

Name of the Student: _____

Max. Marks : 10 Marks

Time : 10 Minutes

Q1.

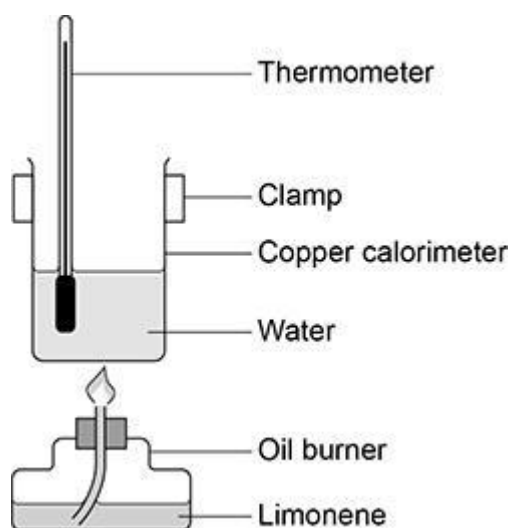
This question is about enthalpy of combustion.

- (a) Limonene is found in the skin of citrus fruits.

The figure below shows a diagram of the apparatus used in an experiment to determine a value for the enthalpy of combustion of limonene.

When 1.31 g of limonene are burned, the temperature of the 60.0 g of water in the copper calorimeter increases by 52.1 °C

The specific heat capacity of water is $4.18 \text{ J K}^{-1} \text{ g}^{-1}$



Calculate a value for the enthalpy of combustion, in kJ mol^{-1} , of limonene ($\text{C}_{10}\text{H}_{16}$).

Enthalpy of combustion _____ kJ mol^{-1}

(4)

- | Method | | Enthalpy of combustion / kJ mol ⁻¹ |
|--------|--|---|
| 1 | Standard enthalpy of combustion $\Delta_c H^\ominus_{298}$ | -4194 |
| 2 | Value calculated from a calorimetry experiment | -1100 |
| 3 | Value calculated using mean bond enthalpies | -3159 |

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Q2.

Which statement correctly describes a trend down Group 7 from Cl to I?

X represents Cl, Br or I

- A** The boiling point of HX increases.
- B** The bond dissociation energy of H–X increases.
- C** The standard electrode potential value for
 $X_2(aq) + 2 e^- \rightarrow 2 X^-(aq)$ becomes more positive.
- D** The solubility of AgX in ammonia increases.

☐☐☐☐

(Total 1 mark)