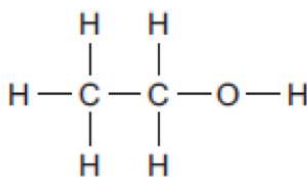


0 1

This question is about ethanol.

Figure 1 shows the displayed structure of ethanol.

Figure 1



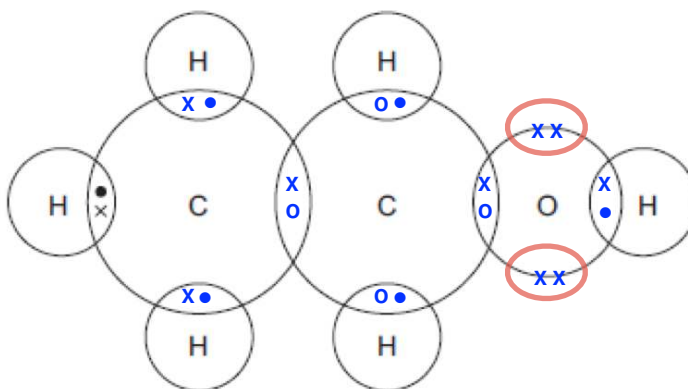
0 1

1

Complete the dot and cross diagram in **Figure 2** to show the bonding in ethanol. Show the outer shell electrons only.

[2 marks]

Figure 2



TOP TIP :

Any combination of dots, crosses or other symbols is allowed.

But don't forget the non-bonding electrons on the oxygen atom.

0 2

The names, structures and boiling points of ethanol and two other alcohols are shown in **Table 1**.

Table 1

Name	Methanol	Ethanol	Propanol
Structure	$ \begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{O}-\text{H} \\ \\ \text{H} \end{array} $	$ \begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{O}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array} $	$ \begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{O}-\text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array} $
Boiling point in °C	65	78	97

0 2

1

Use your knowledge of structure and bonding to suggest why the boiling points increase as the number of carbon atoms increases.

(as the molecules get bigger or the number of carbon atoms increases) [3 marks]

the intermolecular forces [1]

increase [1]

allow more / stronger (intermolecular forces)

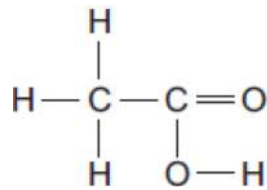
and therefore require more (heat) energy to overcome [1]

breaking covalent bonds or unspecified bonds max 1 mark

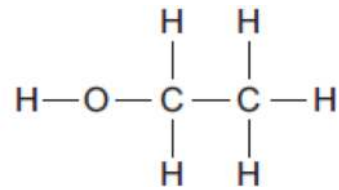
0 3

The diagrams represent two compounds, A and B.

Compound A



Compound B



Compound B is an alcohol.

0 3

1

Name compound B.

[1 mark]

ethanol

Use the correct answer from the box to complete the sentence.

burned

decomposed

oxidised

0 3

2

To form compound A,

compound B is oxidised

[1 mark]

(Total 7 marks)

End