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

BIOINFORMATICS

(Fundamentals of Bioinformatics)

Time : Three Hours] [Maximum Marks : 80

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

(2) Draw well labelled diagrams wherever necessary.

1. (A) Fill in the blanks : 2

(i) Building blocks of protein are _____.

(ii) pH of 7 is considered as _____.

(iii) Sucrose is a _____.

(iv) Alternate name for TCA cycle is _____.

(B) Choose the correct alternative : 2

(i) Lactose is a :

(a) Monosaccharide (b) Disaccharide

(c) Polysaccharide (d) All of these

(ii) β (Beta) plate belongs to :

(a) Primary structure (b) Secondary structure

(c) Tertiary structure (d) Quaternary structure

(iii) Which of the following is an example of isoenzymes ?

(a) Glucose hexokinase

(b) Fructose kinase

(c) Lactate dehydrogenase

(d) Alcohol dehydrogenase

(iv) Following are steroids :

(a) Cholesterol (b) Testosterone

(c) Oestrogen (d) All of these

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

(i) Universal solvent.

(ii) Storage form of carbohydrates.

(iii) Define Holoenzyme.

(iv) Steroids.

2. Explain the following : 4
   (a) Amphoteric nature of water 4
   (b) Normality 4
   (c) Equivalent weight.

OR

   (p) Ionization of water 4
   (q) Buffer solution 4
   (r) Molarity. 4

3. Describe the following : 4
   (a) Diasaccharides 4
   (b) Mucopolysaccharides 4
   (c) Glycoprotein.

OR

   (p) Polysaccharides 4
   (q) Proteoglycans 4
   (r) Functions of monosaccharides. 4

4. Describe the following : 4
   (a) Structure and functions of saturated fatty acids 4
   (b) Glycerophospholipids 4
   (c) Sterols.

OR

   (p) Structure and functions of unsaturated fatty acids 4
   (q) Triglycerides 4
   (r) Isoprenoids. 4

5. Describe primary and secondary structure of protein with suitable example. 12

OR

Describe denaturation, renaturation of protein with special reference to their biological function. 12

6. (a) Describe general properties of enzymes. 4
   (b) Describe vitamins as coenzymes. 4
   (c) V_{max}. 4

OR

   (p) Nomenclature of enzymes. 4
   (q) Metal as coenzymes. 4
   (r) K_m. 4

7. Describe EMP pathway in detail. 12

OR

Discuss cholesterol biosynthesis in detail. 12