

**Chemistry**  
**Standard level**  
**Paper 2**

Practice paper

**Topic: Thermodynamics**



(b) State why bond enthalpy values are always positive integers.

[1]

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3. A student burns 1.00 g of ethanol,  $C_2H_5OH$ , in a spirit burner to heat 100 g of water. The temperature rises by 30.0 degrees C.

(a) Calculate the enthalpy of combustion of ethanol based on this data.

[3]

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(b) The data booklet value is  $-1367 \text{ kJ mol}^{-1}$ . Suggest two reasons for the discrepancy, other than heat loss to the air.

[2]

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4. Definitions are critical for thermodynamics.

(a) Write the balanced thermochemical equation for the standard enthalpy of formation of liquid water.

[2]

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5. Enthalpy of neutralization is usually independent of the specific strong acid/base pair.

(a) State the ionic equation for the neutralization of a strong acid by a strong base. **[1]**

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(b) Explain why the enthalpy of neutralization for HF(aq) with NaOH(aq) might differ from that of HCl(aq) with NaOH(aq). **[2]**

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