specificity. 4

(b) What are isoenzymes ? Explain isoenzymes of Lactate dehydrogenase. 4

(c) Explain general characteristic of enzymes. 4

OR

(p) Explain with example activators and inhibitors. 4

(q) Describe six main classes of enzymes. 4

- (r) Explain with example metalloenzyme and marker enzymes. 4
3. Explain in detail isolation and purification of enzymes. 12

OR

- Write about factors affecting enzyme activity and add a note on enzyme assay. 12
4. Explain with examples and kinetic expressions competitive and Non-competitive enzyme inhibition. 12

OR

- Explain kinetics of first order reaction and add a note on significance of energy of activation and free energy. 12
5. (a) Explain with example allosteric enzyme. 4
- (b) Explain role of metal ion in enzyme catalysis with example. 4
- (c) Write the structure of TPP and explain its role as cofactor. 4

OR

- (p) Explain with example role of FAD as a cofactor. 4
- (q) Write about coenzyme Q. 4