

- M1.** (a) (Enthalpy change) when 1 mol **(1)** of a compound is formed from its constituent elements **(1)** in their standard states **(1)**

3

*Allow energy or heat, Ignore evolved or absorbed
Mark each point independently*

- (b) (The enthalpy change for a reaction is) independent of the route **(1)**

1

- (c) $\Delta H_R = \sum \Delta H_f \text{ products} - \sum \Delta H_f \text{ reactants}$ **(1)**
 $= [(3 \times -286) + (3 \times -394)] - (-248)$ **(1)**
 $= -1792$ **(1)** (kJ mol⁻¹)

Deduct one mark for each error to zero

3

[7]

M2.C

[1]

M3.B

[1]

M4.D

[1]