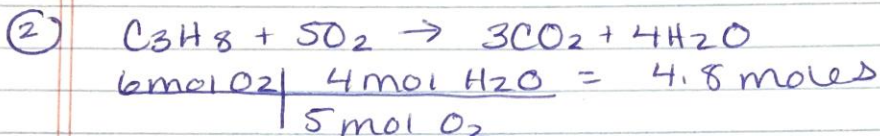


Spring Final - Chunk #4

$$\textcircled{1} \quad \frac{3.8 \text{ mol N}_2 \mid 2 \text{ mol NH}_3}{1 \text{ mol N}_2} = 7.6 \text{ moles}$$



$$\textcircled{3} \quad \frac{60.4 \text{ g H}_2 \mid 1 \text{ mol H}_2 \mid 2 \text{ mol NH}_3 \mid 17.03 \text{ g NH}_3}{2.02 \text{ g H}_2 \mid 3 \text{ mol H}_2 \mid 1 \text{ mol NH}_3} = 339.5 \text{ g}$$

$$\textcircled{4} \quad \frac{12.5 \text{ g C}_2\text{H}_4 \mid 1 \text{ mol C}_2\text{H}_4 \mid 2 \text{ mol CO}_2 \mid 44 \text{ g}}{28.05 \text{ g} \mid 1 \text{ mol C}_2\text{H}_4 \mid 1 \text{ mol CO}_2} = 39.2 \text{ g}$$

$$\textcircled{5} \quad \frac{9.6 \times 10^{31} \text{ molecules Cl}_2 \mid 1 \text{ mol Cl}_2 \mid 1 \text{ mol H}_2}{6.02 \times 10^{23} \text{ molecules Cl}_2 \mid 1 \text{ mol Cl}_2} = 1.59 \times 10^8 \text{ moles}$$

$\textcircled{6}$ exo $\textcircled{7}$ endo $\textcircled{8}$ exo

$\textcircled{9}$ endo = melting, ~~boiling~~ boiling
 exo = freezing, burning

$$\textcircled{10} \quad Q = (4.3)(0.87)(39 - 20) = 71.08 \text{ J}$$

$$\textcircled{11} \quad 480 = (10)(0.18)(\Delta T) = \Delta T = 266.7^\circ$$

$$\textcircled{12} \quad 190 = (5)(c)(90 - 30) \quad c = 0.63 \text{ J/g}^\circ\text{C}$$

$$\textcircled{13} \quad Q_1 = (20)(2.09)(0 - -30) = 1254 \text{ J}$$

$$Q_2 = (20)(3.33) = 6660 \text{ J}$$

$$Q_3 = (20)(4.18)(50 - 0) = 4180 \text{ J}$$

$$Q_T = Q_1 + Q_2 + Q_3 = 12094 \text{ J}$$