

INDIAN SCHOOL MUSCAT

CHEMISTRY DEPARTMENT

QUESTION BANK

Biomolecules

- 1 Name a polysaccharide which is stored in the liver of animals. 1
- 2 What structural feature is required for a carbohydrate to behave as reducing sugar? 1
- 3 How many asymmetric carbon atoms are present in D (+) glucose? 1
- 4 Give the significance of (+)-sign in the name D-(+)-glucose. 1
- 5 Glucose is an aldose sugar but it does not react with sodium hydrogen sulphite. Give reason. 1
- 6 Why is sucrose called invert sugar? 1
- 7 Name the building blocks of proteins. 1
- 8 Give the structure of simplest optically active amino acid. 1
- 9 Name the amino acid which is not optically active. 1
- 10 Name the enzyme which catalyses the hydrolysis of maltose into glucose 1
- 11 How would you explain the amphoteric behavior of amino acids. 1
- 12 Which forces are responsible for the stability of α - helical structure of proteins 1
- 13 Which nucleic acid is responsible for carrying out protein synthesis in the cell. 1
- 14 The two strands in DNA are not identical but complementary. Explain. 1
- 15 When RNA is hydrolysed, there is no relationship among the quantities of 1

different bases obtained. What does this fact suggest about the structure of RNA.

- 16 What type of linkage holds together the monomers of DNA and RNA. 1
- 17 A child diagnosed with bone deformities, is likely to have the deficiency of which vitamin? 1
- 18 What is meant by the term DNA fingerprinting? 1
- 19 Name the vitamin responsible for coagulation of blood 1
- 20 Except vitamin B₁₂, all other vitamins of group B, should be supplied regularly in diet. Why? 1
- 21 How is glucose prepared commercially? 1
- 22 What is the structural difference between glucose and fructose? 1
- 23 Which disaccharides are non – reducing sugars? 1
- 24 What is the meaning of statement- Glucose is an aldohexose. 1
- 25 Why are polysaccharides considered non- sugars? 1
- 26 Name the reagents used to check the reducing nature of carbohydrates 1
- 27 Name the forces responsible for secondary and tertiary structure. 1
- 28 Name the different types of RNA molecules found in the cells of organisms. 1
- 29 What is nucleoside? 1
- 30 Write the sequence of bases in the complementary strand of the given strand -
A G G C T T A A C C T 1
- 31 What are anomers. Give the structures of two anomers of glucose. 2
- 32 Write the hydrolysed products of 2
(i) maltose (ii) cellulose.

- 33 Name the two components of starch? Which one is water soluble? 2
- 34 i) Acetylation of glucose with acetic anhydride gives glucose pentaacetate. Write the structure of the pentaacetate. 2
- ii) Explain why glucose pentaacetate does not react with hydroxylamine?
- 35 What are vitamins? How are they classified? 2
- 36 Classify the following as monosaccharides or oligosaccharides. 2
- (i) Ribose (ii) Maltose(iii) Galactose(iv) Lactose
- 37 Write the products of oxidation of glucose with 2
- (a) Bromine water (b) Nitric acid
- 38 State two main differences between globular and fibrous proteins 2
- 39 What are essential and non essential amino acids? Give one example of each type. 2
- 40 Classify the following as globular or fibrous proteins. 2
- (i) Keratin (ii) Myosin(iii) Insulin (iv) Haemoglobin.
- 41 What do you understand by 2
- (a) denaturation of protein (b) specificity of an enzyme
- 42 i) Name the disease caused by deficiency of vitamin D. 2
- ii) Why cannot vitamin C be stored in our body?
- 43 Define the terms hypervitaminosis and avitaminosis. 2
- 44 Explain what is meant by : 2
- (i) a peptide linkage(ii) a glycosidic linkage?
- 45 What are the main functions of DNA and RNA in human body? 2
- 46 Give the sources of vitamin A and E and name the deficiency diseases 2

- resulting from lack of vitamin A and E in the diet.
- 47 Give a reaction to prove that – 2
- i) Glucose has carbonyl group
 - ii) The six carbons in glucose are arranged in a straight chain
- 48 Which reaction of glucose cannot be explained by its cyclic structure? 2
- 49 What are the expected products of hydrolysis of 2
- i) Sucrose
 - ii) Galactose
- 50 What is animal starch? Where is it found? 2
- 51 Differentiate between α - helical and β - pleated sheet structure. 2
- 52 What do you understand by secondary structure of proteins? 2
- 53 How are carbohydrate classified? 3
- 54 i) Name four bases present in DNA. 3
- ii) Which of them is not present in RNA.
 - iii) Give the structure of a nucleotide of DNA.
- 55 Differentiate between the following : 3
- i) Secondary and tertiary structure of protein.
 - ii) α -Helix and β -pleated sheet structure of protein
 - iii) Fibrous and globular proteins.