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VCD-13/10/16 BIOCHEMISTRY-I F.Y.B.Sc. SEM I EXAM MARKS75 21/2HRS (50)

NOTE: 1. All questions are compulsory.
2. Figures to right indicate marks.
3. Draw labeled diagrams wherever necessary.

Q I A) Answer the following (any four) **(8M)**

1. Give structure of water.
2. Explain the entropy.
3. Name any two buffers with pH more than 7.
4. Name any two buffers with pH less than 7.
5. Explain hydrophobic interaction.
6. What is mole?
7. Define Molar Concentration of a solution.
8. Define pH

(B) Explain the following (any two) **(6M)**

1. Write an account on Ionization of water.
2. Explain Normality and Molarity with equations.
3. Calculate weight of HCl in 5 molar solution. [Mol. Wt of HCl - 36.46 gm]
4. Explain polarity of water molecule.

(C) Answer in brief (any one) **(6M)**

1. Explain dissolution of sodium chloride in water.
2. List the weak forces involved in aqueous system.

Q II A) Answer the following (any four) **(8M)**

1. What is amino acid; give e.g?
2. Why amino acid is called amphoteric molecule.
3. Draw the structure of Ruhemann's dye.
4. What is peptide bond and give structure.
5. What do you mean by fibrous protein. give e.g.
6. What is dipeptide?
7. Glycine cannot form alpha helix –why?
8. Explain the term multisubunit and protomer.

(B) Explain the following (any two) **(6M)**

1. How does temperature effects protein structure?
2. How does the Sanger's method help in protein sequencing?
3. Mention shortly about any three interactions which stabilize tertiary structure of protein.
4. Which amino acids can form disulphide bond, draw their structure.

(C) Answer in brief (any one) (6M)

1. Explain the quaternary structure of protein hemoglobin.
2. Write a note on beta structure of protein.

QIII A) Answer the following (any four) (8M)

1. What is optical activity of sugars?
2. Draw structure of amylose part of starch.
3. What are homopolysaccharides? Give examples.
4. Classify polysaccharides based on function.
5. Draw structure of cellulose.
6. Give the reaction for osazone formation with chemical structures.
7. Give the reduction reaction of monosaccharides when treated with sodium amalgam. Structures are expected.
8. What are the different classes of sugar acids. Give two examples with structures.

(B). Explain the following .(Any two) (6M)

1. Write an account of osazone formation.
2. Classify monosaccharides on the basis of functional groups and number of carbon atoms.
3. Comment on stereoisomerism.
4. Describe optical activity of sugars.

(C). Answer the following questions in brief (any one) (6M)

1. Describe physical properties of monosaccharides.
2. Describe chemical properties of monosaccharides with reactions and structures.

Q IV.1. (A) Explain the following (any one) (2M)

1. Properties of Hydrogen bonds.
2. Electronegativity of oxygen atom and water.

1. (B) Answer the following: (any three) (3M)

1. What is the bond angle in water molecule?
2. Define Entropy.
3. Derive Ka of HCl
4. What is Normality of 1 M H_2SO_4 solution?
5. What is Avogadro's number?
6. Write number of molecules in 1 mole of HCl.

Q IV 2. (A) Explain the following (any one) **(2M)**

1. Define polypeptide.
2. Define pKa.

2. (B) Answer of the following: (any three) **(3M)**

1. Tyrosine is _____ amino acid .(aromatic/acidic/nonaromatic)
2. Peptide chain starts with _____ terminal.(COO^-/NH_3^+/COOH)
3. _____ of single amino acid is 110.(Mol. Wt./molar wt./ molar conc.)
4. _____contains imidazole ring. (Histidine/tryptophan/phenylalanine)
5. Angle between Cα-N is called_____.(phi/psi/theta)
6. Beta -sheet is a _____ structure. (local/primary/secondary).

Q IV 3. (A) Explain the following (any one) **(2M)**

1. Polysaccharides
2. Disaccharides

3. (B) Answer of the following: (any three) **(3M)**

1. Xylose is an example of .....sugar. (ketose/aldose/aldo-ketose).
2. The storage form of energy for animals is ..... (starch/ glucose/glycogen).
3. An example of tetrose sugar is..... (ribose/erythrose/xylose).
4. Lactose is composed of glucose and .....(galactose/fructose/sucrose).
5. N-acetyl muramic acid is present in .....(chitin/peptidoglycan/starch).
6. D-glucose and .....are examples of epimers. (D-galactose/D-glyceraldehyde/D-ribose)