IB/AP Chemistry Name:

Concentration Electrochemical Cells Pre-Lab Work in groups of three. GOTO:

http://group.chem.iastate.edu/Greenbowe/sections/projectfolder/flashfiles/electroChem/voltaicCell20.html

1. Start the software and construct a zinc-copper electrochemical cell using 1.0 M Zn^{2+} and 1.0 M Cu^{2+} solutions.

a. What is the EMF of this cell (include units)? _____

b. For the voltage that you are measuring, is this $E°_{cell}$ or E_{cell}? _____. Explain.

c. Write the chemical equation that represents the reaction occurring in this cell.

d. Is this a spontaneous or non-spontaneous reaction? _____. Explain.

e. Draw a cell diagram for this electrochemical cell.

f. What is the oxidation half-reaction that occurs and where does it occur? Look at the molecular level animation. The anode is _____.

2. Construct two electrochemical cells such that the EMF of the cells are greater than +1.10 V. Before doing the simulation, predict the EMF of the cells. Prediction _____ _____. Explain.

a. Draw the cell diagram for each of the electrochemical cells that you construct.

b. What is the EMF of the two cells (include units)? _____ _____

c. The voltage that you are measuring, is this $E°_{cell}$ or E_{cell}? _____

d. Is this a spontaneous or non-spontaneous reaction? _____

e. What is the oxidation half-reaction that occurs and where does it occur? Look at the molecular level animation. The anode is _____.

f. Write the chemical equilibrium equation that represents the reaction occurring in this cell.

g. Construct two electrochemical cells such that the EMF of the cells are less than +1.10 V. Before doing the simulation, predict the EMF of the cells. Prediction _____ _____. Explain.

h. Draw the cell diagram for each of the electrochemical cells that you construct.

i. What is the EMF of the three cells (include units)? _____ _____ _____

j. Write the chemical equilibrium equation that represents the reaction occurring in these cells.