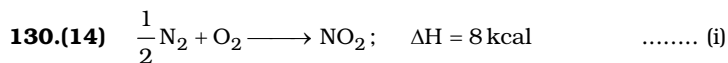
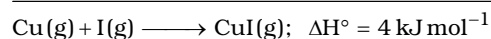
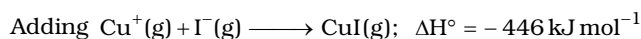
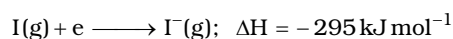
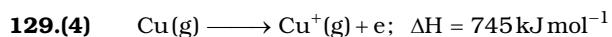
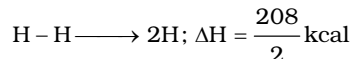
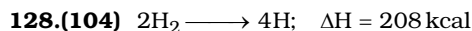


Daily Tutorial Sheet-11

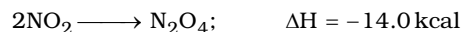
Numerical Value Type

126.(7.43) $\Delta H - \Delta U = \Delta nRT = 3 \times 8.314 \times 298 = -7432 \text{ J} = -7.43 \text{ kJ}$

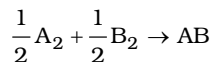
127.(5) Now, heat evolved during neutralization of 10 mL of each acid and base is twice the heat evolved during neutralization of 5 mL of each acid and base but the quantity of solution taking heat is also doubled thus, same temperature rise is noticed.



By equation (i) $\times 2$ - (ii)



131.(400) $\epsilon_{\text{A-A}} = x \quad \epsilon_{\text{A-B}} = x \quad \epsilon_{\text{B-B}} = x/2$



$$\frac{1}{2}x + \frac{x}{4} - x = -100 \Rightarrow x = 400$$

132.(550) $\Delta H = -2 \times [2 \times \epsilon_{\text{O-H}}] + 2 \times \epsilon_{\text{H-H}} + \epsilon_{\text{O=O}} = -4 \times 220 + 2 \times 105 + 120 = -550 \text{ kJ}$

133.(10) $\Delta H = \frac{2.5 \times 16}{4} = -10 \text{ kcal mol}^{-1}$

134.(196) By equation (i) + (ii).



135.(17) $\Delta H = (\Delta H_{\text{comb}}\text{CH}_4) - [\Delta H_{\text{comb}}\text{C(s)} + 2 \times \Delta H_{\text{comb}}\text{H}_2(\text{g})] = 17 \text{ cal}$

136.(93) $\Delta H = -2[3 \times \epsilon_{\text{N-H}}] + \epsilon_{\text{N=N}} + 3 \times \epsilon_{\text{H-H}} = -2 \times 3 \times 391 + 945 + 436 \times 3 = -93 \text{ kJ}$

137.(427) $\Delta H = -2 \epsilon_{\text{H-Cl}} + \epsilon_{\text{H-H}} + \epsilon_{\text{Cl-Cl}}$

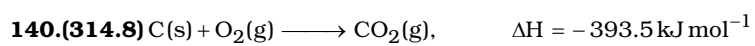
$$-182 = -2 \times a + 430 + 242$$

$$a = 427 \text{ kJ mol}^{-1}$$

138.(11.4) 0.2 mole of HNO_3 is neutralized by 0.2 mole of NaOH to give heat = $57 \times 0.2 = 11.4 \text{ kJ}$

139.(-2.7) $\Delta n = 2 - 0 = 2$

$$\Delta H = \Delta U + \Delta n(\text{g})RT = 2100 + \left(\frac{2 \times 300 \times 8.314}{4.18} \right) \Rightarrow \Delta G = \Delta H - T\Delta S$$



44 g CO_2 is formed then heat released is $= 393.5 \text{ kJ mol}^{-1}$

35.2 g CO_2 is formed then heat released $= \frac{393.5 \times 35.2}{44} \text{ kJ} = 314.8 \text{ kJ}$