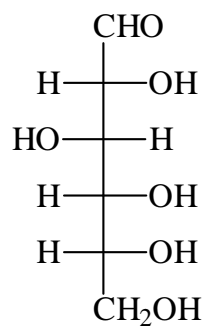


The open chain form of D-glucose has the structure shown.



Draw the Haworth projection of β -D-glucopyranose.

Marks
5

Draw the major organic product of the reaction of D-glucose with the following reagents.

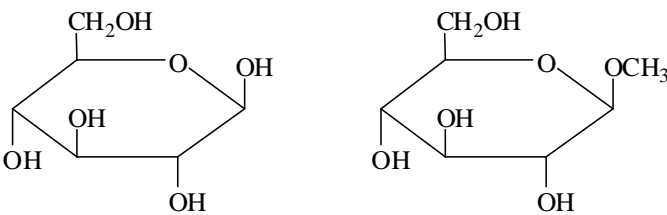
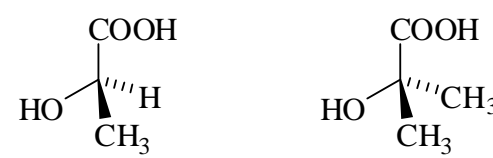

1. NaBH_4 2. $\text{H}^{\oplus} / \text{H}_2\text{O}$

$[\text{Ag}(\text{NH}_3)_2]^{\oplus} / \text{OH}^{\ominus}$

Would you expect D-glucose to be water soluble? Why?

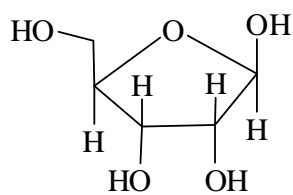
- Using a chemical test, how would you distinguish between the following pairs of compounds? Indicate the reagent you would use and the observations you would make.

Marks
3

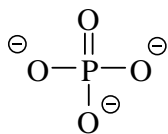
Compounds	Reagent and observation
	
	
	

- The following species represent some of the building blocks of RNA.

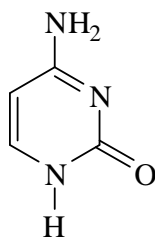
Marks
8



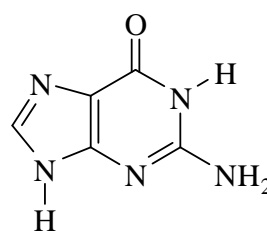
ribofuranose



phosphate



cytosine



guanine

Is the sugar depicted the α - or the β - form? Circle the one correct answer.

α β

Is the sugar depicted a reducing sugar or a non-reducing sugar? Circle the one correct answer.

reducing non-reducing

Indicate on the above structure the 'anomeric' carbon atom that gives rise to the α or the β form.

Draw the Fischer projection of D-ribose.

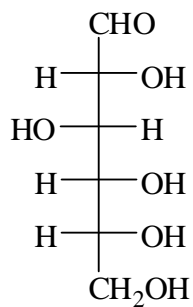
Using a selection of the species given, draw a nucleoside and a nucleotide.

Nucleoside	Nucleotide
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Indicate the likely hydrogen-bonding interactions between complementary strands of RNA containing cytosine and guanine.

Marks
5

- The open chain form of D-glucose has the structure shown.



Draw the Haworth projection of β -D-glucopyranose.

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Draw the major organic product of the reaction of D-glucose with the following reagents.

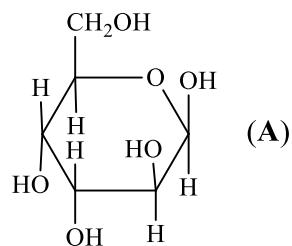
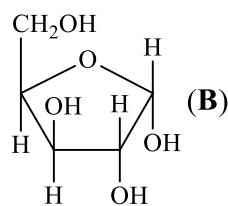
1. NaBH_4 2. $\text{H}^+ / \text{H}_2\text{O}$	$[\text{Ag}(\text{NH}_3)_2]^+ / \text{OH}^-$
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Would you expect D-glucose to be water soluble? Why?

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Marks
6

- Consider the following two monosaccharides, (A) and (B).


 β -D-altropyranose

 α -D-xylofuranose

Draw Fischer projections of the open chain forms of (A) and (B).

(A)	(B)
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Draw the major organic product of the reaction of D-altropyranose with the following reagents.

1. NaBH_4 2. $\text{H}^+ / \text{H}_2\text{O}$	$[\text{Ag}(\text{NH}_3)_2]^+ / \text{OH}^-$
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