

Ch 5 Intro. to Solutions and Aq. Rxns

$$21a) \frac{3.25 \text{ mol LiCl}}{2.78 \text{ L soln}} = 1.17 \text{ M}$$

$$23b) 0.150 \text{ M Ca(NO}_3)_2 \times \frac{2 \text{ mol (NO}_3)_2}{1 \text{ mol Ca(NO}_3)_2} = 0.300 \text{ M (NO}_3)_2$$

$$27) 400.0 \text{ mL soln} \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{1.1 \text{ mol NaNO}_3}{\text{L}} \times \frac{85.00 \text{ g NaNO}_3}{1 \text{ mol}} = 37.5 \text{ g NaNO}_3$$

$$29) (1.1 \text{ M})(123 \text{ mL}) = M_2(500.0 \text{ mL}) \quad M_2 = 0.27 \text{ M}$$

$$31) (12 \text{ M})(50.0 \text{ mL}) = V_2(0.100 \text{ M}) \quad V_2 = 6000 \text{ mL} \quad 6.0 \times 10^3 \text{ or } 6.0 \text{ L}$$

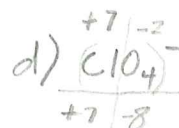
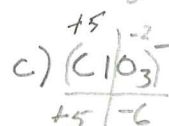
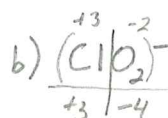
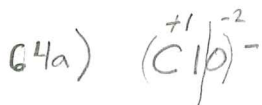
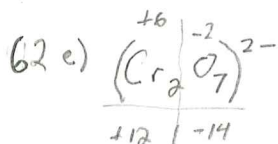
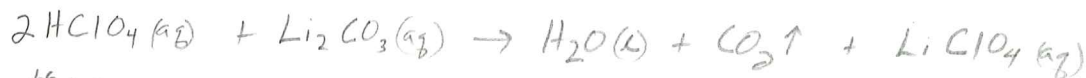
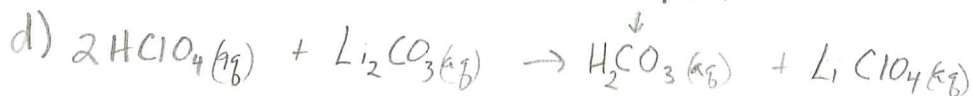
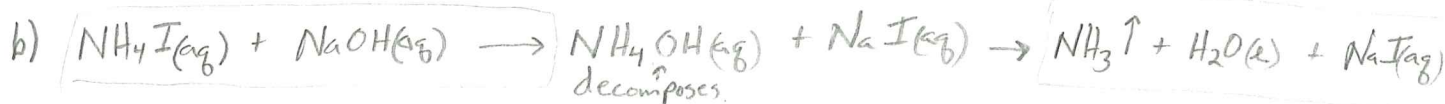
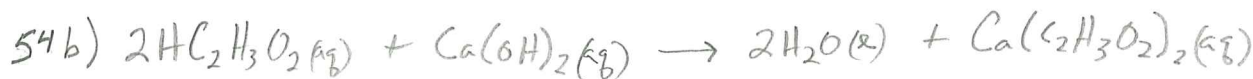
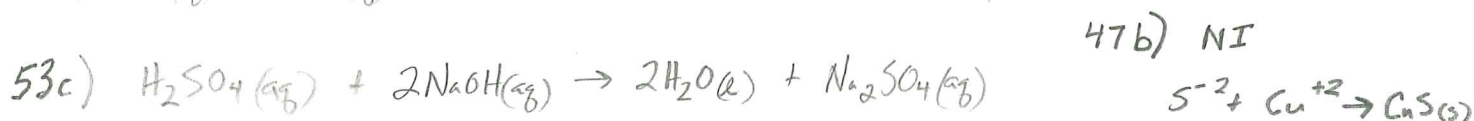
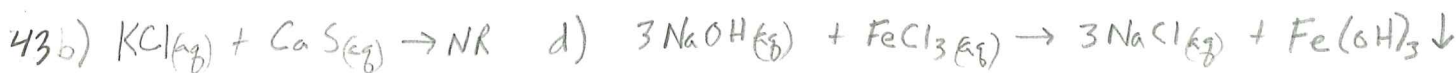
$$35) 25.0 \text{ g H}_2 \times \frac{1 \text{ mol H}_2}{2.016 \text{ g}} \times \frac{3 \text{ mol H}_2\text{SO}_4}{3 \text{ mol H}_2} \times \frac{1 \text{ L}}{6.0 \text{ mol H}_2\text{SO}_4} = 2.1 \text{ L H}_2\text{SO}_4$$

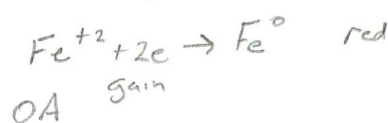
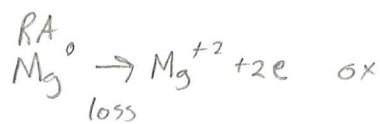
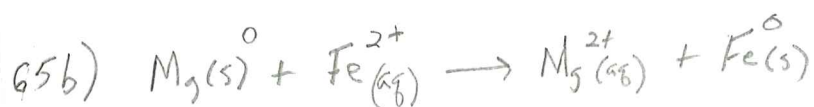
$$37) 25.0 \text{ mL KCl} \times \frac{1.20 \text{ mol KCl}}{1000 \text{ mL}} \times \frac{1 \text{ mol BaCl}_2}{2 \text{ mol KCl}} = 0.0150 \text{ mol BaCl}_2 \quad \text{ER}$$

$$15.0 \text{ mL Ba(NO}_3)_2 \times \frac{0.900 \text{ mol BaCl}_2}{1000 \text{ mL}} \times \frac{1 \text{ mol BaCl}_2}{1 \text{ mol Ba(NO}_3)_2} = 0.0135 \text{ mol BaCl}_2 \times \frac{208.23 \text{ g BaCl}_2}{1 \text{ mol}} = 2.81 \text{ g BaCl}_2$$

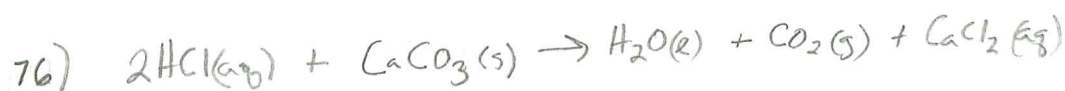
$$\frac{2.45 \text{ g}}{2.81 \text{ g}} \times 100 = 87.2 \%$$

$$39) a, c, d = \text{SE} \quad b = \text{NE} \quad 42a) \text{I} \quad b) \text{I} \quad c) \text{I} \quad d) \text{S} \quad \text{K}^+ \text{ and } \text{PO}_3^{3-}$$

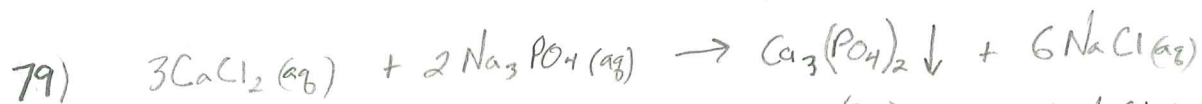




$$73) \frac{20.0g \text{C}_2\text{H}_6\text{O}_2}{100.0g \text{ soln}} \times \frac{1 \text{ mol C}_2\text{H}_6\text{O}_2}{62.07g} \times \frac{1.03g \text{ soln}}{1.00 \text{ mL}} \times \frac{1L}{1000 \text{ mL}} = 3.32 \text{ M} \quad \frac{\text{mol}}{\text{L soln}} (M)$$



$$3.8g \text{HCl} \times \frac{1 \text{ mol HCl}}{36.46g} \times \frac{1 \text{ mol CaCO}_3}{2 \text{ mol HCl}} \times \frac{100.09g \text{ CaCO}_3}{1 \text{ mol CaCO}_3} = 5.2g \text{ CaCO}_3$$



$$1.5 \text{ L CaCl}_2 \times 0.050 \frac{\text{mol}}{\text{L}} \text{CaCl}_2 = 0.075 \text{ mol CaCl}_2 \quad 1.5 \text{ L Mg}(\text{NO}_3)_2 \times 0.085 \frac{\text{mol}}{\text{L}} = 0.1275 \text{ mol Mg}(\text{NO}_3)_2$$

$$0.075 \text{ mol CaCl}_2 \times \frac{2 \text{ mol Na}_3\text{PO}_4}{3 \text{ mol CaCl}_2 / \text{Mg}(\text{NO}_3)_2} \times \frac{163.97g \text{ Na}_3\text{PO}_4}{1 \text{ mol}} = 22g \text{ Na}_3\text{PO}_4$$

