2024 Higher Chemistry Paper 1 – Q17

Section: Chemistry in Society
Topic: Chemical Energy (Enthalpy)

Question summary (Q17):
A potential energy diagram is shown with levels X, Y, Z. The question asks: what is the enthalpy change for the forward reaction?

Worked Solution:
• On a potential energy diagram:
  – Reactants are at energy level X.
  – Products are at energy level Y.
  – The peak Z represents the activated complex (transition state).
• Enthalpy change (ΔH) = Energy of products − Energy of reactants.
• Therefore, ΔH = Y − X.

Final Answer: B — Y − X

Revision Tips:
• Always identify reactant and product levels on energy diagrams.
• ΔH = H(products) − H(reactants).
• A negative ΔH means exothermic (products lower than reactants).
• Activation energy (E_a) = Z − X for forward reaction.