



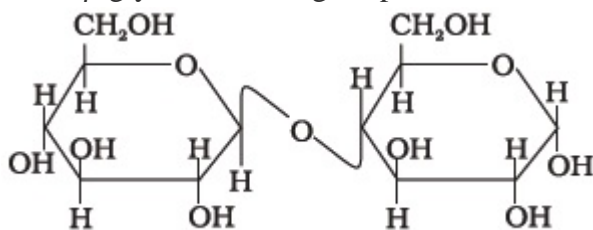
## INDIAN SCHOOL AL WADI AL KABIR

<b>Class: XII</b>	<b>Department: SCIENCE 2020 -2021</b> <b>SUBJECT : CHEMISTRY</b>	<b>Date of Completion:</b> <b>24.05.2020</b>
<b>Worksheet No: 03</b> <b>With answers</b>	<b>Chapter: BIOMOLECULES – PART I</b>	<b>Note:</b> <b>A4 FILE FORMAT</b>
<b>NAME OF THE STUDENT</b>	<b>CLASS &amp; SEC:</b>	<b>ROLL NO.</b>

- Glucose on oxidation with  $\text{Br}_2(\text{aq})$  gives
  - Gluconic acid
  - Tartaric acid
  - Sachharic acid
  - Meso-oxalic acid
- Which of the following is non-reducing sugar?
  - Glucose
  - Sucrose
  - Maltose
  - Lactose
- Which of the following polymer is stored in the liver of animals?
  - Amylose
  - Cellulose
  - Amylopectin
  - Glycogen
- Assertion* : D (+) – Glucose is dextrorotatory in nature.  
*Reason* : ‘D’ represents its dextrorotatory nature.

**Ans. Assertion is correct but reason is wrong.**

- Assertion* :  $\beta$ -glycosidic linkage is present in maltose,



*Reason* : Maltose is composed of two glucose units in which C–1 of one glucose unit is linked to C–4 of another glucose unit.

**Ans. Assertion is wrong but reason is correct.**

1 Mark

6. Name the reagents used to check the reducing nature of carbohydrates.

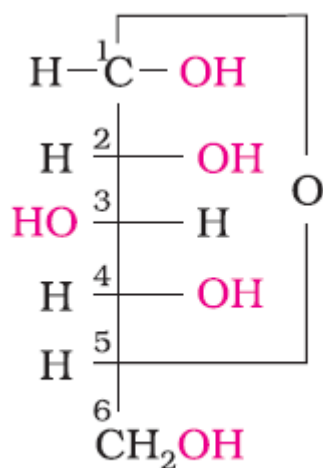
Ans. Tollens reagent and Fehlings solution.

7. Glucose pentaacetate does not react with hydroxylamine. Give reason.

Ans. Absence of free aldehyde group due to the ring formation.

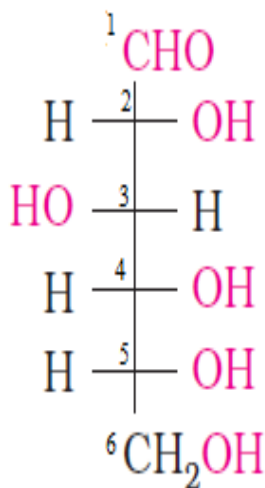
8. Draw the Fischer projection of  $\alpha$  D(+) Glucose.

Ans, Ring structure



$\alpha$  - D - (+) - Glucose

Open structure



9. What are the products of hydrolysis of Lactose?

Ans.  $\beta$ -D-Galactose and  $\beta$ -D-Fructose

2 Marks

10. What happens when Glucose is treated with

- acetic anhydride
- HCN?

Ans. a. Pentaacetate is formed , write the reaction.

b. Cyanohydrin is formed, write the reaction.

11. Describe the following with an example.

- Polysaccharides
- Reducing sugars

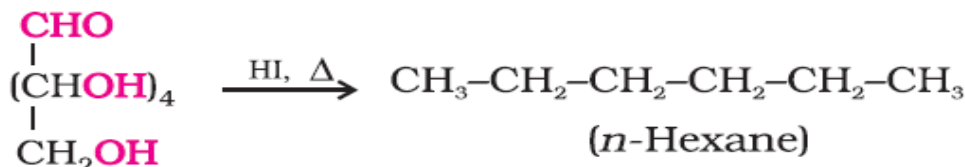
Ans. a. One which produces large number of monosaccharide units on hydrolysis. Eg Starch

b. One which has free aldehyde functional group and that which reacts with Fehlings solution (blue to reddish brown) and Tollens reagent (colourless to silver).Eg Glucose

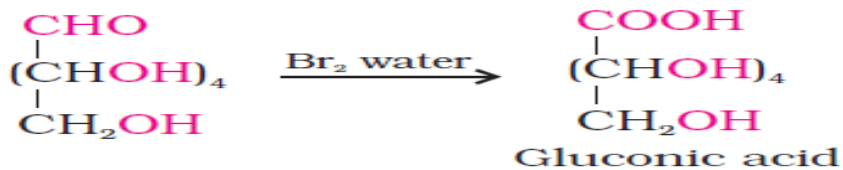
12. Write chemical reactions to show the presence of

- straight chain
- aldehyde functional group in Glucose.

Ans. a. Reaction with HI.



b. Reaction with Br<sub>2</sub> water.

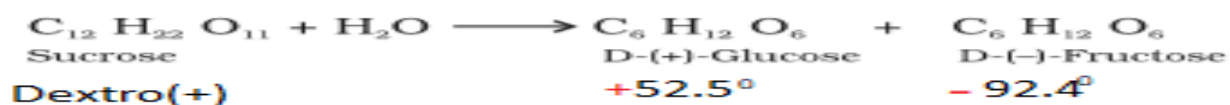


13. a. What is inversion of cane sugar?

b. Which one of the following is an oligosaccharide?

Maltose, Starch, Fructose, Glucose

Ans. a. Sucrose (dextrorotatory) on hydrolysis becomes laevorotatory.



b. Maltose

14. Define the terms.

a. Invert sugar

b. Glycosidic linkage

Ans. a. Write the definition for inversion of cane sugar with reaction. Due to the inversion, sucrose is also called invert sugar.

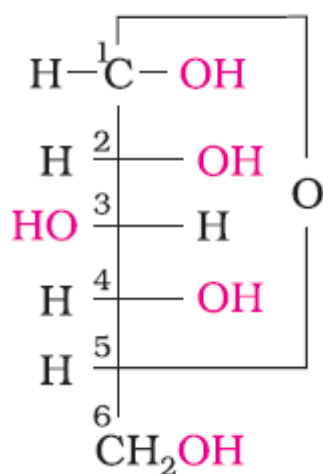
3 Marks

15. a. What are anomers? Give the structures of two anomers of Glucose.

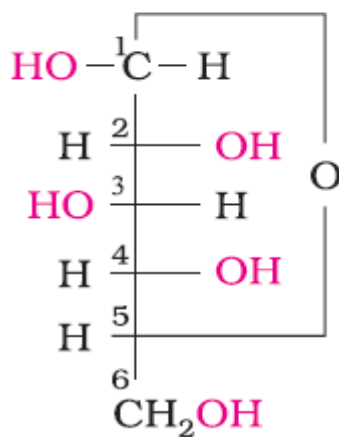
b. Give a chemical reaction to show the presence of a primary alcoholic group in Glucose.

c. Draw the pyranose structure of α-D-Glucose.

Ans. a. The compounds which differ in the configuration of only one carbon.

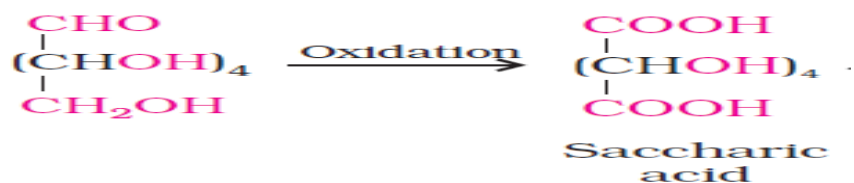


α-D-(+)-Glucose



β-D-(+)-Glucose

b. Reaction with conc HNO<sub>3</sub>



16. Mention three facts/reactions which cannot be explained by the open structure of Glucose.

Ans. Glucose does not give

- i. 2,4-DNP test
- ii. Schiff's test
- iii. form hydrogensulphite addition product with  $\text{NaHSO}_3$ .
- iv. The pentaacetate of glucose does not react with hydroxylamine ( $\text{NH}_2\text{OH}$ ) indicating the absence of free  $\text{—CHO}$  group.

17. a. Write two differences between the  $\alpha$  and  $\beta$  forms of Glucose.

b. Which component of starch is a branched polymer of  $\alpha$ -D-Glucose and insoluble in water?

c. What is essentially the difference between  $\alpha$ -form and  $\beta$ -form of fructose? Explain.

Ans. a.

$\alpha$ -D-Glucose	$\beta$ -D-Glucose
C1 – OH is on the right.	C1-OH is on the left.
Its melting point is 419K	Its melting point is 423K

b. Amylopectin

c. The configuration of C - 2 carbon.

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