

- 6** Solution X was tested for the presence of non-reducing sugars. It did **not** contain reducing sugars.

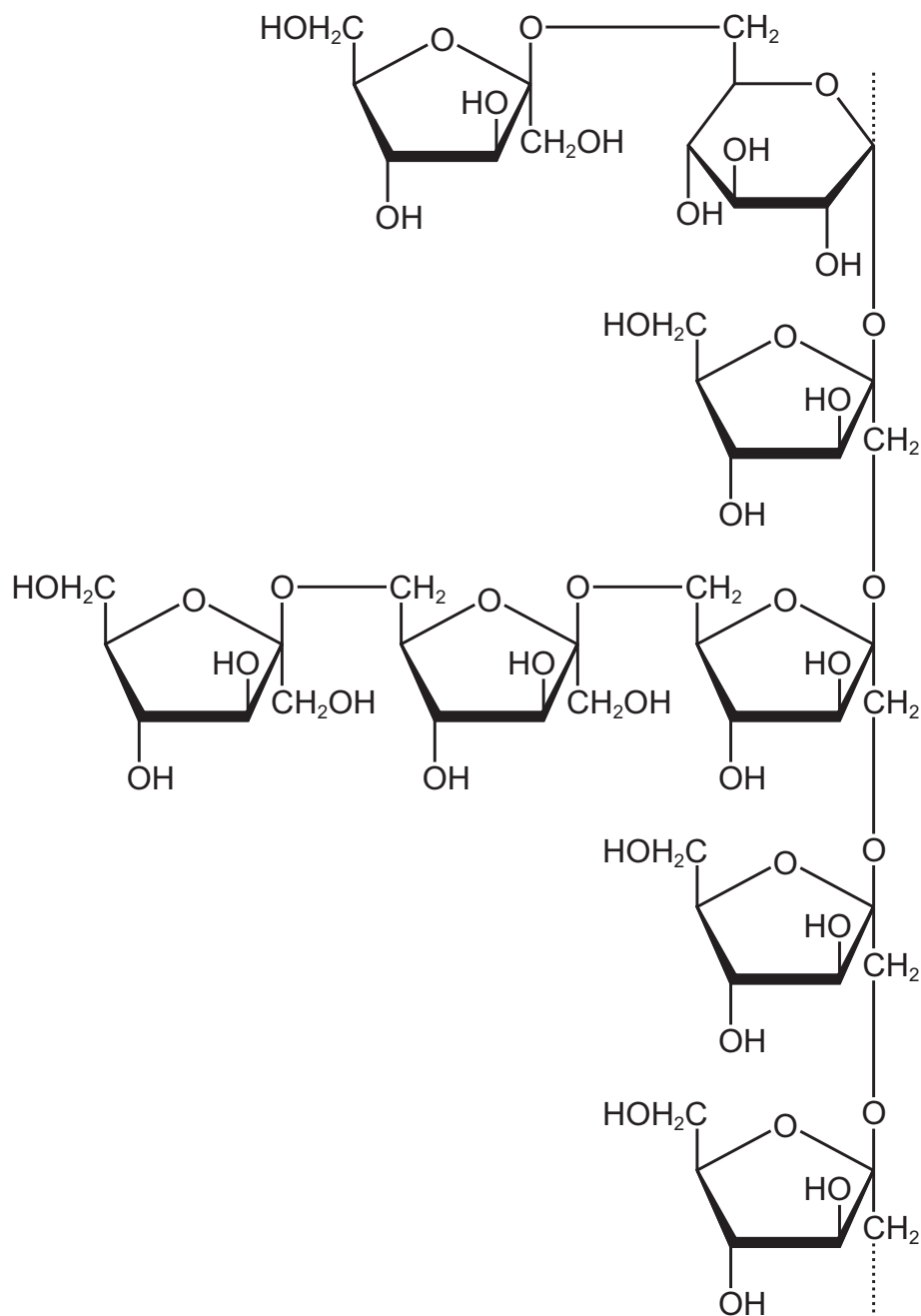
Some steps that can be used to test for the presence of biological molecules are listed.

- 1 Add Benedict's solution to the test-tube.
- 2 Add dilute hydrochloric acid to the test-tube.
- 3 Add sodium hydrogencarbonate to the test-tube.
- 4 Heat the test-tube in a water-bath.

Which order of steps to identify the presence of non-reducing sugars in solution X is correct?

- A** 1 → 4
- B** 2 → 3 → 1 → 4
- C** 2 → 4 → 3 → 1 → 4
- D** 3 → 2 → 4 → 1

7 The diagram shows the structure of part of a biological molecule.

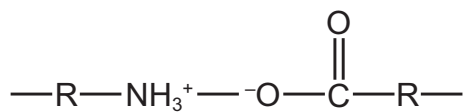
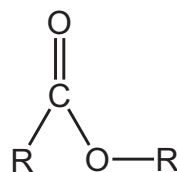
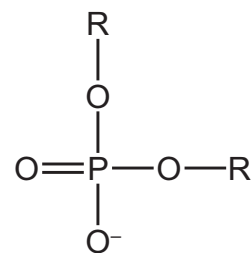


Which statements about this biological molecule are correct?

- 1 It has monomers joined by ester bonds.
- 2 It is a macromolecule.
- 3 It is a polysaccharide.

**A** 1, 2 and 3      **B** 1 and 2 only      **C** 1 and 3 only      **D** 2 and 3 only

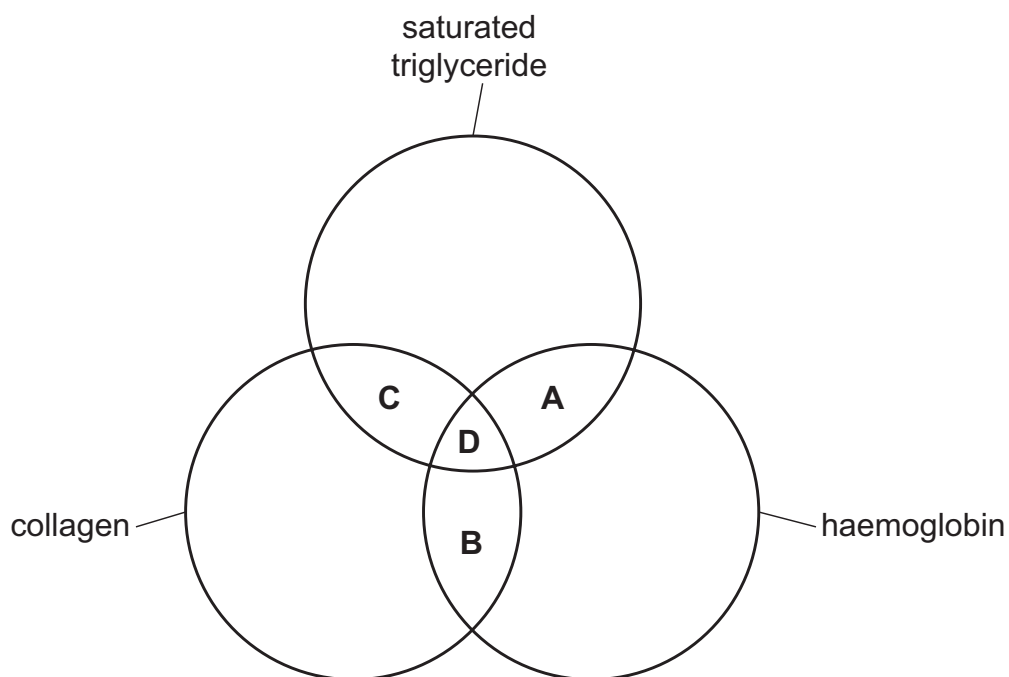
- 8 Which diagram has a covalent bond that joins monomers together to form a biological polymer in eukaryotes?

**A****B****C****D**

- 9 Which feature of storage polysaccharides means they do **not** change the water potential of cells?

- A** They are easily hydrolysed.
- B** They are compact.
- C** They are insoluble.
- D** They are branched molecules.

- 10 Which molecules contain at least four double bonds?



- 11** In some people a mutation can affect the beta chains in their haemoglobin molecules. As a result polar amino acids on the outer surfaces of the chains are replaced by non-polar amino acids.

What will be the effect on haemoglobin?

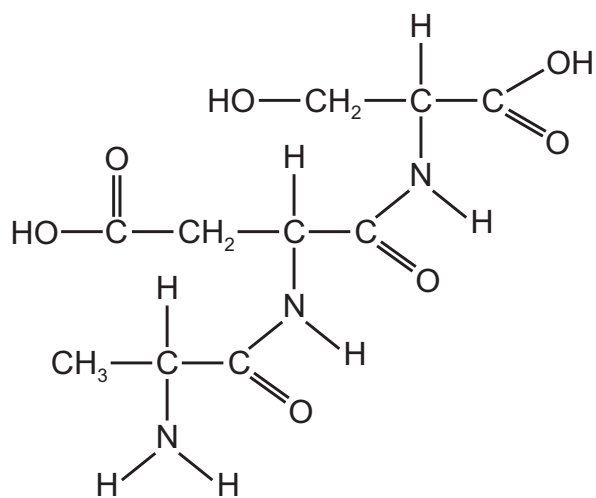
- A** Haemoglobin will become less soluble.
- B** Haemoglobin will become more soluble.
- C** Hydrophobic interactions between amino acids will decrease.
- D** More hydrogen bonds will form in the molecule.

**6** A student carried out four tests for biological molecules. The observations are shown in the table.

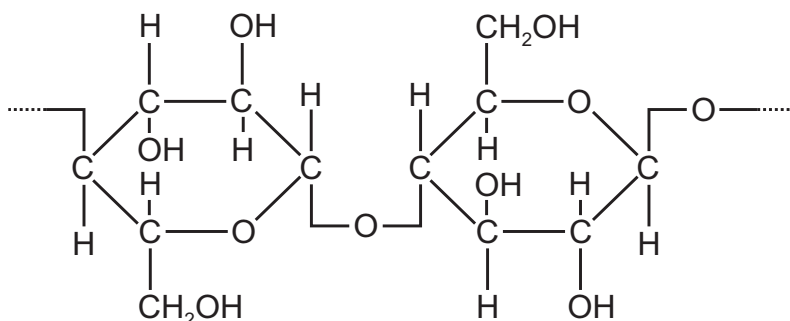
| test       | observations |
|------------|--------------|
| iodine     | orange       |
| biuret     | purple       |
| Benedict's | orange       |
| emulsion   | clear        |

The diagrams show molecules or parts of molecules.

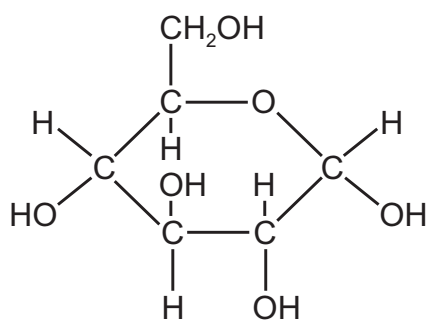
Which pair is present in the solution?



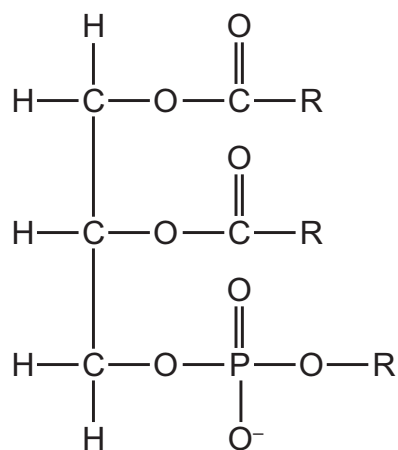
1



2



3



4

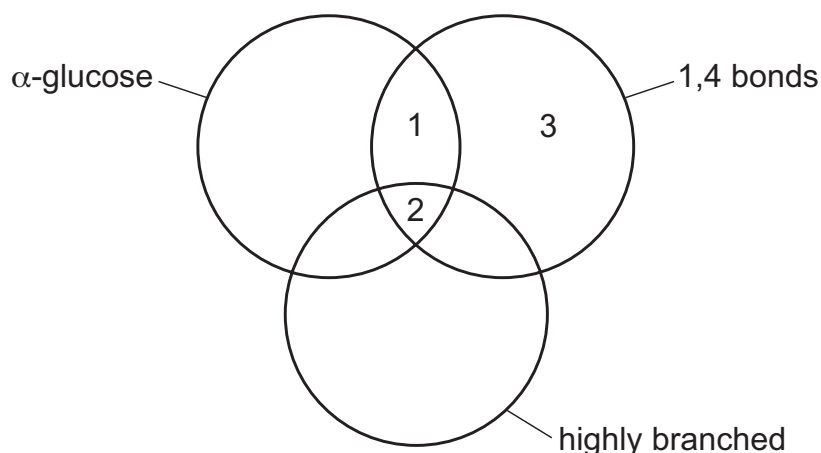
**A** 1 and 2

**B** 1 and 3

**C** 2 and 3

**D** 3 and 4

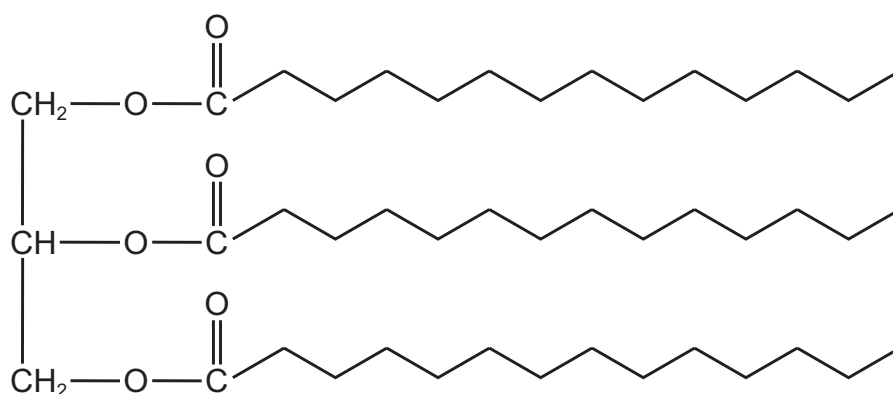
7 The diagram shows some relationships between features of carbohydrates.



Which row correctly matches the carbohydrate with some of its features?

|          | 1           | 2           | 3           |
|----------|-------------|-------------|-------------|
| <b>A</b> | amylopectin | glycogen    | amylose     |
| <b>B</b> | amylose     | amylopectin | cellulose   |
| <b>C</b> | cellulose   | glycogen    | sucrose     |
| <b>D</b> | glycogen    | amylose     | amylopectin |

8 The diagram shows a triglyceride molecule.



Which statement is correct for the structure and function of this triglyceride?

- A** The glycerol head forms hydrogen bonds with water in cytoplasm to produce oil droplets.
- B** The hydrophobic fatty acids allow only small molecules to pass through the cell surface membrane.
- C** It packs closely with identical triglyceride molecules to form energy reserves in lysosomes.
- D** It has long hydrocarbon chains that release high energy output per unit mass when oxidised.

**10** Which bonds between amino acids hold the shape of the secondary structure and also the tertiary structure of proteins?

- A** peptide bonds
- B** disulfide bonds
- C** hydrogen bonds
- D** ionic bonds