Electrochemistry : Online Tutorial Question Form

Name:_____ **Lab ID:**_____

1. (Step 3: Practice with standard cell potentials)
   Use the simulation to determine the half-cell potential for the metal "X".
   a. **What is the balanced half-cell reaction corresponding to the reduction of metal X?**

   b. **What cell potentials did you measure, to help determine the half-cell reduction potential for metal X, and what values did you obtain (list two different cells, and the measured potential)?**

   c. **What value did you obtain for the half cell reduction potential of metal X?**

   d. **As a check on your answer, use your above value for the half-cell reduction potential of X to calculate the potential of the two cells you measured in part b. Your predicted values should agree with what you measured in part b.**

2. (Step 4: Practice with Non-standard conditions)
Dilute the Sn2+ solution in the following two galvanic cells. What happens to the voltage in each? Explain your results.

a. Reaction 1

$Sn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Sn^{2+}_{(aq)} + Cu_{(s)}$ $\quad E^0_{cell}=0.48V$

b. Reaction 2

$Zn_{(s)} + Sn^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Sn_{(s)}$ $\quad E^0_{cell}=0.62V$

3. **Consider a cell: $Zn_{(s)} + Cu^{2+}_{(aq)} \rightarrow Zn^{2+}_{(aq)} + Cu_{(s)}$ in which the concentration of $[Cu^{2+}]$ and $[Zn^{2+}]$ are both 2M.** [Note that the simulation does not provide solutions above 1M. Please make predictions about cells with 2M concentrations based upon experiments you perform with the concentrations provided.]

   a) Will the cell potential be greater than, equal to or less than the standard cell potential?

   b) Will the cell be able to run the stopwatch for a longer time, equal time, or shorter time than the standard cell.