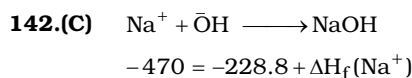


HINTS & SOLUTION WORKBOOK - 2

Thermochemistry

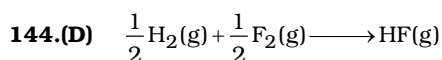
Daily Tutorial Sheet-12	Level-3
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141.(B) More $\Delta H_{\text{ionization}}$, weaker the acid, lesser the K_a value.



$$\Delta H_f(\text{Na}^+) = -241.9 \text{ kJ}$$

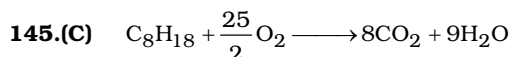
143.(B) $C_p = \frac{\Delta H}{\Delta T}$
 $\Delta T = 0$
 $C_p = \infty$



$$\Delta_f H = \Delta_r H = \frac{1}{2} \Delta H_{\text{H-H}} + \frac{1}{2} \Delta H_{\text{F-F}} - \Delta H_{\text{H-F}}$$

$$= \frac{1}{2} \times 2x + \frac{1}{2} \times x - 3 \times x = -\frac{3}{2}x \quad : \quad [\Delta H_{\text{H-H}} = 400 = 2x]$$

$$\Delta_f H_{\text{HF}} = -\frac{3}{2}x = -\frac{3}{2} \times \frac{400}{2} = -300 \text{ kJ/mol}$$



$$8\Delta_f H(\text{CO}_2) + 9\Delta_f H(\text{H}_2\text{O}) - \Delta_f H(\text{C}_8\text{H}_{18}) = \Delta H_{\text{comb}}(\text{C}_8\text{H}_{18})$$

$$8 \times (-394) + 9(-286) - (-250) = \Delta H_{\text{comb}}(\text{C}_8\text{H}_{18})$$

$$\Delta H_{\text{comb}}(\text{C}_8\text{H}_{18}) = -5476 \text{ kJ/mol}$$

146.(5) Energy released = Energy due to formation of two single bonds

$$= 2 \times 331 = 662 \text{ kJ mol}^{-1} \text{ of propene}$$

$$\Delta H_{\text{polymerisation/mol}} = 590 - 662 = -72 \text{ kJ mol}^{-1}$$

$$\Delta H_{\text{polymerisation}} = -72 \times n = -360$$

$$n = 5$$