

1. All questions are compulsory.
2. All questions carry equal marks.
3. Draw neat, labelled diagrams wherever necessary.

- Q.1.A) State True or False:** 4
- (i) Boiling point of water is 4°C.
  - (ii) Potassium chloride is a weak electrolyte.
  - (iii) N<sub>2</sub> is water soluble.
  - (iv) On the pH scale, we can measure pH from 0 (very acidic) to 14 (very alkaline).
- Q.1.B) Answer of the following: (Any three)** 9
- (i) Explain Van der Waals interactions.
  - (ii) What are polar and nonpolar compounds?
  - (iii) Write a note on pH.
  - (iv) Write a note on hydrophobic interactions.
  - (v) Elaborate on buffer with the help of an example.
  - (vi) Write a note on hydrophilic interactions.
- Q.1.C) Answer of the following: (Any two)** 12
- (i) Describe the role of water in life.
  - (ii) Describe the relationship between pH and pOH.
  - (iii) Explain the role of entropy in the dissolution of solutes in water.
  - (iv) Write a note on amphipathic compounds.
- Q.2.A) State True or False:** 4
- (i) There are 20 amino acids that act as monomers for producing common proteins.
  - (ii) Essential amino acids are not synthesized in animals.
  - (iii) Proteins is not a part of every cell, tissue, and organ in our body.
  - (iv) Protein is not found in meat, poultry and fish.
- Q.2.B) Answer the following: (Any three)** 9
- (i) Define Peptides.
  - (ii) Draw structure of both Valine and Glutamine.
  - (iii) Write in brief about Melting point of proteins.
  - (iv) Justify- Amino acids exist both in D and L forms.
  - (v) Explain Globular proteins.
  - (vi) What are non-essential amino acids?
- Q.2.C) Answer the following: (Any two)** 12
- (i) Elaborate on any four physical properties of amino acids.
  - (ii) Describe in detail the chemical reaction of amino acid with Edman's reagent.
  - (iii) Explain the Tertiary structure of protein with an example.
  - (iv) Explain Primary and Secondary structure of protein in detail.

- Q.3A) State True or False:** 4
- (i) Galactose is a constituent of lactose.
  - (ii) Monosaccharides are joined together by peptide bond.
  - (iii) Sucrose is a disaccharide.
  - (iv) Sucrose hydrolyses lactose.
- Q.3B) Answer the following: (Any three)** 9
- (i) State the significance of carbohydrates.
  - (ii) Write a short note on monosaccharide.
  - (iii) Draw the structure of glycogen.
  - (iv) Write a short note on Oligosaccharide.
  - (v) Explain the structure, significance and occurrence of Maltose.
  - (vi) Explain the structure, significance and occurrence of Lactose.
- Q.3C) Answer the following: (Any two)** 12
- (i) Write a short note on carbohydrates.
  - (ii) Draw the structure and mention the significance of a) Chitin and b) Glycogen.
  - (iii) Explain the structure, occurrence and significance of a) Sucrose and b) Galactose.
  - (iv) Draw the structure and significance of: a) Ribose b) Mannose and c) Fructose
- Q.4A) Define and explain: (Any five)** 10
- (i) Glycosidic bond
  - (ii) Epimers
  - (iii) Structural isomers
  - (iv) Dalton
  - (v) Beta sheets
  - (vi) Molar equivalent
  - (vii) Polysaccharide
- Q.4B) Write short notes on: (Any three)** 15
- (i) Write a note on interaction of biomolecules in aqueous solution.
  - (ii) Explain the concept of mole and molar with an example.
  - (iii) Describe in detail the chemical reaction of amino acids with Ninhydrin reagent.
  - (iv) Explain protein denaturation in detail.
  - (v) Write a short note on disaccharides.
  - (vi) Write a short note on formation of glycosidic bond.

\*\*\*\*\*