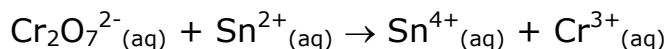


**ELECTROCHEMISTRY WORKSHEET #3**

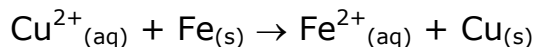
1. In a redox titration 12.50 mL of 0.0800 mol/L  $\text{K}_2\text{Cr}_2\text{O}_7$  (aq) was used in acidic solution to oxidize  $\text{Sn}^{2+}$  (aq) ions to  $\text{Sn}^{4+}$  (aq) ions. The volume of  $\text{K}_2\text{Cr}_2\text{O}_7$  (aq) used was just sufficient to oxidize all the  $\text{Sn}^{2+}$  (aq) in 10.0 mL of the solution. Calculate the concentration of the  $\text{Sn}^{2+}$  (aq) ions in the solution according to the following unbalanced equation.

(Ans: 0.300 mol/L)



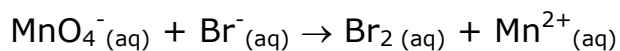
2. The copper (II) ions in a solution can be converted to copper metal by trickling the solution over scrap iron. The reaction produced iron (II) ions from scrap iron. If the process produces 25.00 L of solution containing 0.00200 mol/L of  $\text{Fe}^{2+}$  (aq) ions, what mass of copper is produced?

(Ans: 3.18g)



3. What volume of 0.0500 mol/L  $\text{KMnO}_4$  (aq) is needed to oxidize all the  $\text{Br}^-$  (aq) ions in 25.0 mL of an acidic 0.200 mol/L  $\text{NaBr}$  (aq) solution according to the following unbalanced equation.

(Ans:  $v = 20.0\text{mL}$ )



4. Aqueous solutions of hydrogen peroxide sold in pharmacies are usually approximately 3%  $\text{H}_2\text{O}_2$  by mass. However, in solution, hydrogen peroxide decomposes into water and oxygen.

What is the percent by mass of a solution of hydrogen peroxide,  $\text{H}_2\text{O}_2$ , prepared from 1.423 g of  $\text{H}_2\text{O}_2$  which is titrated with 40.22 mL of 0.01143 mol/L  $\text{KMnO}_4$  (aq).

The reaction occurs in an acidified solution.

(Hint: Find mass of  $\text{H}_2\text{O}_2$  actually present, then mass %) (Ans: 2.747%)

Balanced equation:

