AS–1440

B.Sc. (Part–II) Semester–IV Examination

BIOCHEMISTRY

(Enzymology)

Time : Three Hours] [Maximum Marks : 80

Note :– (1) **All** questions are compulsory and carry equal marks except question no. **1** which carry **8** marks.

(2) Draw a neat diagram wherever necessary.

1. (A) Fill in the blanks : 2

(i) Chemical substances which decreases the activity of enzymes are known as _____.

(ii) Enzyme catalysis in which amino acids in active site of enzyme acts as nucleophile or electrophile is known as _____ .

(iii) $V_o = \frac{V_{max}[S]}{----}$

(iv) Enzymes made up from more than one polypeptide chain are known as _____.

(B) Choose correct alternative : 2

(i) Multiple forms of enzymes catalyzing same reaction are known as :

(A) Multienzyme complex (B) Isoenzyme

(C) Lipase (D) Apoenzyme

(ii) Which of the following enzyme breaks α1, 4 linkage in starch ?

(A) Protease (B) Amylase

(C) Holoenzyme (D) Glycogen synthase

(iii) Which of the following is a substrate analog ?

(A) Competitive inhibitor

(B) Non-competitive inhibitor

(C) Un-competitive inhibitor

(D) None of the above

(iv) In which type of catalysis the substrate molecule binds covalently to the enzyme ?

(A) Acid-base catalysis

(B) Covalent catalysis

(C) Strain and distortion catalysis

(D) None of the above.

(C) Answer in one sentence : 4

(i) Define International unit

(ii) Define reversible enzyme inhibition

(iii) Enlist names of any four proteolytic enzymes.

(iv) Define Active site of enzyme.

2. Explain in detail nomenclature and classification of enzymes. Add a note on monomeric and oligomeric enzymes. 12

OR

Explain with example isoenzyme, multienzyme complexes and enzyme specificity. 12

3. Explain with diagram factors affecting enzyme activity. 12

OR

Describe in detail isolation and purification of enzyme. 12

4. (a) Explain Line Weaver Burk plot for determination of K_m and V_{max} 4

(b) Explain kinetics of First order reaction. 4

(c) Describe significance of energy of activation. 4

OR

(p) Describe competitive enzyme inhibition. 4

(q) Explain irreversible enzyme inhibition. 4

(r) Describe uncompetitive enzyme inhibition. 4

5. (a) Explain with example role of metal ion in enzyme catalysis. 4

(b) Explain with example allosteric enzymes. 4

(c) Describe with example role of NAD+ as coenzyme. 4

OR

(p) Explain with example role of TPP as coenzyme. 4

(q) Describe with example role of Biotin as co-enzyme. 4

(r) Describe the role PLP in transamination reaction. 4

6. (a) Explain with diagram induced fit model. 4

(b) Explain with example acid-base catalysis. 4

(c) Describe proximity and orientation effect. 4

OR

(p) Explain with example Covalent catalysis. 4

(q) Describe with diagram Lock and Key hypothesis. 4

(r) Explain strain and distortion thesis. 4

7. (a) Explain any two methods of enzyme immobilization. 4

(b) Explain any four medical application of enzymes. 4

(c) Explain use of lactose in dairy industry. 4

OR

(p) Explain application of proteases. 4

(q) Explain any four application of immobilized enzymes. 4

(r) Explain production of glucose from starch. 4

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