AU–119

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 diagrams and formulae wherever necessary.

1. (A) Fill in the blanks :

(i) The class of enzymes involved in synthetic reaction are _____.

(ii) Enzymes lose the catalytic activity at temperature above 70°C due to _____.

(iii) The E.C. number for alcohol dehydrogenase is _____.

(iv) The non-protein part of holoenzyme is called _____. 2

(B) Choose the correct alternative :

(i) The coenzyme not involved in hydrogen transfer :

(a) FMN (b) FAD

(c) $NADP^+$ (d) FH_4

(ii) In the feedback regulation, the end product binds at :

(a) Active site (b) Allosteric site

(c) E-S complex (d) None of these

(iii) Some enzymes are named by their functions only e.g. :

(a) Ptyalin (b) Pepsin

(c) Reductases (d) Trypsin

(iv) The enzymes catalysing hydrolysis of ester, peptide by addition of water are called :

(a) Lyases (b) Hydrolases

(c) Both (d) None 2

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

(i) What is competitive inhibitor ?

(ii) What is activator ?

(iii) What is substrate for urease ?

(iv) What is V_{max} ? 4

2. Define with examples the following :

(a) Isoenzymes 4

(b) Marker enzymes 4

(c) Active site. 4

OR

(p) Oligomeric enzymes 4

(q) Specific activity 4

(r) Cofactors. 4

3. Describe in brief methods of isolation, purification and crystallization of enzymes. 12

OR

Write an account of effect of enzyme concentration, temperature and pH on enzyme activity. 12

4. Describe in short the following :

(a) Competitive inhibition 4

(b) Non-competitive inhibition 4

(c) Activation energy. 4

OR

(p) Irreversible inhibition 4

(q) Graphical determination of K_m and V_{max}. 4

(r) Zero and first order reactions. 4

5. What are coenzymes ? Write briefly on the role of coenzymes in enzyme action. 12

OR

What are metallo enzymes and metal-activated enzymes ? Describe in detail role of metal ion in enzyme catalysis. 12

6. Write in short about the following :

(a) Acid-base catalysis 4

(b) Covalent catalysis 4

(c) Substrate strain theory. 4

OR

(p) Induced fit model 4

(q) Lock and key model 4

(r) Proximity and orientation effect. 4

7. Write in brief on uses of the following :

(a) Immobilized enzyme 4

(b) Glucose oxidase 4

(c) Proteases 4

OR

(p) Glucose isomerase 4

(q) α-amylase 4

(r) Papain. 4