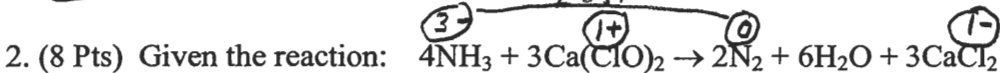
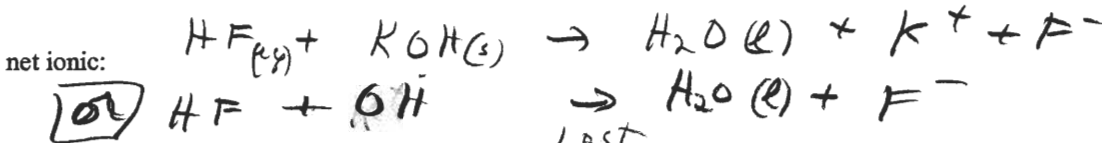
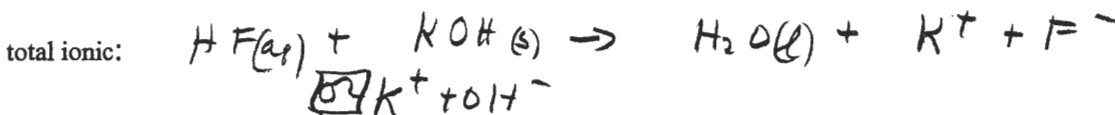
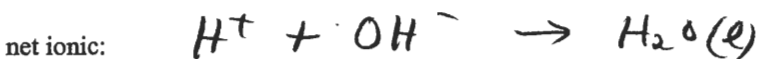
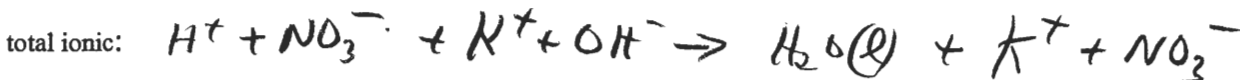
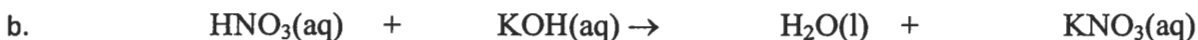
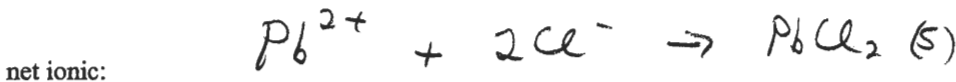
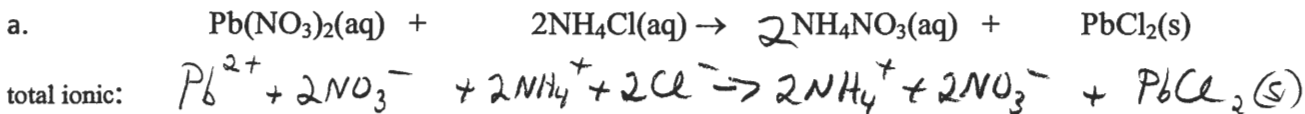


*****SHOW ALL WORK TO RECEIVE CREDIT*****

1. (6 Pts) Write the total ionic and the net ionic equations for each of the following reactions.



a. N^{3-} is oxidized from a -3 charge to a 0 charge.

b. Cl^{1+} is reduced from a +1 charge to a -1 charge.

c. $\text{Ca}(\text{ClO})_2$ is the oxidizing agent and NH_3 is the reducing agent.

3. (5 Pts) A 4.691 g sample of MgCl_2 is dissolved in enough water to give 750. mL of solution.

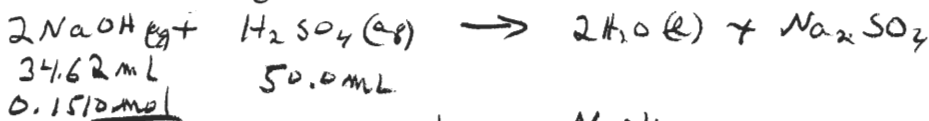
a. What is the magnesium ion concentration in this solution?

$$\frac{4.691 \text{ g MgCl}_2}{95.205 \text{ g/mol MgCl}_2} \times \frac{1 \text{ mol Mg}^{2+}}{1 \text{ mol MgCl}_2} = 0.0657 \text{ mol Mg}^{2+} / 0.750 \text{ L}$$

b. What is the chloride ion concentration in this solution?

$$\text{Cl}^- \times \text{Mg}^{2+} \text{ conc} = 0.131 \text{ mol Cl}^- / \text{L}$$

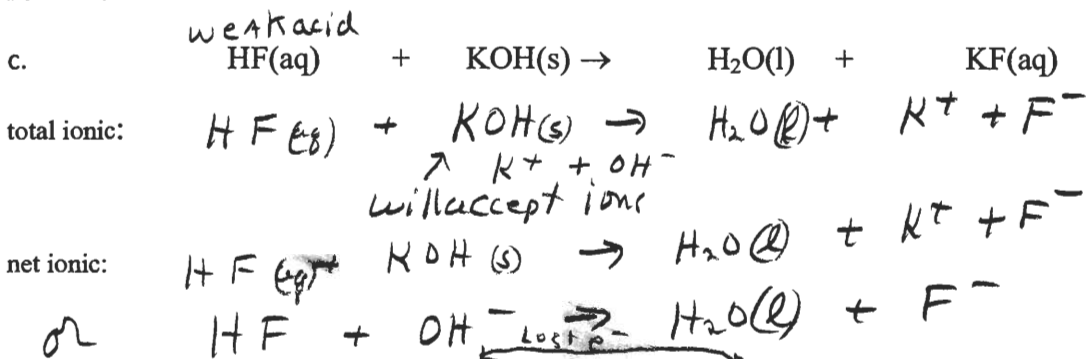
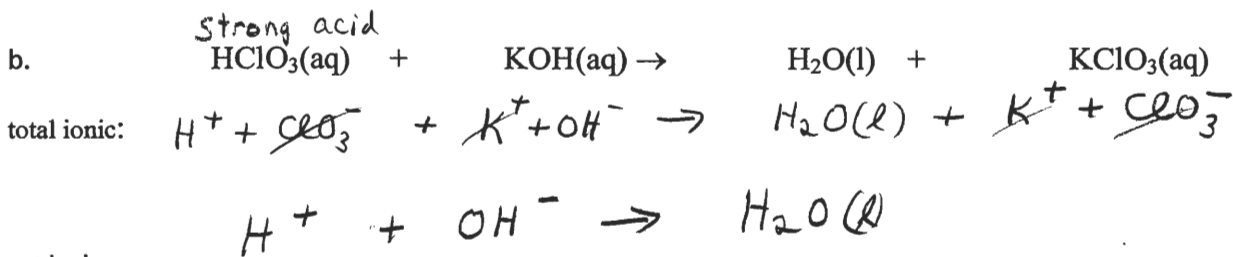
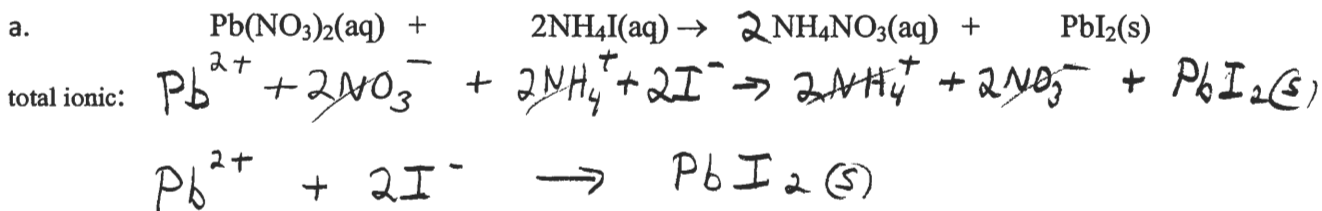
4. (6 Pts) 34.62 mL of 0.1510 M NaOH was needed to neutralize 50.0 mL of an H_2SO_4 solution. What is the concentration of the original sulfuric acid solution? Be sure to write a balanced equation.



$$\frac{34.62 \text{ mL NaOH}}{1000 \text{ mL NaOH}} \times \frac{0.1510 \text{ mol}}{1 \text{ mol NaOH}} \times \frac{1 \text{ mol H}_2\text{SO}_4}{2 \text{ mol NaOH}} = 0.0523 \text{ mol H}_2\text{SO}_4 / \text{L H}_2\text{SO}_4$$

*****SHOW ALL WORK TO RECEIVE CREDIT*****

1. (6 Pts) Write the total ionic and the net ionic equations for each of the following reactions.



2. (8 Pts) Given the reaction: $4\text{NH}_3 + 3\text{Ca}(\text{ClO})_2 \rightarrow 2\text{N}_2 + 6\text{H}_2\text{O} + 3\text{CaCl}_2$

- a. Cl^{1+} is reduced from a +1 charge to a -1 charge.
 b. N^{3-} is oxidized from a -3 charge to a 0 charge.
 c. NH_3 is the reducing agent and $\text{Ca}(\text{ClO})_2$ is the oxidizing agent.

3. (5 Pts) A 6.691 g sample of MgCl_2 is dissolved in enough water to give 750. mL of solution.

a. What is the magnesium ion concentration in this solution?

$$\frac{6.691 \text{ g } \text{MgCl}_2}{95.205 \text{ g}} \times \frac{1 \text{ mol } \text{MgCl}_2}{95.205 \text{ g}} \times \frac{1 \text{ mol } \text{Mg}^{2+}}{1 \text{ mol } \text{MgCl}_2} \times \frac{1}{0.750 \text{ L}} = 0.09371 \frac{\text{mol } \text{Mg}^{2+}}{\text{L}}$$

b. What is the chloride ion concentration in this solution?

$$\text{Cl}^- = 2 \text{ conc. } \text{Mg}^{2+} = 0.1874$$

4. (6 Pts) 54.62 mL of 0.1510 M NaOH was needed to neutralize 50.0 mL of an H_2SO_4 solution. What is the concentration of the original sulfuric acid solution? Be sure to write a balanced equation.

$2\text{NaOH}(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow 2\text{H}_2\text{O}(\text{l}) + \text{Na}_2\text{SO}_4(\text{aq})$

$$\frac{54.62 \text{ mL}}{0.1510 \text{ mol/L}} \times \frac{1 \text{ mol } \text{NaOH}}{1000 \text{ mL}} \times \frac{1 \text{ mol } \text{H}_2\text{SO}_4}{2 \text{ mol } \text{NaOH}} = 0.0825 \frac{\text{mol } \text{H}_2\text{SO}_4}{\text{L } \text{H}_2\text{SO}_4}$$