AT–344

B.Sc. (Part—II) Semester—III Examination

3S : BIOINFORMATICS

(Fundamentals of Bioinformatics)

Time : Three Hours] [Maximum Marks : 80

Note :— (1) **ALL** questions are compulsory.

(2) Draw well labelled diagram wherever necessary.

1. (A) Fill in the blanks : 2

(i) _____ resists the change in pH.

(ii) Lactose is a sugar present in the milk, it is _____

(iii) Formation of disulphide linkage is a characteristic of _____ structure of protein.

(iv) TCA cycle is carried out in _____

(B) Choose the correct alternative : 2

(i) Gram molecular weight of substance in a litre of solution :

(a) 1 Normal solution (b) 1 Molar solution

(c) 1 Molal solution (d) pH

(ii) Building blocks of a protein are linked by :

(a) Peptide linkage (b) Disulphide linkage

(c) Phosphodiester linkage (d) Hydrogen linkage

(iii) Storage polysaccharide in animal :

(a) Starch (b) Cellulose

(c) Glycogen (d) Peptidoglycan

(iv) Biocatalyst present in a cell :

(a) Starch (b) Enzyme

(c) Lipid (d) Nucleid acid

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

(i) Define V_{max}.

(ii) Define one normal solution.

(iii) Name secondary structure elements of protein.

(iv) Define Holoenzyme.

2. Describe :

(a) Ionization of water 4

(b) Water as a biological solvent 4

(c) Normality of a solution. 4

OR

(p) Molality of a solution 4

(q) Buffer solution 4

(r) Structure of water and polarity. 4

3. Explain :

(a) Classification of carbohydrates 4

(b) Mucopolysaccharides 4

(c) Structural polysaccharide in plant. 4

OR

(p) Structure and occurrence of sucrose 4

(q) Proteoglycans 4

(r) Storage polysaccharide in an animal. 4

4. Attempt the following :

(a) Distinguish between saturated and unsaturated fatty acid. 4

(b) Glycerophospholipids 4

(c) Any two biological functions of lipids. 4

OR

(p) Distinguish between simple and compound lipids. 4

(q) Classification of lipids. 4

(r) Structure and properties of glycolipids. 4

5. Describe :

(a) Denaturation of proteins. 4

(b) Any two biological functions of proteins. 4

(c) Secondary structure elements of proteins. 4

OR

(p) Renaturation of proteins. 4

(q) Structure of building blocks of protein. 4

(r) Tertiary structure of protein. 4

6. Explain the effect of pH, temperature and substrate concentration on enzyme catalyzed reaction. 12

OR

Explain the Michaelis-Menton kinetics of enzyme catalyzed reaction in detail. 12

7. Describe the steps involved in TCA cycle in detail. 12

OR

Describe in detail the beta oxidation of fatty acids. 12