Name of the Student:_____
Max. Marks : 10 Marks **Time : 10 Minutes**

Q1.

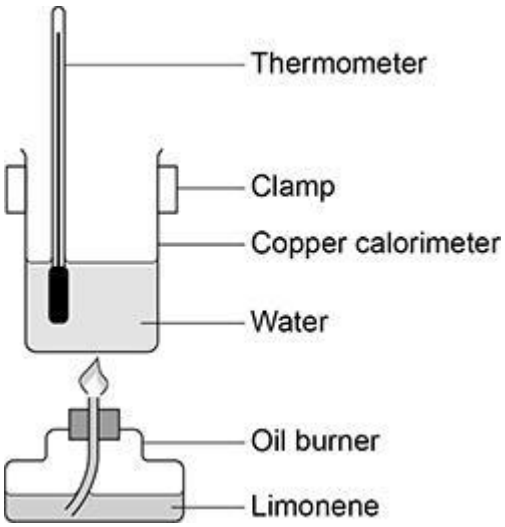
This question is about enthalpy of combustion.

(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 J K^{-1} g^{-1}



Calculate a value for the enthalpy of combustion, in kJ mol^{-1}, of limonene ($C_{10}H_{16}$).

Enthalpy of combustion _____ kJ mol^{-1}

(4)

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(b) The table below shows values, obtained by different methods, for the enthalpy of combustion of a different liquid hydrocarbon.

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

Suggest reasons for the differences between the values obtained by each of Methods **2** and **3**, and the value obtained by Method **1** in the table above.

(5)

(Total 9 marks)

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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 $X_2(aq) + 2\ e^- \longrightarrow 2\ X^-(aq)$ becomes more positive. ⬭

D The solubility of AgX in ammonia increases. ⬭

(Total 1 mark)

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