

$$\frac{100.0 \text{g C}_8\text{H}_{18}}{114.0 \text{g}} \left| \frac{1 \text{mol C}_8\text{H}_{18}}{114.0 \text{g}} \right| \frac{16 \text{mol CO}_2}{2 \text{mol H}_2\text{O}} \left| \frac{44.0 \text{g CO}_2}{1 \text{mol CO}_2} \right|$$

$$= 309 \text{g CO}_2$$

$$\frac{100.0 \text{g C}_8\text{H}_{18}}{114.0 \text{g}} \left| \frac{1 \text{mol C}_8\text{H}_{18}}{114.0 \text{g}} \right| \frac{18 \text{mol H}_2\text{O}}{2 \text{mol C}_8\text{H}_{18}} \left| \frac{18.0 \text{g H}_2\text{O}}{1 \text{mol H}_2\text{O}} \right|$$

$$= 142 \text{g H}_2\text{O}$$

$$309 \times .975 = 301 \text{g CO}_2$$

$$142 \times .975 = 138 \text{g H}_2\text{O}$$



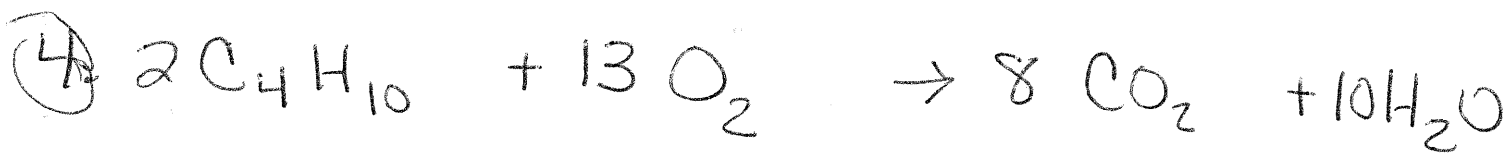
$$\frac{300.0 \text{g Fe}_2\text{O}_3}{159.6 \text{g Fe}_2\text{O}_3} \left| \frac{1 \text{mol}}{159.6 \text{g Fe}_2\text{O}_3} \right| \frac{4 \text{mol Fe}}{2 \text{mol Fe}_2\text{O}_3} \left| \frac{55.8 \text{g}}{1 \text{mol}} \right|$$

$$\boxed{2.10 \times 10^2 \text{g Fe}}$$

$$\textcircled{3} \quad \frac{3}{8} = .375 \quad \frac{9}{23} = .391$$

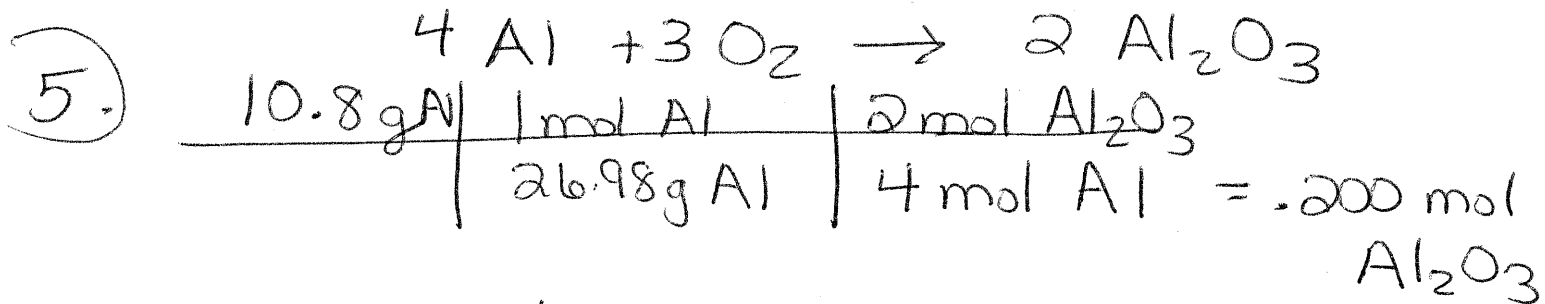
$$\frac{.391}{.375} \times 100\% = 104.266\bar{6}$$

$$\therefore \text{error} = \underline{4.27\%}$$



$$\frac{116.0 \text{ g C}_4\text{H}_{10} \mid 1 \text{ mol C}_4\text{H}_{10} \mid 8 \text{ mol CO}_2 \mid 44.0 \text{ g CO}_2}{58.0 \text{ g C}_4\text{H}_{10} \mid 2 \text{ mol C}_4\text{H}_{10} \mid 1 \text{ mol CO}_2} = 352 \text{ g}$$

$$100\% \times \frac{330.0}{352 \text{ g}} = \underline{93.8\%}$$



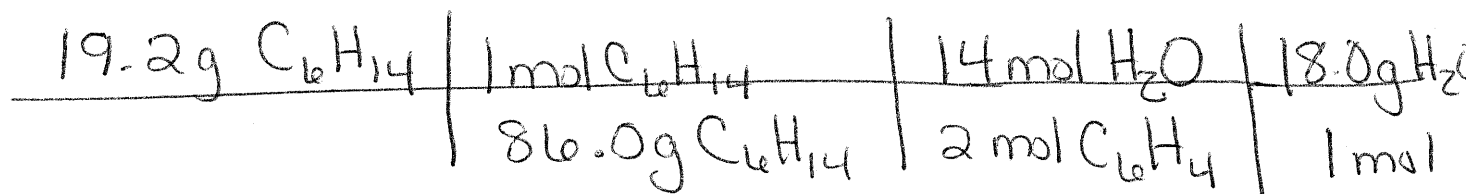
$$\frac{9.20 \text{ g O}_2 \mid 1 \text{ mol O}_2 \mid 2 \text{ mol Al}_2\text{O}_3}{32.0 \text{ g O}_2 \mid 3 \text{ mol O}_2 = .192 \text{ mol Al}_2\text{O}_3}$$

$\therefore \text{O}_2$  is limiting

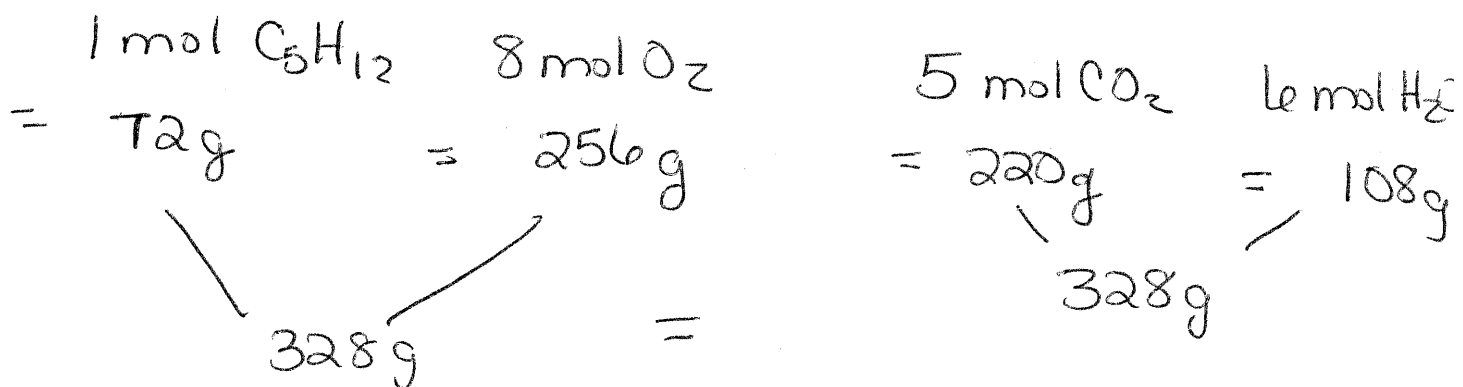
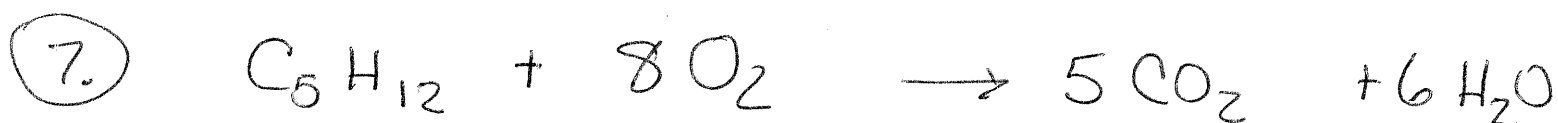
~~$$\frac{.192 \text{ mol Al}_2\text{O}_3 \mid 3 \text{ mol O}_2 \mid 32.0 \text{ g O}_2}{2 \text{ mol Al}_2\text{O}_3 \mid 1 \text{ mol Al}}$$~~

$$.192 \text{ mol Al}_2\text{O}_3 \mid 4 \text{ mol Al} \mid 26.98 \text{ g Al} = 10.4 \text{ g Al needed}$$

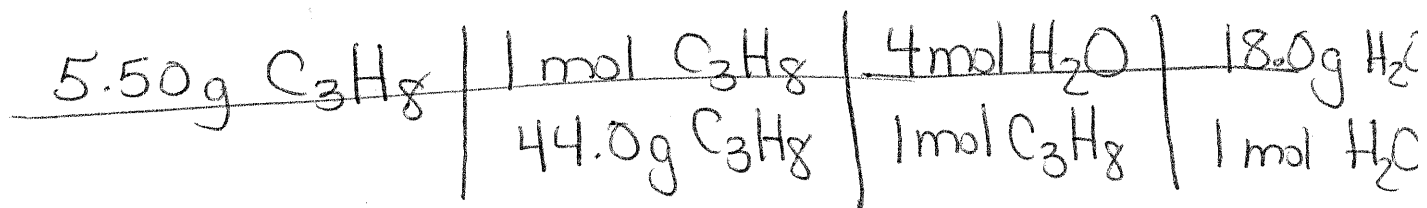
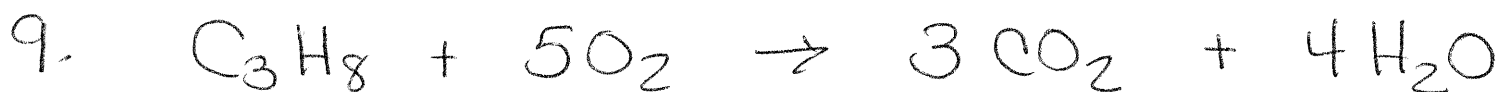
$$10.8 - 10.4 = .4 \text{ g remain}$$



$$= 28.1 \text{ g H}_2\text{O}$$

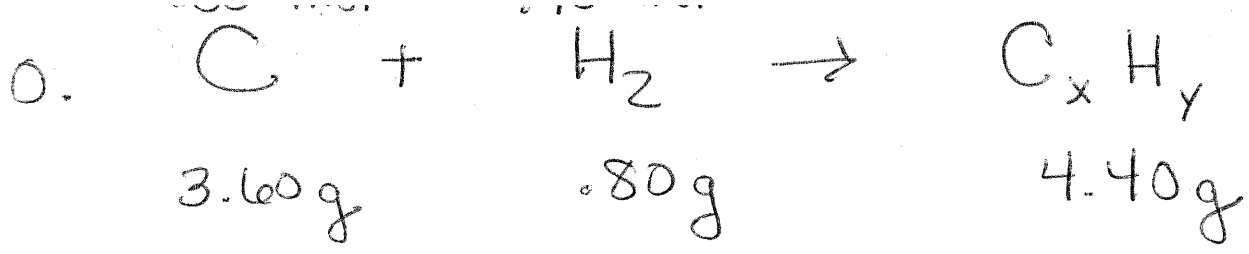


$$\textcircled{8} \quad \frac{246\text{g}}{255\text{g}} \times 100\% = \underline{96.5\%}$$



$$9.00 \text{ g H}_2\text{O}$$

$$\frac{8.50\text{g}}{9.00\text{g}} \times 100\% = \underline{94.4\%}$$



$$\frac{3.60g C}{12.0g C} \Bigg| \frac{1 \text{ mol } C}{12.0g C} = .300 \text{ mol } C$$

$$\frac{.80g H_2}{2g H_2} \Bigg| \frac{1 \text{ mol } H_2}{2g H_2} = .400 \text{ mol } H_2$$

