

Candidate Name

Centre Number

Candidate Number

**CHEMISTRY****9701/52****Paper 5 Planning, Analysis and Evaluation****Mock Exam 2026 (Set 3 of 5)****1 hour 15 minutes**

You must answer on the question paper.

No additional materials are needed.

**INSTRUCTIONS**

- \* Answer all questions.
- \* Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- \* Write your name, centre number and candidate number in the boxes at the top of the page.
- \* Write your answer to each question in the space provided.
- \* Do not use an erasable pen or correction fluid.
- \* Do not write on any bar codes.
- \* You may lose marks if you do not show your working or if you do not use appropriate units.
- \* You may use a calculator.

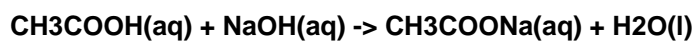
**INFORMATION**

- \* The total mark for this paper is 30.
- \* The number of marks for each question or part question is shown in brackets [ ].

Question	1	2	Total
Marks	15	15	30

This document has 16 pages.

- 1 A student is given a sample of vinegar and wants to determine the concentration of ethanoic acid in it by titrating with standardised sodium hydroxide solution of concentration  $0.100 \text{ mol/dm}^3$ .



- (a) Draw a fully labelled diagram of the apparatus needed for this titration. Include the burette, conical flask, and any indicators or accessories.

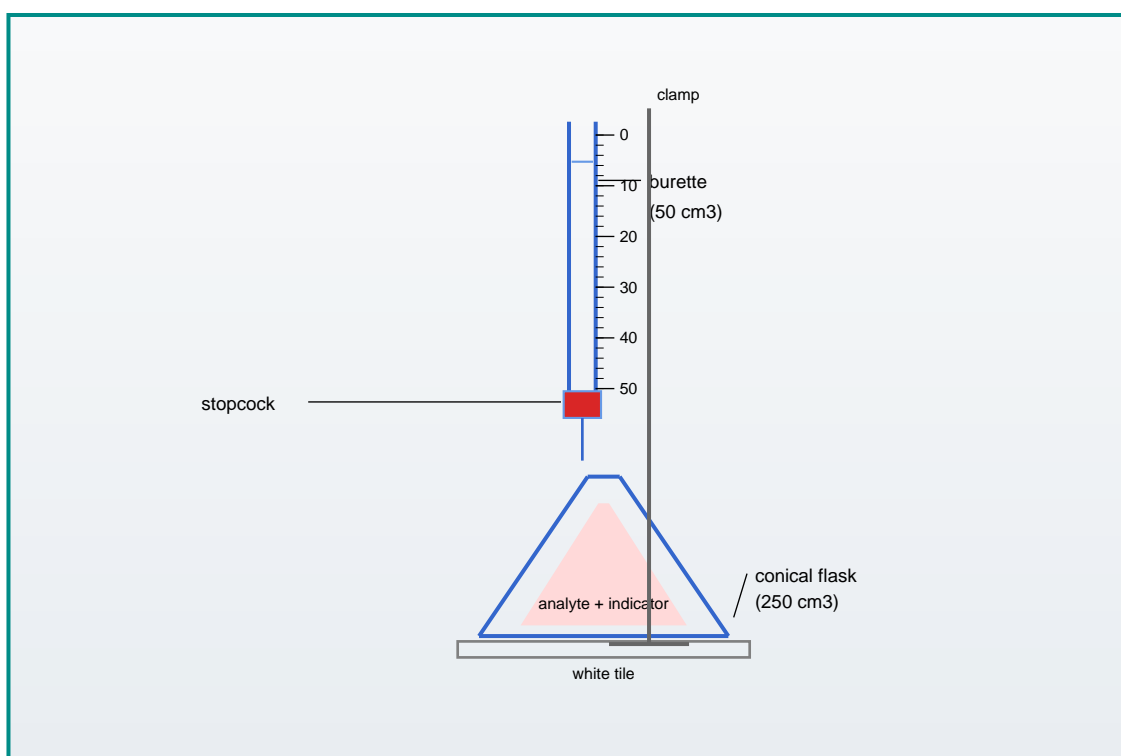


Fig. 1.1

[3]

- (b) Name a suitable indicator for this titration and state the colour change at the end point.
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**(d)** Explain how you would use the titre values to calculate the concentration of ethanoic acid in the vinegar.

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**[3]**

**(e)** State two precautions to ensure accurate results in this titration.

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**[2]**

**[Total: 15]**

- 2 A student investigated the enthalpy of combustion of a series of alcohols by burning them under a copper calorimeter containing 100 cm<sup>3</sup> of water. The temperature rise and mass of alcohol burned were recorded.

(a) The results are shown in Table 2.1.

Table 2.1

Alcohol	Mr	Mass burned / g	Temp rise / C	Delta H / kJ/mol
Methanol	32	0.85	8.2	
Ethanol	46	0.72	10.5	
Propan-1-ol	60	0.65	12.8	
Butan-1-ol	74	0.58	14.1	
Pentan-1-ol	88	0.52	15.6	

- (i) Calculate the enthalpy of combustion for methanol using the formula:  $\Delta H = -(m \times c \times \Delta T \times Mr) / (\text{mass burned} \times 1000)$  where  $m = 100 \text{ g}$ ,  $c = 4.18 \text{ J/(g K)}$ .

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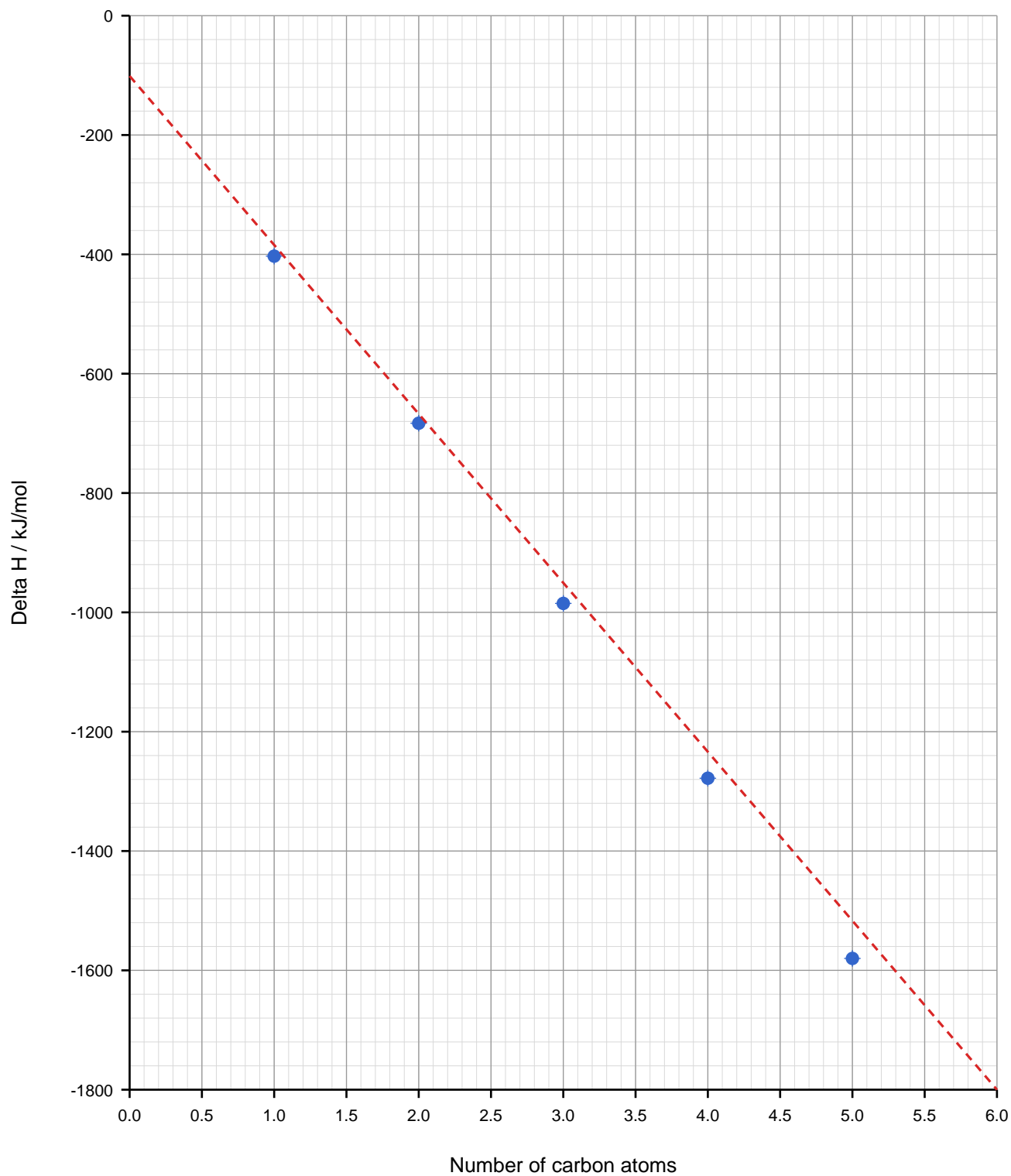
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**[2]**

**(ii)** Complete the table by calculating Delta H for all five alcohols.

**[2]**

**(b)** Plot a graph of Delta H (y-axis) against the number of carbon atoms (x-axis). Draw a line of best fit.

**[3]**





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