VCD/ 02\222_FYBSC SEM I BIOCHEMISTRY I 3 HRS 100 marks

(30)

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_2 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.1C) 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.2A) 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.2B) 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.2C) 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.

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