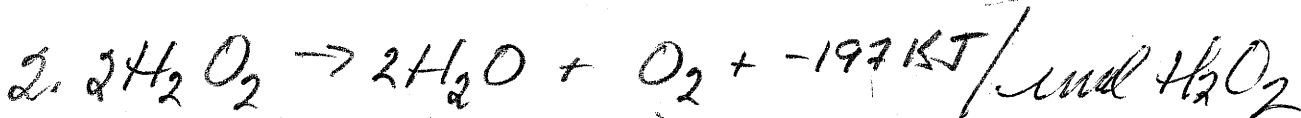




$$\left(.05 \text{ mol C}_6\text{H}_{12}\text{O}_6 \right) \left(\frac{-2043 \text{ kJ}}{1 \text{ mol}} \right) = \boxed{-102.15 \text{ kJ}} \\ \text{RELEASED}$$

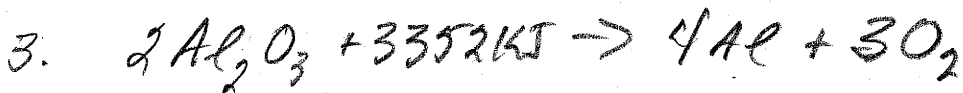


$$\left(57 \text{ g H}_2\text{O}_2 \right) \left(\frac{1 \text{ mol}}{34.02 \text{ g}} \right) = 1.499 \text{ mol H}_2\text{O}_2$$

$$= -295.30 \text{ kJ}$$

$$\left(1.499 \text{ mol H}_2\text{O}_2 \right) \left(\frac{-197 \text{ kJ}}{1 \text{ mol H}_2\text{O}_2} \right)$$

$$= \boxed{-295.30 \text{ kJ}} \\ \text{PRODUCED}$$



$$3 \text{ kg Al} = 3000 \text{ g Al} \quad \left(\frac{3000 \text{ g Al}}{26.98 \text{ g}} \right) = 111.193 \text{ mol}$$

$$\left(111.193 \text{ mol Al} \right) \left(\frac{2 \text{ mol Al}_2\text{O}_3}{4 \text{ mol Al}} \right) = 55.597 \text{ mol Al}_2\text{O}_3$$

$$\left(55.597 \text{ mol Al}_2\text{O}_3 \right) \left(\frac{101.96 \text{ g}}{1 \text{ mol}} \right) = 5668.67 \text{ g Al}_2\text{O}_3 \text{ NEEDED} \\ = 5.67 \text{ kg Al}_2\text{O}_3$$

$$\left(111.193 \text{ mol Al} \right) \left(\frac{3352 \text{ kJ}}{4 \text{ mol Al}} \right) = \boxed{93179.73 \text{ kJ NEEDED}}$$



$$\left(35 \text{ g C} \right) \left(\frac{1 \text{ mol}}{12.01 \text{ g}} \right) = 2.914 \text{ mol C}$$

$$\left(2.914 \text{ mol C} \right) \left(\frac{-394 \text{ kJ}}{1 \text{ mol}} \right) = -1148.12 \text{ kJ}$$

$$= \boxed{-1148.12 \text{ kJ}} \\ \text{RELEASED}$$



$(11.5 \text{ g } C_2H_5OH) \left(\frac{1 \text{ mol}}{46.07 \text{ g}} \right) = .25 \text{ mol } C_2H_5OH$

$(.25 \text{ mol } C_2H_5OH) (-950 \text{ kJ/mol}) = -237.5 \text{ kJ}$

$(-237.5 \text{ kJ produced})$



NOT NECESSARY TO ANSWER THIS QUESTION

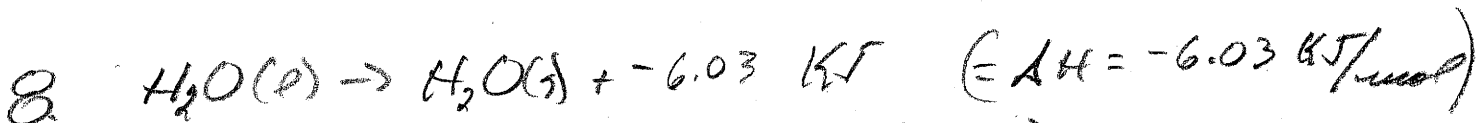
$(33 \text{ g } C_3H_8) \left(\frac{1 \text{ mol}}{44.11 \text{ g}} \right) = .748 \text{ mol } C_3H_8$

$(.748 \text{ mol } C_3H_8) \left(\frac{-2200 \text{ kJ}}{1 \text{ mol}} \right) = -1645.6 \text{ kJ}$

7. $\Delta H_{SO_2} = -297 \text{ kJ/mol}$

$(25 \text{ g } SO_2) \left(\frac{1 \text{ mol}}{64.06 \text{ g}} \right) = .39 \text{ mol } SO_2$

$(.39 \text{ mol } SO_2) (-297 \text{ kJ/mol}) = -116.13 \text{ kJ}$



$3.0 \text{ L } H_2O = (3000 \text{ mL } H_2O) \left(\frac{1 \text{ g}}{1 \text{ mL}} \right) = 3000 \text{ g } H_2O$

$(3000 \text{ g } H_2O) \left(\frac{1 \text{ mol}}{18.02 \text{ g}} \right) = 166.482 \text{ mol } H_2O$

$(166.482 \text{ mol } H_2O) (-6.03 \text{ kJ/mol}) = -1003.89 \text{ kJ}$