



Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Biomolecules	1	-	-	1	6

One mark questions

1. Define the term 'nucleotide'
Answer: When a nucleoside is linked to phosphoric acid at 5' position of sugar, we get a nucleotide
2. Name the reagent used to distinguish between aldose and ketose.
Answer: Bromine water
3. What type of linkage is responsible for α -helix formation?
Answer: Intra molecular hydrogen bonds
4. Give an example for α -amino acid which is basic
Answer: Lysine (any other)

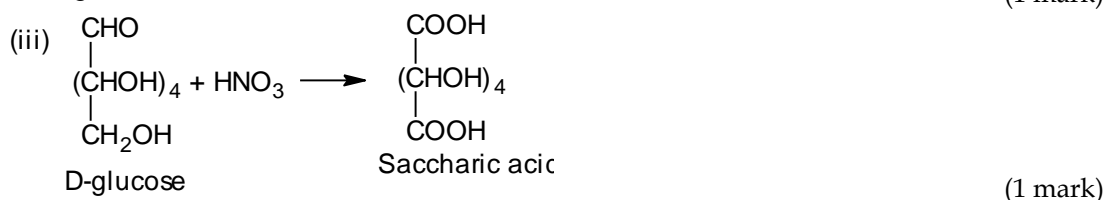
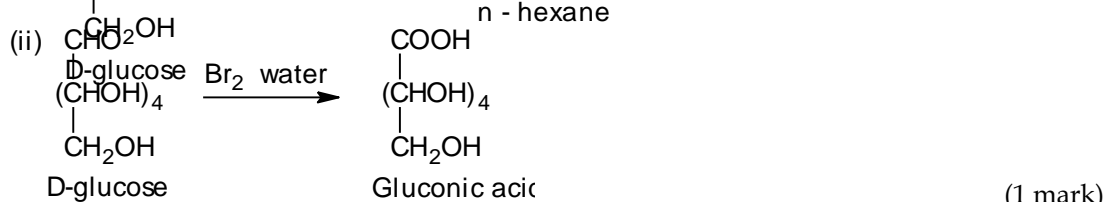
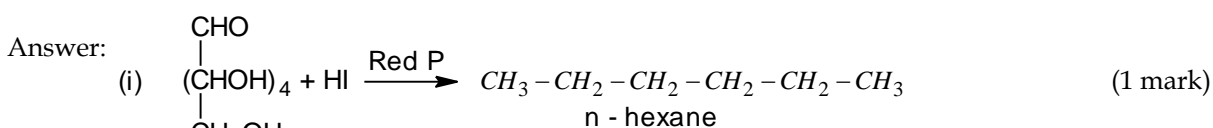
Two marks questions

5. Why cannot vitamin C be stored in our body?
Answer: Vitamin C is water soluble, therefore it is readily excreted in urine and hence cannot be stored in the body.
6. What is the effect of denaturation on the structure of proteins?
Answer: During the denaturation, 2° and 3° structure of proteins are destroyed but 1° structure remains intact. For e.g. curdling of milk.
7. Explain the term mutarotation giving an example.
Answer: The spontaneous change in specific rotation when an optically active substance is dissolved in water is called mutarotation. For example, when α -glucose is dissolved in water, its specific rotation changes because it gets converted into β -glucose.
8. Which sugar is called invert sugar? Why is it called so?
Answer: Sucrose
Sucrose is dextrorotatory, but hydrolysis of sucrose gives glucose (dextrorotatory $+52.5^\circ$) and fructose (lacvo rotatory -92.4°) with mixture being lacvorotatory. This change in the sign of rotation of sucrose from (+) to (-) is why it is called as Invert sugar.

Five marks questions

9. (a) What happens when D- glucose is treated with the following reagents?

- (i) HI (ii) Bromine water (iii) HNO_3 (3 marks)





(b) What are nucleic acids? Mention their two important functions:

Answer: Nucleic acids are polymers of nucleotides containing pentose sugar, heterocyclic base and a phosphate group. (1 mark)

Functions:

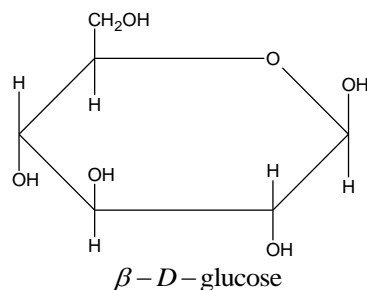
- (1) They help in synthesis of proteins
- (2) They are responsible for transfer of genetic characters (1 mark)

10. **(a) Mention two differences in the structure of starch and cellulose. Write the Haworth's structure of the monomer is cellulose.**

(b) Give an example each for (i) acidic α -amino acid (ii) fibrous protein. (3+2 marks)

Answer: (a)

	Starch	Cellulose
1	Made up of α -D(+) glucose units	Made up of β -D(+) glucose units
2	Has α -glycosidic linkage	Has β -glycosidic linkage
3	Has C_1-C_4 and C_1-C_6 linkage	Has only C_1-C_4 linkage
4	Has linear and branched polymeric chains	It is a linear polymer (Any Two)



- (b) (i) Aspartic acid or glutamic acid
- (ii) Keratin or Myosin

11. **(a) What are reducing sugars? Is sucrose a reducing sugar? Give reason**

(b) (i) Write the Zwitter ion form of an α -amino acid

(ii) Name the naturally occurring α -amino acid that is not optically active (3+2 marks)

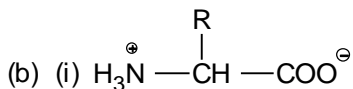
Answer: (a) sugar that reduces Tollen's reagent or Fehling's solution is known as reducing sugar.

(1 mark)

Sucrose is not a reducing sugar.

(1 mark)

Both the reducing groups of glucose and fructose in sucrose are involved in glycoside bond formation (No free $-CHO$ or $-CO$ gp) (1 mark)



(1 mark)

(ii) glycine or $H_2N - CH_2 - COOH$

(1 mark)

12. **(a) Mention the diseases caused by the following**

- (i) Vitamin - C
- (ii) Vitamin - D

(b) How is a dipeptide formed? Give equation

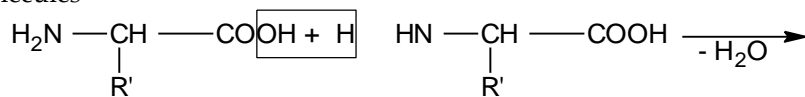
(c) What are Enzymes

(2+2+1 marks)

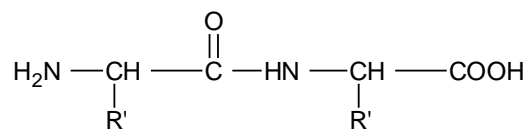
Answer: (a) (i) Scurvy

(ii) Rickets in children or Bones and Teeth deformation

(b) A dipeptide bond is formed by the condensation of $-NH_2$ gp and $-COOH$ gp of 2 amino acid molecules



(1 mark)



Dipeptide

(c) Enzymes are Bio catalysts for biological reactions.

(1 mark)