

## Redox Reactions: Part #4 - Electrochemical Cells

1. Draw a detailed full page and **FULLY LABELLED** diagram for the electrochemical cell (a.k.a galvanic or voltaic cell) that uses a Zn metal/ $\text{Zn}^{2+}$  ion half cell and a Cu metal/ $\text{Cu}^{2+}$  ion half cell. Label fully. You do not need to use the carefully formatted labelling technique used in grade eleven lab reports. You can label however you like. What you are looking for can be found on pg 696 of your text, however this diagram lacks detail and is not complete. Using other references that you find, add as much information as you can, including details of all ion movements. Be sure to include half cell reactions under each half cell. Please write these in the correct direction and indicate if they are reductions or oxidations.
2. Use the half cell reactions to determine the overall cell potential for your electrochemical cell. This is similar to what you did on the last quiz that you have written.
3. Provide definitions for each of the following (include precisely where oxidation and reduction occurs within your definitions):  
  
Anode:  
  
Cathode:  
  
Electrochemical Cell (Galvanic or Voltaic):  
  
Electrolytic Cell: (Include what is different about this cell compared to an electrochemical cell and what this type of cell can be used for.  
  
Cell Potential:
4. What is the purpose of the salt bridge? What would happen if it were removed? How does the salt bridge complete the circuit?

Bonus question: Using the Nernst Equation, determine what the cell potential would be for an electrochemical cell that uses a gold half cell with a zinc half cell. The gold solution is 0.5 M gold nitrate, the zinc solution is 2.0 M zinc nitrate.