Chemical Reactions Test

1. Convert 10.2 g Cu → atoms

$$10.2\text{ g Cu} \times \frac{1\text{ mole}}{63.5\text{ g}} \times \frac{6.02 \times 10^{23}\text{ atoms}}{1\text{ mole}} =$$

2. 500 g $Mg(OH)_2$ → moles

$$500\text{ g } Mg(OH)_2 \times \frac{1\text{ mole}}{58.3\text{ g}} =$$

3. $$\frac{34.0\text{ g}}{58.3\text{ g}} \times 100 =$$

4. 80.0% C 20.0% H MW = 30.0 g

C $80.0\text{ g C} \times \frac{1\text{ mole}}{12.01\text{ g}} = 6.66\text{ moles}$ 20.0 g H $\times \frac{1\text{ mole}}{1.01\text{ g H}} = 19.8$

$$C = \frac{6.66\text{ moles}}{6.66\text{ moles}} = 1 \qquad H = \frac{19.80\text{ moles}}{6.66\text{ moles}} \approx 2.97$$

CH_3 = Empir. Form. $\quad \frac{30}{15} = 2$

$(CH_3)_2$ C_2H_6 = Molec. Form

5. $Li_2SO_4 + 2AgNO_3 \rightarrow 2LiNO_3 + Ag_2SO_4$(ppt)

→

$2Li^{+1} + SO_4^{-2} + 2Ag^{+} + 2NO_3^{-} \rightarrow 2Li^{+} + 2NO_3^{-} + Ag_2SO_{4(s)}$

$SO_4^{-2} + 2Ag \rightarrow Ag_2SO_4$

~~$NaNO_3 + CaCl_2 \rightarrow$ N.R.~~

$NaCl + Mg \rightarrow NR$

$MgCl_2 + Na \rightarrow 2NaCl + Mg$

$AlCl_3 + Br_2 \rightarrow NR$

$2AlBr_3 + 3Cl_2 \rightarrow 2AlCl_3 + 3Br_2$

6. $KClO_3 \rightarrow KCl + O_2$

$KOH \rightarrow K_2O + H_2O$

$K_2CO_3 \rightarrow K_2O + CO_2$

$H_2SO_4 \rightarrow H_2O + SO_3$

7. $Cr_2O_7^{-2} + C_2H_4O \rightarrow Cr^{+3} + C_2H_4O_2$

$14H^{+} + 6e^{-} + Cr_2O_7^{-2} \rightarrow 2Cr^{+3} + 7H_2O$

$H_2O + C_2H_4O \rightarrow C_2H_4O_2 + 2e^{-} + 2$