AT–364

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 Q.No.**1** which carries **8** marks.

(2) Draw well labelled diagram and formulae wherever necessary.

1. (A) Fill in the blanks : 2

(i) At the temperature 0 °C, most enzymes are practically _____.

(ii) Lactate dehydrogenase exists in _____ isozymic forms.

(iii) Enzymes that catalyse removal of groups from substrates without addition or removal of water are called _____.

(iv) The chief function of CoA is to carry _____ groups.

(B) Choose the correct alternative : 2

(i) Coenzyme involved in hydrogen transfer is :

(a) TPP (b) CoA

(c) ATP (d) FAD

(ii) The protein moiety of an enzyme is known as :

(a) Holoenzyme (b) Apoenzyme

(c) Coenzyme (d) Enzyme

(iii) Oxidases are generally inhibited by :

(a) Cyanides (b) Fluorides

(c) Salts of mercury (d) Salts of silver

(iv) The optimum temperature of an enzyme of human body is :

(a) 22 °C (b) 25 °C

(c) 37 °C (d) 47 °C

(C) Answer in **one** sentence : 4

(i) What is K_m value ?

(ii) What is marker enzyme ?

(iii) What is activation energy ?

(iv) Which is activator for α-amylase ?

2. (a) What are enzymes ? Give their general characteristics. 4

(b) Discuss unit of enzyme activity. 4

(c) Describe classification of enzymes. 4

OR

(p) Describe nomenclature of enzymes. 4

(q) What are multienzyme complexes ? 4

(r) What are isoenzymes ? 4

3. (a) Write Michaelis and Menten equation and Lineweaver-Burk equation with graphical representation. 4

(b) What is the significance of K_m value ? 4

(c) Describe Ping-Pong mechanism. 4

OR

(p) Give any one test for homogeneity. 4

(q) Describe the effect of temperature on enzyme activity. 4

(r) Describe affinity chromatography for enzyme purification. 4

4. Discuss with the help of graphs the different types of inhibitions. What is importance of enzyme inhibition ? 12

OR

Describe in detail kinetics of zero and first order reactions in enzyme catalysed reaction. 12

5. Write one reaction for each of following to illustrate their action :

(a) NAD^+ 4

(b) FAD 4

(c) Pyridoxal phosphate. 4

OR

Describe in short the following with suitable examples :

(p) Allosteric enzymes. 4

(q) Metalloenzymes. 4

(r) Metal-activated enzymes. 4

6. Describe in short Lock and Key hypothesis and Induced fit model. 12

OR

Explain in brief acid-base catalysis and covalent catalysis. 12

7. Write in short an account of the following :

(a) Application of immobilized enzymes. 4

(b) Use of proteases in detergents and leather industry. 4

(c) Medicinal applications of enzymes. 4

OR

(p) Production of glucose from starch. 4

(q) Use of Lactose in dairy industry. 4

(r) Production of glucose-fructose syrup from sucrose. 4