# Chapter- 14
# Biomolecules Marks-3 with option 4

## Multiple Choice Questions (1-Mark)

i) Glucose on oxidation with dilute nitric acid gives------

**a) saccharic acid** b) oxalic acid c) gluconic acid d) malonic acid

ii) The glycosidic linkage in maltose is formed between------

a) C-1 of α-D glucose and C-2 of α-D glucose **b) C-1 of α-D glucose and C-4 of α-D glucose**

c) C-1 of α-D glucose and C-2 of α-D fructose d) C-1 of α-D glucose and C-4 of α-D fructose

iii) The optically inactive α- amino acid among the following is-----

a) alanine b) insulin c) leucine **d) glycine**

iv) The sugar component of nucleotide unit in RNA is-----

a) α- deoxy-D-ribose **b) D-ribose** c) L-ribose d) 2-deoxy-L-ribose

v) The chemical nature of peptide bond in proteins is ------

a) primary amide **b) secondary amide** c) tertiary amide d) an ionic bond

vi) In which of the following structure of DNA carries genetic information of the organism

**a) the primary structure of DNA** b) the double helix structure of DNA

c) complementary base pairing d) sugar-phosphate backbone

vii) In the process of denaturation, there is NO change in the structure following protein

**a) primary** b) secondary c) tertiary d) quaternary

## Very Short Answer Questions (1-Mark)

i) Write the name of polysaccharide used for commercial preparation of glucose.

ii) Draw the structure of α-D glucopyranose.

iii) Write the structure of Zwitter ion of alanine.

iv) Write the glycosidic linkage in sucrose.

v) Write the name of the base present in DNA but not found in RNA.

vi) Write the number of chiral carbon atoms present in fructose.

vii) write the name of Sugar present in DNA.

viii) Complete the following reaction.

$$H_2N\text{-}CH_2\text{-}COOH + H_2N\text{-}CH(CH_3)\text{-}COOH \xrightarrow{-H_2O} ?$$

## Short Answer Questions (Type-I) (2-Marks)

i) Explain preparation of glucose form sucrose

ii) Write chemical reaction for following conversions

a) glucose into glucoxime b) glucose into gluconic acid

iii) Define peptide bond. Write types of proteins depending upon molecular shape.

iv) Define the following terms. a) nucleotide b) nucleoside

v) Explain denaturation of proteins

vi) Define enzymes. Write industrial application of enzyme catalysis.

vii) Draw structure of following. a) 2-Deoxy-D-ribose b) Cytosine

viii) Explain globular and fibrous proteins with example.

ix) Classify the following carbohydrates into monosaccharide,disaccharide,oligosaccharide and polysaccharide glucose, cellulose, maltose,stachyose

## Short Answer Questions (Type-II) (3-Marks)

i) What is the action of following reagents on glucose?

a) acetic anhydride b) hydrogen cyanide c) hydrogen iodide.

ii) Define carbohydrates. Draw the Haworth projection structures of the following.

a) α-D-(-) fructofuranose b) maltose

iii) Explain D and L configuration in sugars. Write a chemical reaction to convert glucose into glucose cyanohydrin.

iv) Define α- amino acids. Draw the structures of a) Zwitterion of alanine b) Haworth formula of sucrose.

v) Explain the primary structure of proteins. Write a commercial method for preparation of glucose.

vi) Write the structure of following

a.α-D-(+) Glucose by Fishcer projection formula.

b.α-D-(+) Glucopyranose.

c.α-D-(-) fructofuranose

## Long Answer Questions (4-Marks)

i) Define carbohydrates. Give the classification of carbohydrates with example.

ii) What is monosaccharide? How is glucose prepared on a commercial scale? Draw the structure of pyran.

iii)Write the glycosidic linkages present in Maltose,lactose, cellulose and .amylose.