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AS Chemistry

C8: Chemical Energetics -1

Assignment Questions

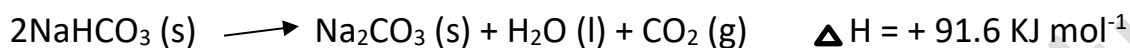
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Chemical Energetics -1

Q1: Define standard enthalpy change of a reaction.

Q2: Baking powder contain sodium hydrogen carbonate.

This decomposes as



Draw a labelled enthalpy level diagram for this reaction.

Q3: Define the standard enthalpy change of formation.

Q4: The following results were obtained in the experiment, to measure the enthalpy change of combustion of methanol. In the experiment 170.0 g of water was used.

Initial Temperature Of water / °C	Final Temperature Of water / °C	Initial mass of spirit Burner / g	Final mass of spirit Burner / g
21.8	42	124	122.5

Calculate the heat $\Delta_c H$ for methanol in KJ mol^{-1} . (Value of c for water = $4.18 \text{ J g}^{-1} \text{ K}^{-1}$)

Q5: Calculate the standard enthalpy change of neutralisation for the reaction between HCl (aq) and NaOH (aq). The following data is obtained from the experiment

Volume of 2.00 mol dm^{-3} HCl	25.0 cm^3
Volume of 2.10 mol dm^{-3} NaOH	25.0 cm^3
Initial temperature of acid	20° C
Initial temperature of alkali	20° C
Maximum Temperature reached	34° C

a) Calculate the heat energy transferred using

$$Q = mc \Delta T$$

(Assume the specific heat capacity of the final solution is $4.18 \text{ J g}^{-1} \text{ K}^{-1}$ and its density is 1 g cm^{-3})

b) Calculate the enthalpy change of neutralisation for the reaction.

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