

**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)  $\beta$  (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. 4
- OR**
- (p) Ionization of water 4
  - (q) Buffer solution 4
  - (r) Molarity. 4
3. Describe the following : 4
- (a) Disaccharides 4
  - (b) Mucopolysaccharides 4
  - (c) Glycoprotein. 4
- 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. 4
- 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