CBSE Test Paper-04

Class - 12 Chemistry (Biomolecules)

1. The most appropriate structure for knowing about the sequence of nucleotides in the DNA chain is
   a. tertiary structure
   b. quaternary structure
   c. secondary structure
   d. primary structure
2. Honey contains primarily
   a. fat
   b. minerals
   c. lipid
   d. carbohydrate
3. Glycogen is formed in
   a. Viruses
   b. Plants
   c. Animals
   d. Bacteria
4. The sugar constituent of DNA is
   a. D – ribose
   b. D – 2 – deoxy ribose
   c. D – glucose
   d. D – lactose
5. Which amino acid produces Thyroxine hormone?
   a. Proline
   b. Arginine
   c. Leucine
   d. Tyrosine
6. What is the information given by primary structure of proteins?
7. Which vitamins cannot be stored in our body?
8. What products would be formed when a nucleotide from DNA containing thymine is

hydrolysed?

9. Name two fat soluble vitamin, their sources and the diseases caused due to their deficiency in diet.
10. How are proteins related to amino acids?
11. What are enzymes? State the activity of an enzyme.
12. Write down the structures and names of products formed when D-glucose is treated with:
    i. Hydroxylamine
    ii. HI
    iii. Ammonical silver nitrate solution.
13. List four main functions of carbohydrates in organism.
14. What do you understand by the term glycosidic linkage?
15. Write the important structural and functional differences between DNA and RNA.

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Solutions

1. (d) primary structure
   Explanation: Proteins may have one or more polypeptide chains. Each polypeptide in a protein has amino acids linked with each other in a specific sequence and it is this sequence of amino acids that is said to be the primary structure of that protein. Thus the most appropriate structure for knowing about the sequence of nucleotides in the DNA chain is its primary structure.
2. (d) carbohydrate
   Explanation: Honey is a high carbohydrate substance. It also contains proteins.
3. (c) Animals
   Explanation: Carbohydrates are used as storage molecules as starch in plants and glycogen in animals. Glycogen is called animal starch because its structure is similar to that of amylopectin and it is rather more branched. It is present in liver, muscles and brain. When the body needs energy, it breaks down the available glycogen and converts it to glucose which can be further utilised to give energy. Glycogen is also present in fungi and yeast.
4. (b) D – 2 – deoxy ribose
   Explanation: Complete hydrolysis of DNA yields a pentose sugar, phosphoric acid and nitrogen containing heterocyclic compounds (called bases). In DNA molecules, the sugar moiety is β-D-2-deoxyribose.
5. (d) Tyrosine
   Explanation: Thyroxine produced in the thyroid gland is an iodinated derivative of amino acid tyrosine
6. Primary structure of proteins tells about the sequence in which various amino acids are linked with each other.
7. Water soluble vitamins cannot be stored in our body as they are excreted in urine.
8. When a nucleotide from the DNA containing thymine is hydrolyzed, thymine β -D-2-deoxyribose and phosphoric acid are obtained as products.

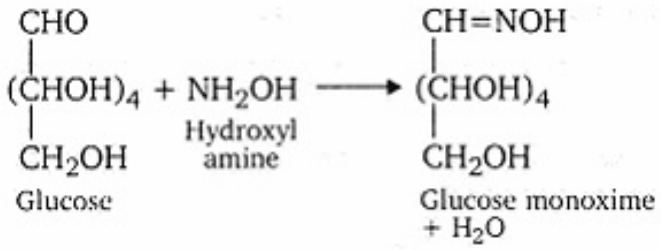
9.

	Sources	Deficiency diseases
Vitamin A	Fish, cod liver oil, carrot	Night blindness
Vitamin D	Fish, cod liver oil	Rickets and Osteomalacia

10. Proteins are the polymers of about twenty different α-amino acids which are linked by peptide bonds.

11. **Enzyme.** Enzymes are biocatalysts which speed up the reactions in biosystem. They are very specific and selective in their action.

12. i.



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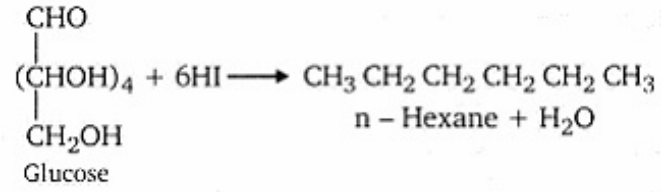

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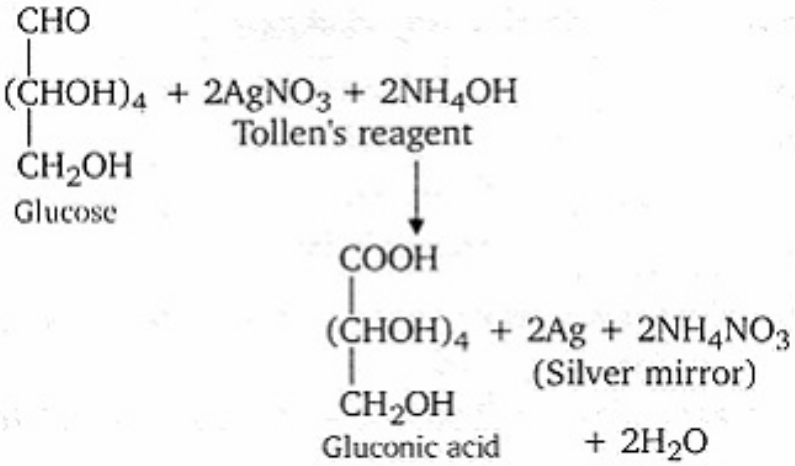
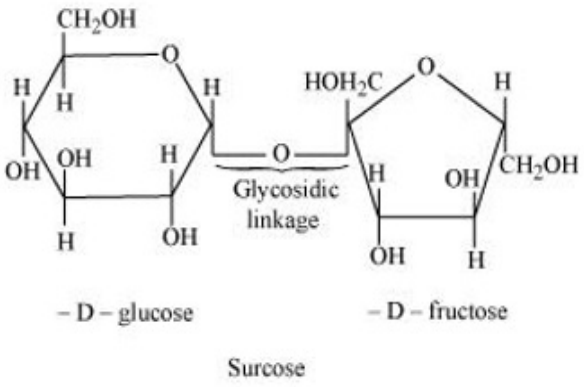


13. **Functions of carbohydrates:**
    i. Cellulose forms cell wall of plant cell.
    ii. Store energy in the form of starch in plant cell and in the form of glycogen in animal cell.
    iii. They are found in combination with proteins and lipids.
    iv. They are essential for plants and animals as a primary source of energy.

14. Glycosidic linkage refers to the linkage formed between two monosaccharide units through an oxygen atom by the loss of a water molecule.
For example, in a sucrose molecule, two monosaccharide units, $\propto$ -glucose and β -fructose, are joined together by a glycosidic linkage.



Surcose

15. The structural differences between DNA and RNA are as follows:

DNA	RNA
1. The sugar moiety in DNA molecules is β -D-2 deoxyribose.	1. The sugar moiety in RNA molecules is β -D-ribose.
2. DNA contains thymine (T). It does not contain uracil (U).	2. RNA contains uracil (U). It does not contain thymine (T).
3. The helical structure of DNA is double-stranded.	3. The helical structure of RNA is single-stranded.

The functional differences between DNA and RNA are as follows:

DNA	RNA
1. DNA is the chemical basis of heredity.	1. RNA is not responsible for heredity.
2. DNA molecules do not synthesise proteins, but transfer coded message for the synthesis of proteins in the cells.	2. Proteins are synthesised by RNA molecules in the cells.