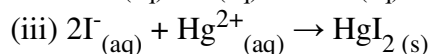
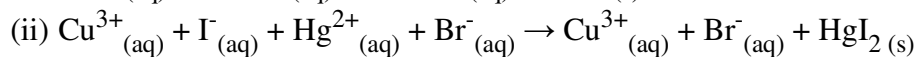
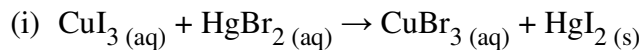


Year 11 Chemistry
Equations and Calculations
Checkup

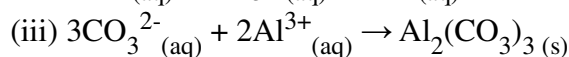
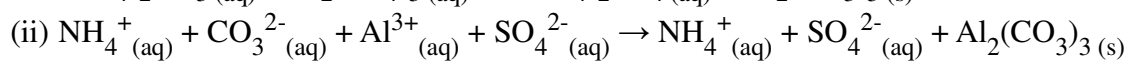
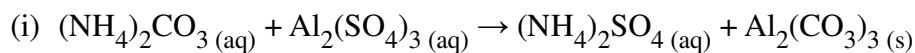
SOLUTIONS

1.

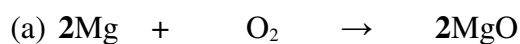
(a)



(b)



2.



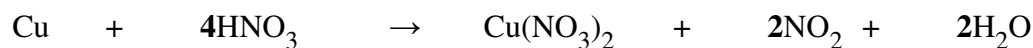
$$(b) n_{\text{Mg}} = \frac{m_{\text{Mg}}}{M_{\text{Mg}}} = \frac{13.5}{24.31} = 0.555 \text{ mol}$$

$$(c) \text{Mole ratio } \frac{n_{\text{O}_2}}{n_{\text{Mg}}} = \frac{1}{2}$$

$$\therefore n_{\text{O}_2} = \frac{1}{2} \times n_{\text{Mg}} = \frac{1}{2} \times 0.555 = 0.278 \text{ mol}$$

$$(d) m_{\text{O}_2} = n_{\text{O}_2} \times M_{\text{O}_2} = 0.278 \times 32.00 = 8.89 \text{ g}$$

Bonus:



$$n_{\text{HNO}_3} = C_{\text{HNO}_3} \times V_{\text{HNO}_3} = 2.0 \times 0.050 = 0.10 \text{ mol}$$

$$\frac{n_{\text{NO}_2}}{n_{\text{HNO}_3}} = \frac{2}{4}$$

$$\therefore n_{\text{NO}_2} = \frac{2}{4} \times n_{\text{HNO}_3} = \frac{2}{4} \times 0.10 = 0.050 \text{ mol}$$

$$m_{\text{NO}_2} = n_{\text{NO}_2} \times M_{\text{NO}_2} = 0.050 \times 46.01 = 2.3 \text{ g}$$