Unit 5 – Chapter 16: Electrochemistry **Name _____**

Assignment #1: Chemical Equation for Cell Rxn, Diagrams of Salt Bridges **Period _____**

1) Write the balanced chemical equation for the overall cell reaction represented as
   a. $Ag \mid Ag^{+} \parallel Sn^{4+}, Sn^{2+} \mid Pt$
   b. $Al \mid Al^{3+} \parallel Cu^{2+} \mid Cu$
   c. $Pt \mid Fe^{2+}, Fe^{3+} \parallel MnO_4^{-}, Mn^{2+} \mid Pt$

2) Draw a diagram for a salt bridge cell for each of the following reactions. Label the anode and cathode and indicate the direction of current flow throughout the circuit.
   a. $Sn(s) + 2\ Ag^{+}(aq) \rightarrow Sn^{2+}(aq) + 2\ Ag(s)$
   b. $H_2(g) + Hg_2Cl_2(s) \rightarrow 2\ H^{+}(aq) + 2\ Cl^{-}(aq) + 2\ Hg(l)$
   c. $Pb(s) + PbO_2(s) + 4\ H^{+}(aq) + 2\ SO_4^{2-}(aq) \rightarrow 2\ PbSO_4(s) + 2\ H_2O(l)$

3) Consider a salt bridge cell in which the anode is a manganese rod immersed in an aqueous solution of manganese (II) sulfate. The cathode is a chromium strip immersed in an aqueous solution of chromium (III) sulfate. Sketch a diagram of the cell, indicating the flow of the current throughout. Write the half-equations for the electrode reactions, the overall equation, and the abbreviated notation for the cell.

4) Follow the directions for question 3 above for a salt bridge cell in which the anode is a platinum rod immersed in an aqueous solution of sodium iodide containing solid iodine crystals. The cathode is another platinum rod immersed in an aqueous solution of sodium bromide with bromine liquid.