

**NTK/KW/15-5867**

**Fourth Semester B. Sc. (Part – II)**  
**Examination**

**BIOCHEMISTRY**

**Paper – I**  
**(Enzymology)**

Time : Three Hours ] [ Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.  
(2) Draw diagrams wherever necessary.

1. Describe in detail Enzyme catalysis with respect to :—  
(a) Covalent catalysis. 5  
(b) Metal Ion catalysis. 5

**OR**

Write notes on :—

(c) Classification of Enzymes. 5  
(d) ATcase. 5  
2. Describe the role of vitamins as coenzyme precursors. 10

**OR**

Write notes on :—

(a) Mechanism of action of chymotrypsin. 5  
(b) Effect of Enzyme concentration on the rate of reaction. 5

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Contd.

3. Derive Michaelis-Menten equation for single substrate enzyme reaction. How can it be transformed into equation for straight line ? 10

**OR**

Write notes on :—

(a) Competitive inhibitors. 2  $\frac{1}{2}$   
(b) Non competitive inhibitors. 2  $\frac{1}{2}$   
(c) Sequential Bisubstrate reaction. 2  $\frac{1}{2}$   
(d) Ping pong mechanism. 2  $\frac{1}{2}$

4. Describe in detail use of ionexchange and affinity chromatography in enzyme purification. 10

**OR**

Write notes on :—

(a) Effect of PH on enzyme. 2  $\frac{1}{2}$   
(b) Action coupled enzyme assay. 2  $\frac{1}{2}$   
(c) Enzyme activity units. 2  $\frac{1}{2}$   
(d) Describe the moving boundary electrophoresis technique for assessing the purity of enzyme preparation. 2  $\frac{1}{2}$

5. Answer any **Ten** of the following :—

(I) Define Holoenzyme. 1  
(II) James Sumner crystallised ———— enzyme. 1  
(III) Name the two models of Enzyme specificity. 1

(IV) Name any one amino acid present in the active site of ribonuclease. 1

(V) Riboflavin is the precursor of which coenzymes ? 1

(VI) Define Temperature quotient. 1

(VII) What is initial velocity ? 1

(VIII) What is  $K_{cat}/K_m$  significance. 1

(IX) Define uncompetitive inhibition. 1

(X) What is meant by "Salting-in" ? 1

(XI) What is meant by enzyme assay ? 1

(XII) Name one method of enzyme purification based on molecular size. 1