

Daily Tutorial Sheet-14

Level-3

153.(C) $\Delta H = \Delta E + \Delta n_g RT$; $\Delta H = -56 \text{ kJ / mol}$

$$\Delta n_g = 2 - 3 = -1$$

$$\Delta E = \Delta H - \Delta n_g RT = -56 - \left(\frac{-1 \times 8.34 \times 500}{1000} \right) = -51.843 \text{ kJ / mol}$$

154.(B) Heat absorbed for fusion of ice = Heat released during cooling of water.

Let x mol of ice cubes are required.

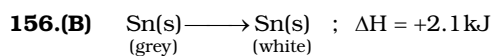
$$6 \times x = \frac{4.2 \times 500 \times 20}{1000}$$

$$x = \frac{4.2 \times 500 \times 20}{1000 \times 6} = 7$$

155.(C) $\Delta T = 0$ (Isothermal system)

$$\Delta U = nC_p \Delta T = 0$$

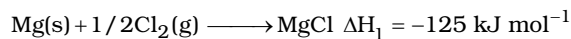
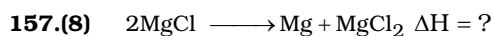
$$\Delta H = 0$$



$$\Delta H = \Delta U + P\Delta V$$

$$\Delta H - \Delta U = P\Delta V = P \times [V_{\text{white tin}} - V_{\text{grey tin}}]$$

$$= \frac{10 \times 0.986}{1000} \left[\frac{119}{7.13} - \frac{119}{5.75} \right] \text{ L atm} = \frac{10 \times 0.986}{1000} \left[\frac{119}{7.13} - \frac{119}{5.75} \right] \times 101.33 \text{ J} = -3.99 \approx -4 \text{ J}$$



$$\Delta H = \Delta H_2 - 2\Delta H_1 = -642 - (2 \times -125) = -392 \text{ kJ mol}^{-1}$$

$$\therefore -49x = -392$$

$$x = 8$$

158.(B) Reaction is exothermic, so temperature will increase.