	INDIAN SCHOOL AL WADI AL KABIR	
Class: XII	**Department: SCIENCE 2021 – 22** **SUBJECT : CHEMISTRY**	**Date of submission:** **30.05.2021**
Worksheet No: 05 with answers	**Chapter: BIOMOLECULES**	**Note:** **A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

1. Glucose on oxidation with Br_2(aq) gives
   a. Gluconic acid
   b. Tartaric acid
   c. Saccharic acid
   d. Meso-oxalic acid

2. Which of the following is non-reducing sugar?
   a. Glucose
   b. Sucrose
   c. Maltose
   d. Lactose

3. Globular proteins are present in
   a. blood
   b. eggs
   c. milk
   d. all of these

4. Which one of the amino acids can be synthesised in the body?
   a. Alanine
   b. Lysine
   c. Valine
   d. Histidine

5. Which of the following is not true about amino acids?
   a. They are constituents of all proteins
   b. Alanine has one amino and one carboxylic group
   c. Most naturally occurring amino acids have D-configuration
   d. Glycine is the only naturally occuring amino acid which is optically inactive.

6. Denaturation of protein leads to loss of its biological activity by
   a. formation of amino acids
   b. loss of primary structure
   c. loss of both primary and secondary structure
   d. loss of both secondary and tertiary structures

7. The melting points of amino acids are higher than the corresponding halo-acids because
   a. amino acids exist as zwitter ions resulting in strong dipole-dipole attraction
   b. amino acids are optically active
   c. due to higher molecular mass of-NH_2 group molecular mass of amino acids is higher
   d. they interact with water more than halo-acids and have salt like structure

8. Assertion: Glycine must be taken through diet.
   Reason: It is a non-essential amino acid.
   a. Assertion and reason are correct and Reason is the correct explanation of Assertion.
   b. Assertion and reason are correct and Reason is the correct explanation of Assertion.
   c. Assertion is correct but reason is wrong.
   d. Assertion is wrong but reason is correct.

9. Assertion: At iso electric point, the amino group does not migrate under the influence of electric field.
   Reason: At isoelectric point, amino acid exists as a zwitter ion
   a. Assertion and reason are correct and Reason is the correct explanation of Assertion.
   b. Assertion and reason are correct and Reason is the correct explanation of Assertion.
   c. Assertion is correct but reason is wrong.
   d. Assertion is wrong but reason is correct.

10. Assertion: D (+) Glucose is dextrorotatory in nature.
    Reason: 'D' represents its dextrorotatory nature.

<u>1 Mark</u>

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

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

13. Draw the Fischer projection of α D(+) Glucose.

14. Write one difference between α-Helix and β pleated structure of proteins.

15. Of the two bases, thymine and uracil, which one is present in DNA?

<u>2 Marks</u>

16. What happens when Glucose is treated with
    a. acetic anhydride
    b. HCN?

17. Write chemical reactions to show the presence of
    a. straight chain
    b. aldehyde functional group in Glucose.

18. Describe the following with an example of each
    a. Denatured protein
    b. Essential amino acids

19. Write the structural difference between DNA and RNA.

20. a. What type of linkage holds together the monomers of DNA?

b. What do you mean by α and β amino acids?

3 Marks

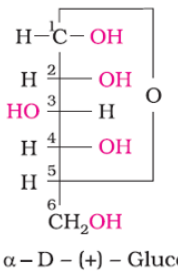
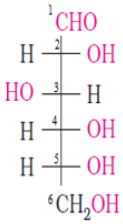
21. a. What are anomers? Give the structures of two anomers of Glucose.
    b. Give a chemical reaction to show the presence of a primary alcoholic group in Glucose.
    c. Draw the pyranose structure of α –D-Glucose.

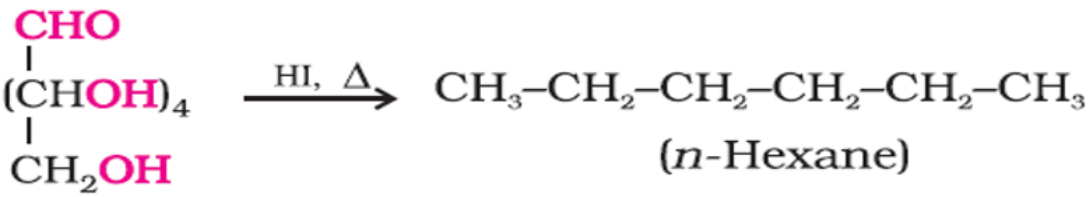
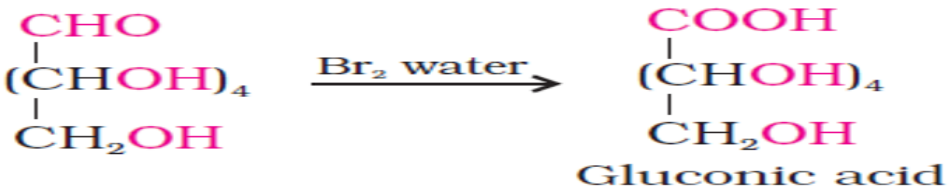
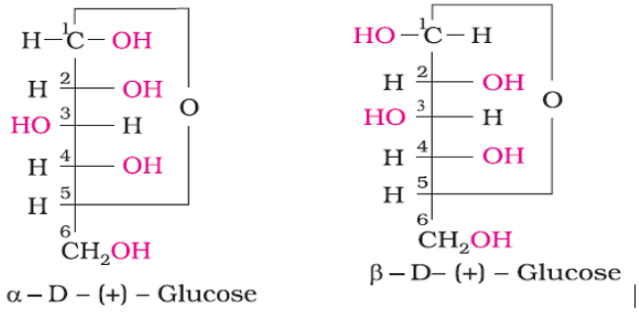
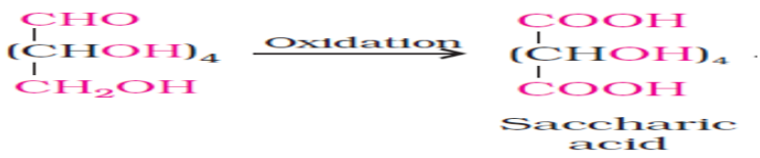
22. Mention three facts/reactions which cannot be explained by the open structure of Glucose.

23. a. Write two differences between the α and β forms of Glucose.
    b. Define the term -Peptide linkage
    c. What is essentially the difference between α-form and β-form of fructose? Explain.

24. Name the forces that stabilize the secondary and tertiary structure of protein. What are the ultimate products of hydrolysis of proteins?

Answers

MCQ ANSWERS	1. a 2. b 3. d 4. a 5. a 6. d 7. d 8. d 9. a 10. c
11	Tollens reagent and Fehlings solution.
12	Absence of free aldehyde group due to the ring formation.
13	Ring structure  α – D – (+) – Glucose Open structure 
14	In α Helix, the peptide chains are coiled up to form helix which is right handed involving H bonding. Example: Myosin Keratin The peptide chains lie side by side held together by intermolecular hydrogen bonding Eg Silk

15	Thymine
16	a. Pentaacetate is formed, write the reaction. b. Cyanohydrin is formed, write the reaction.
17	a. Reaction with HI.  b. Reaction with Br_2 water. 
18	. a. When a protein in its native form, is subjected to physical change like change in temperature or chemical change like change in pH, the hydrogen bonds are disturbed. Due to this, globules unfold and helix get uncoiled and protein loses its biological activity. This is called denaturation of proteins; Eg curdling of milk b. Those amino acids which cannot be synthesised in the body and must be obtained through diet, are known as essential amino acids. Eg. Valine
19	<table><tr><td>DNA</td><td>RNA</td></tr><tr><td>Sugar – 2-Deoxyribose</td><td>Sugar- Ribose</td></tr><tr><td>N Bases- Adenine, Guanine, Cytosine, Thymine</td><td>N Bases- Adenine, Guanine, Cytosine, Uracil</td></tr></table>
20	a. Phosphodiester linkage b. α amino acids have the amino group attached to the (alpha-) carbon atom next to the carboxyl group. β amino acids have the amino group attached to the (β) carbon atom next to the carboxyl group.
21	a. The compounds which differ in the configuration of only one carbon.  b. Reaction with con HNO_3 

<table>
<tr><td>22</td><td>Glucose does not give
i. 2,4-DNP test
ii. Schiff's test
iii. form hydrogensulphite addition product with $NaHSO_3$.
iv. The pentaacetate of glucose does not react with hydroxylamine (NH_2OH) indicating the absence of free —CHO group.</td></tr>
<tr><td>23</td><td>a.
<table><tr><th>α-D-Glucose</th><th>β-D-Glucose</th></tr><tr><td>C1 – OH is on the right.</td><td>C1-OH is on the left.</td></tr><tr><td>Its melting point is 419K</td><td>Its melting point is 423K</td></tr></table>
b. A peptide linkage is an amide formed between –COOH group and $–NH_2$ group. Eg in proteins
c. The configuration of C - 2 carbon.</td></tr>
<tr><td>24</td><td>The main forces which stabilise the 2° and 3° structures of proteins are hydrogen bonds, disulphide linkages, van der Waals and electrostatic forces of attraction.
Amino acids are the ultimate products of hydrolysis of proteins.</td></tr>
</table>

Prepared by : Ms. Jasmin Joseph	Checked by : HOD - SCIENCE