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

Assignment #3: E^0, ΔG, K Calculations for Voltaic Cells **Period _____**

1) For a certain cell, E^0 = 1.20 V. Calculate ΔG^0 if n is
   a. 1
   b. 2
   c. 3

2) Calculate E^0, ΔG^0, and K at 25^{0}C for the reaction

   $3\ S^{2-} + 2\ NO_3^-{}_{(aq)} + 4\ H_2O \rightarrow 3\ S_{(s)} + 2\ NO + 8\ OH^-{}_{(aq)}$

3) Calculate ΔG^0 at 25^{0}C for each of the reactions referred to in each of the following reactions below. Assume smallest whole-number coefficients.
   a. $Pb_{(s)} + 2\ Ag^+{}_{(aq)} \rightarrow Pb^{2+}{}_{(aq)} + 2\ Ag_{(s)}$
   b. $O_{2(g)} + 4\ Fe^{2+}{}_{(aq)} + 4\ H^+{}_{(aq)} \rightarrow 2\ H_2O + 4\ Fe^{3+}{}_{(aq)}$
   c. A Cd-Cd^{2+} half-cell and a Zn-Zn^{2+} half-cell

4) Calculate K at 25^{0}C for each of the reactions referred to below. Assume smallest whole-number coefficients.
   a. chromium (II) ions and tin (IV) ions to produce chromium (III) ions and tin (II) ions
   b. manganese (II) ions and hydrogen peroxide to produce solid manganese dioxide (MnO_2).