

Atomic Energy Central School, Indore

Class XII Chemistry

BIOMOLECULES

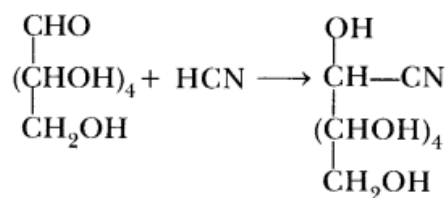
Worksheet 1/3

Questions

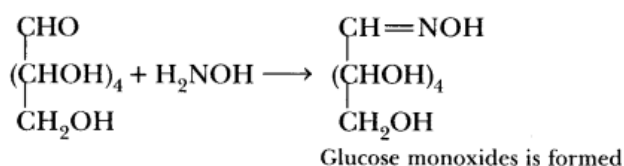
1. What are monosaccharides?
2. α – D(+) Glucose and β - D(+) Glucose are
 - a) Geometrical isomers
 - b) Enantiomers
 - c) Anomers
 - d) optical isomers
3. Which one of the following is an aldohexose:
Starch, Maltose, Fructose and Glucose?
4. Write the product obtained when D-glucose reacts with HCN.
5. Write the product obtained when D-glucose reacts with $\text{H}_2\text{N—OH}$
6. Write the product when D-glucose reacts with Br_2 ?
7. Write a reaction which shows that all the carbon atoms in glucose are linked in a straight chain.
8. What is essentially the difference between α -form of glucose and β -form of glucose?
Explain.
9. Explain pyranose structure of glucose.
10. Write such reactions and facts about glucose which cannot be explained by its open chain structure.

Answers

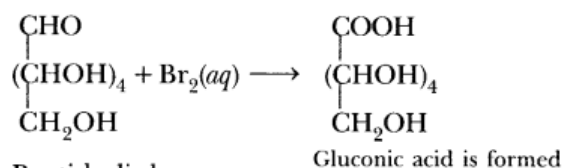
1. These are the simplest carbohydrates which cannot be hydrolysed to smaller molecules.
Their general formula is $(\text{CH}_2\text{O})_n$ where $n = 3 - 7$
Example : glucose, fructose etc.
2. c) Anomers
3. Glucose
- 4.



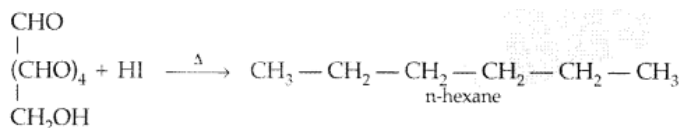
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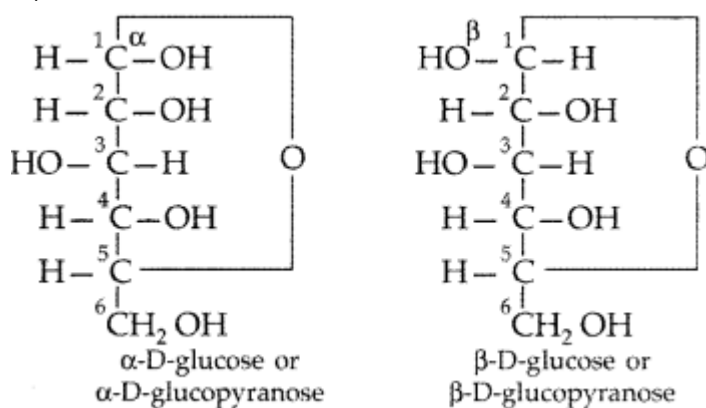
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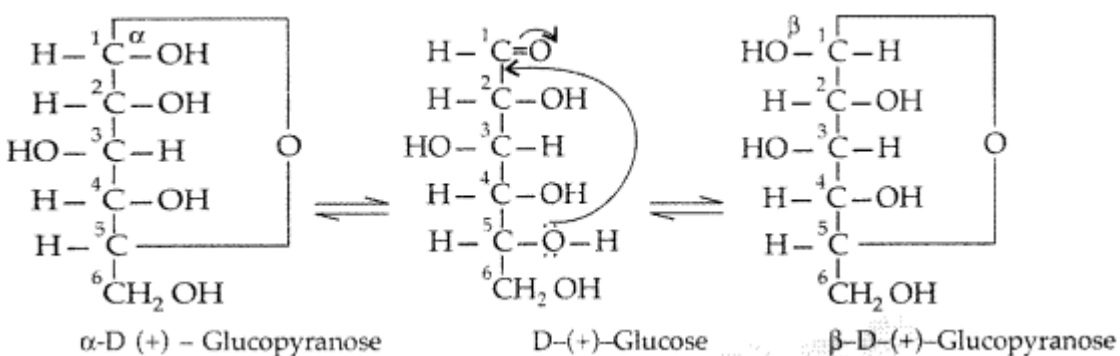
7. On prolonged heating with HI, it forms n-hexane, shows that all the six carbon atoms are linked in a straight chain :



8. In α -D-glucose, the OH group at C_1 is towards right while in β -D-glucose, the OH group at C_1 is towards left.



9. Pyranose structure of glucose : The six membered ring containing 5 carbon atoms and one oxygen atom because of its resemblance with pyran is called the pyranose form.



10. Limitations of the open chain structure of glucose :

1. Glucose does not form NaHSO_3 addition product. Despite having aldehyde group, it does not respond to 2,4-DNP test and does not respond to Schiff's reagent test.
2. Glucose penta acetate does not react with NH_2OH showing absence of aldehydic group.