

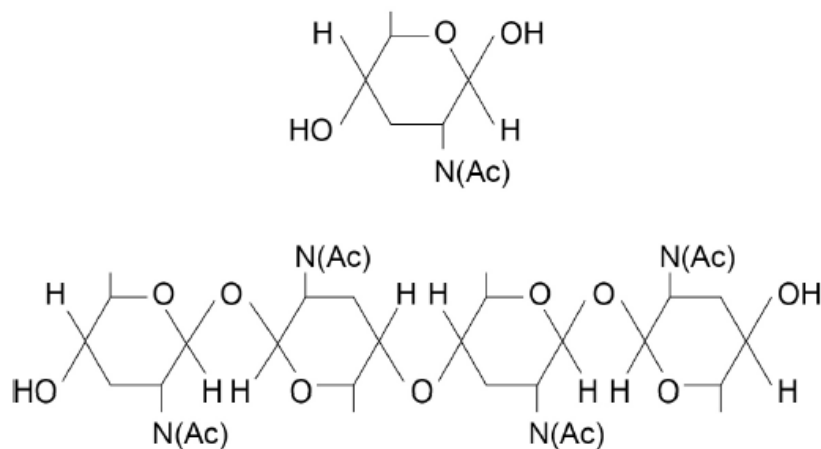
**AQA – Biological Molecules – A2 Biology**

1. No.2

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Chitin is a polysaccharide. The chitin monomer is a  $\beta$ -glucose molecule with one OH group replaced by an  $\text{NHCOCH}_3$  group.  $\text{NHCOCH}_3$  can be represented by  $\text{N}(\text{Ac})$ .

**Figure 1** shows the monomer that forms chitin and the chitin polymer.

**Figure 1**

Chitin has a similar structure to cellulose.

Use **Figure 1** to describe **three** ways the structure of chitin is similar to the structure of cellulose.

**[3 marks]**

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- 2 \_\_\_\_\_  
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| 0 | 2 | . | 2 |
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Chitin keeps the tracheae open in the tracheal system of gas exchange in an insect. Gas exchange does **not** occur in the tracheae.

Explain the importance of **one** adaptation of the gas exchange surface in the tracheal system of an insect.

**[2 marks]**

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Lignin is a polymer found in the walls of xylem vessels in plants. Lignin keeps the xylem vessel open as a continuous tube.

Explain the importance of the xylem being kept open as a continuous tube.

**[3 marks]**

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**[5 marks]**

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

Describe the structure of DNA and the structure of a chromosome.

**[6 marks]**

[illegible]

Mutation can result in an increase in genetic variation within a species.

**[4 marks]**

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.