CHEMISTRY REVIEW: STOICHIOMETRY

① $\frac{6.02 \times 10^{23} \text{ molecules } CaBr_2}{1 \text{ mol } CaBr_2} \left| \frac{1 \text{ mol } CaBr_2}{199.88 \text{ g } CaBr_2} \right| \frac{50.4 \text{ g } CaBr_2}{}$

$= \boxed{1.52 \times 10^{23} \text{ molecules } CaBr_2}$

② $NaOH$

$\frac{22.99 \text{ g Na}}{40.00 \text{ g NaOH}} \times 100 = \boxed{57.48\% \text{ Na in NaOH}}$

③ a) $\frac{1 \text{ mol Zn}}{65.39 \text{ g Zn}} \left| \frac{4.09 \text{ g Zn}}{} \right. = \frac{0.0625 \text{ mol Zn}}{0.0625} = 1$

$\frac{1 \text{ mol O}}{16.00 \text{ g O}} \left| \frac{1.00 \text{ g O}}{} \right. = \frac{0.0625 \text{ mol O}}{0.0625} = 1$

Empirical ZnO

b) $\frac{1 \text{ mol Fe}}{55.85 \text{ g Fe}} \left| \frac{46.54 \text{ g Fe}}{} \right. = \frac{0.8333 \text{ mol Fe}}{0.8333} = 1$

$\frac{1 \text{ mol S}}{32.07 \text{ g S}} \left| \frac{53.44 \text{ g S}}{} \right. = \frac{1.6664 \text{ mol S}}{0.8333} = 2$

Empirical FeS_2

④ $\frac{1 \text{ mol N}}{14.01 \text{ g N}} \left| \frac{4.02 \text{ g N}}{} \right. = \frac{0.2869 \text{ mol N}}{0.2869} = 1 \times 2 = 2$

$\frac{1 \text{ mol O}}{16.00 \text{ g O}} \left| \frac{11.48 \text{ g O}}{} \right. = \frac{0.7175 \text{ mol O}}{0.2869} = 2.5 \times 2 = 5$

Empirical N_2O_5 = 108.02 g **Molecular N_2O_5**

⑤ $\frac{1\ mol\ CoCl_2}{129.83\ g\ CoCl_2} \left| \frac{0.546\ g\ CoCl_2}{} = \frac{0.0042\ mol\ CoCl_2}{0.0042} = 1 \right.$

$\frac{1\ mol\ H_2O}{18.02\ g\ H_2O} \left| \frac{0.454\ g\ H_2O}{} = \frac{0.0252\ mol\ H_2O}{0.0042} = 6 \right.$

$\boxed{CoCl_2 \cdot 6H_2O}$

⑥ $Cu(NO_3)_2 + 2NaOH \rightarrow Cu(OH)_2 + 2NaNO_3$

12.7 g 2 g

$\frac{97.57\ g\ Cu(OH)_2}{1\ mol\ Cu(OH)_2} \left| \frac{1\ mol\ Cu(OH)_2}{1\ mol\ Cu(NO_3)_2} \right| \frac{1\ mol\ Cu(NO_3)_2}{187.57\ g\ Cu(NO_3)_2} \left| 12.7\ g\ Cu(NO_3)_2 \right.$

$= \boxed{6.61\ g\ Cu(OH)_2}$