

**AQA – Organic analysis – AS Chemistry P2**

1. No.1

0 1

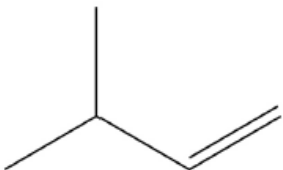
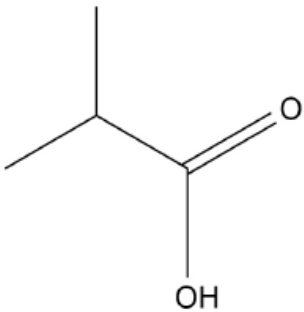
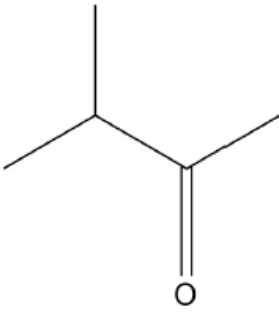
This question is about the analysis of organic compounds.

0 1 . 1

Table 1 shows the results of chemical tests on three organic compounds.

Complete the empty boxes in the table.

**Table 1**

|                                     |                                                                                   |                                                                                    |                                                                                     |
|-------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Chemical test</b>                |  |  |  |
| <b>Add bromine water</b>            | orange to colourless                                                              |                                                                                    | no visible change                                                                   |
|                                     | no visible change                                                                 | bubbles of gas                                                                     | no visible change                                                                   |
| <b>Warm with Fehling's solution</b> | no visible change                                                                 | no visible change                                                                  |                                                                                     |

**[3 marks]**

|   |   |   |   |
|---|---|---|---|
| 0 | 1 | . | 2 |
|---|---|---|---|

0.500 g of a hydrocarbon is analysed.  
The hydrocarbon contains 0.450 g of carbon.

Calculate the empirical formula of this hydrocarbon.

**[3 marks]**

Empirical formula \_\_\_\_\_

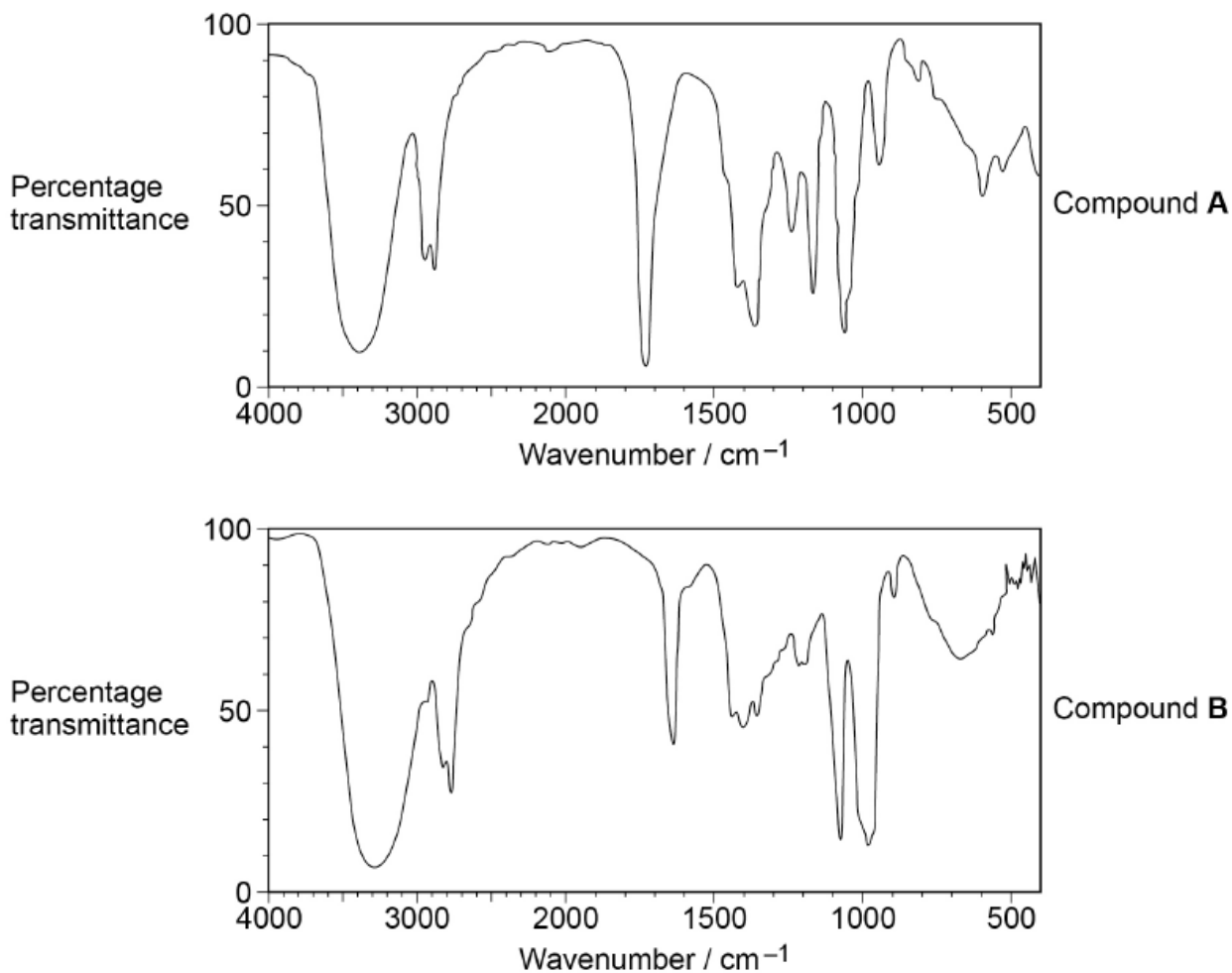
2. No.2

0 2

This question is about infrared spectroscopy.

0 2

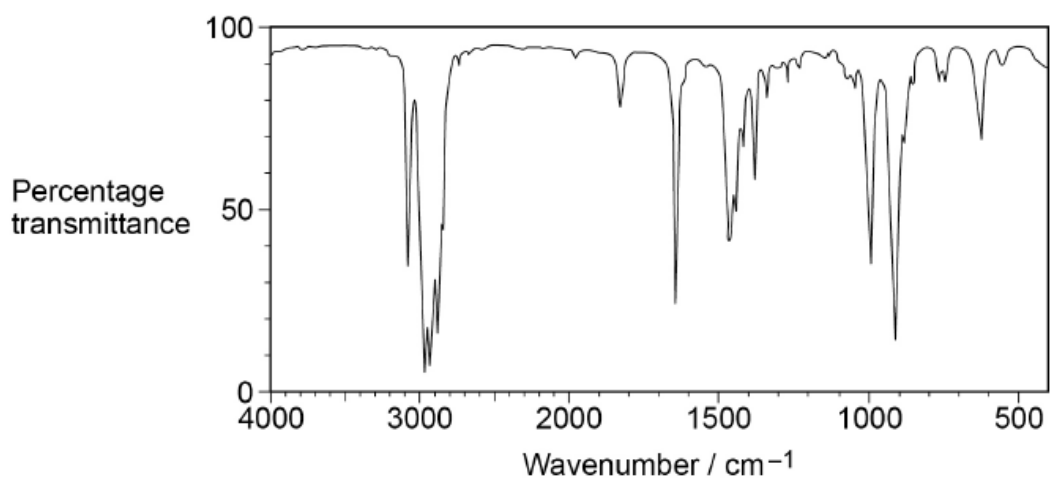
. 1

Compounds **A** and **B** both have the molecular formula  $C_4H_8O_2$ **Figure 1** shows the infrared spectra of compounds **A** and **B**.Use the infrared spectra to deduce a possible structural formula for compound **A** and a possible structural formula for compound **B**.**[2 marks]****Figure 1**Possible structural formula of **A**Possible structural formula of **B**

0 2 . 2

Figure 2 shows the infrared spectrum of either pent-1-ene or 2-methylbut-2-ene.

Figure 2



Outline how to use the infrared spectrum to determine whether the compound is pent-1-ene or 2-methylbut-2-ene.

[2 marks]

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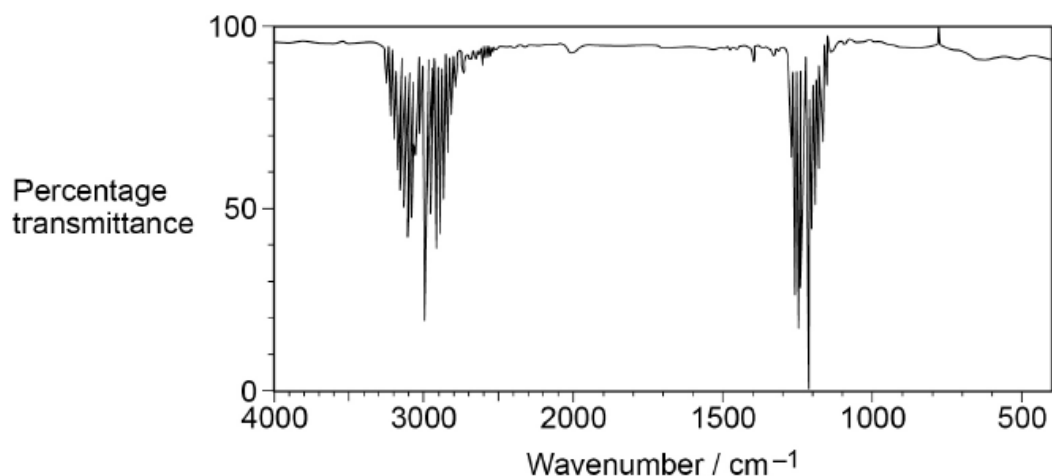
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0 2 . 3

Figure 3 shows the infrared spectrum of methane.

Figure 3

Use information from **Figure 3** to explain why methane acts as a greenhouse gas.

[1 mark]

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3. No.18

High resolution mass spectrometry can be used to determine the precise relative molecular mass of compounds.

Which compound has a precise relative molecular mass that is different from the precise relative molecular mass of butanone?

[1 mark]

A but-3-en-1-ol

☐

B cyclobutanol

☐

C methylpropanal

☐

D prop-2-enoic acid

☐