

## 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 diagrams wherever necessary.

1. (A) Fill in the blanks :

- (i) Amino acids are \_\_\_\_\_ of the protein.
- (ii) \_\_\_\_\_ is a universal solvent.
- (iii) Above 60° C temperature the protein will be \_\_\_\_\_.
- (iv) Glycolysis is carried out in the \_\_\_\_\_ .

2

(B) Choose the correct alternative :

- (i)  $\alpha$ -helix is a \_\_\_\_\_ .
  - (a) Primary structure element
  - (b) Secondary structure element
  - (c) Tertiary structure element
  - (d) None of these
- (ii) The cell stores the energy in the form of \_\_\_\_\_ .
  - (a) ATP
  - (b) AMP
  - (c) cAMP
  - (d) GDP
- (iii) Enzymes were observed for the first time in \_\_\_\_\_ .
  - (a) Bacteria
  - (b) Yeast
  - (c) Drosophila
  - (d) Maize
- (iv) Renaturation is the process appear in \_\_\_\_\_ .
  - (a) Lipids
  - (b) Oligosaccharides
  - (c) DNA
  - (d) All of these

2

(C) Answer in one sentence :

- (i) Define Enzymes.
- (ii) Name the proteins present in milk.
- (iii) Define Buffer solutions.
- (iv) Give long form of ATP.

4

2. Describe :

- (a) Molarity and Normality.
- (b) pH
- (c) Equivalent weight.

4

4

4

OR

- (p) Universal solvent.
- (q) Weak acids and weak bases.
- (r) Ionization of water.

4

4

4

3. Define carbohydrates. How are they classified ? Describe in detail.

12

OR

Describe biological importance of monosaccharides.

12

- 4. (a) What do you mean by saturated fatty acids ? Give at least two examples.
- (b) What are simple lipids ? Give example.
- (c) Discuss glycerophospholipids.

4

4

4

OR

- (p) Give biological functions of lipids.
- (q) Describe triglycerides. What is their role in formation of lipids ?
- (r) What are isoprenoids ?

4

4

4

- 5. (a) Amino acids are building blocks of protein. Justify.
- (b) Explain denaturation and renaturation.
- (c) How proteins are classified ? Give example of each class.

4

4

4

OR

- (p) Describe biological functions of proteins. 4
- (q) What are catalytic proteins ? What are their functions ? 4
- (r) Describe isoelectric point of protein. 4
- 6. (a) Describe properties of enzymes in detail. 4
- (b) Describe various coenzymes. 4
- (c) Define  $K_m$ . Give its importance. 4

OR

- (p) Give mechanism of enzyme action. 4
- (q) Define enzyme. Describe general characteristics. 4
- (r) Describe Holoenzyme with an example. 4
- 7. Describe TCA cycle in detail. 12

OR

What is protein synthesis ? Describe in detail the steps of protein synthesis. 12

