

**Note:**

1. All the questions are compulsory. Choice is internal.
2. Figures to the right indicate full marks.
3. All questions carry equal marks.
4. Draw flowcharts/diagrams wherever necessary.

**Q.1 a) Define the following:** (10)

1. Viscosity
2. Buffer
3. Essential amino acids
4. Alpha helix
5. Disaccharide

**Q.1 b) State true or false with reasons:** (05)

1. pH is the negative logarithm of concentration.
2. Acids are electron donors.
3. Proteins are made up of amino acids.
4. All amino acids have the same basic structure.
5. Fructose contains six carbon as backbone.

**Q.2 Answer the following: (Any four)** (20)

1. What is anabolism?
2. Explain ionization of water.
3. What are Van Der Waals interactions?
4. What is the role of water in biological systems?
5. What is the pH scale? Explain buffer in brief.

**Q.3 Answer the following: (Any four)** (20)

1. With the help of a diagram explain the classification of proteins based on its shape.
2. Differentiate between hemoglobin and myoglobin in detail.
3. What is protein denaturation? Explain in detail the agents involved in denaturation.
4. Write in detail the chemical reaction of amino acids with Sanger's reagent.
5. Elaborate on any four physical properties of amino acids.

**Q.4 Answer the following: (Any four)** (20)

1. Explain in detail enediol formation with respect to glucose and fructose.
2. Explain the formation of alderic, uronic and aldonic acids formation with respect to glucose.
3. Enlist the function of carbohydrates.
4. Explain the action of amylase on starch.
5. Draw the structure of lactose, maltose and comment on its function.

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