

Hess's law of constant heat : It states that

the enthalpy change (or heat evolved or absorbed) in a particular reaction is the same whether the reaction takes place in one step or in a number of steps.

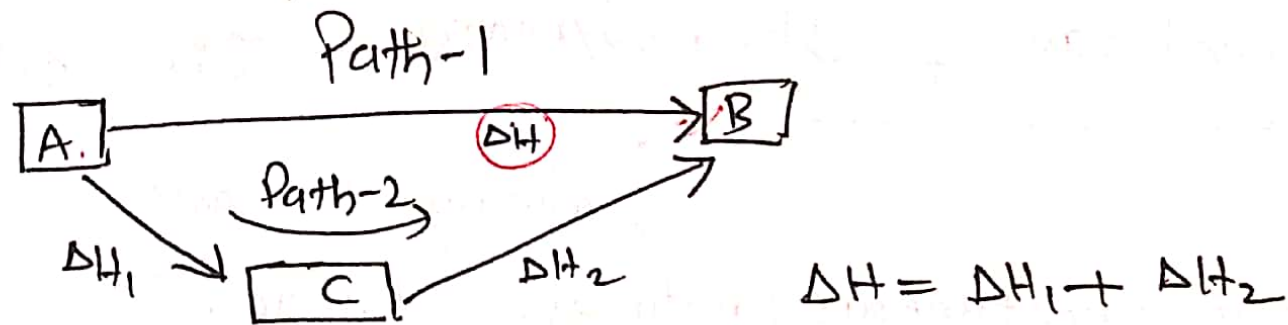


Illustration of Hess's law : Let us illustrate the law by considering

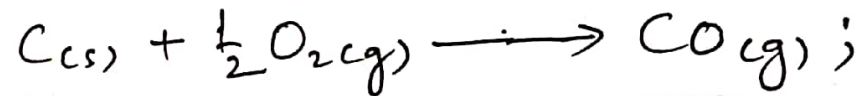
the formation of  $\text{CO}_2$  from carbon and oxygen.

Path - 1

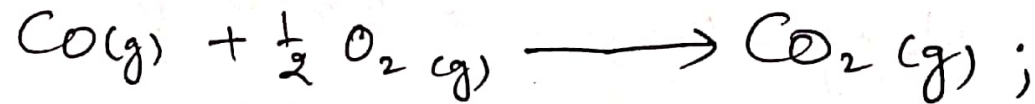


$$\Delta_r H^\circ = \underline{-393.5 \text{ kJ}}$$

Path - 2



$$\Delta_r H_1^\circ = \underline{-110.5 \text{ kJ}}$$



$$\Delta_r H_2^\circ = \underline{-283.0 \text{ kJ}}$$



$$\Delta_r H^\circ = -393.5 \text{ kJ}$$

$$\therefore \Delta H = \Delta H_1 + \Delta H_2$$