Print your name here: _____ Performed: 12 Apr 2012

Lab partner: _____ Due: 19 Apr 2012

Lab Station: 1 2 3 4 5 6 7 8 9 10 11 12 Returned: 26 Apr 2012

Section: Circle Thursday afternoon (AA) or Thursday morning (DD)

Staple this grading rubric to the front of your lab report.

CHM 206 General Chemistry II Laboratory, Spring 2012
Grading Rubric The Nernst Equation

Part A. Earnable Points:

1. Introductory material (this will be checked by the TA at the start of the lab period)   **6 pts**

   a. Read the entire laboratory experiment before coming to lab.

   b. Fill in all header information (title, name, etc.) before lab. Complete the Introduction prior to lab.

   c. The Introduction should include the purpose of the experiment.

   d. Record in your laboratory notebook thorough and detailed notes taken during the laboratory lecture.

TA Initials: _____ Score: _____

2. Experimental Details and Observations   **15 pts**

   (5 pts) Provide details about how each of the copper concentrations was determined in your lab manual or in the spreadsheet. If you use the spreadsheet, be sure to indicate somewhere how the various concentrations were determined (give the equations.)

   (5 pts) Determination the cell potentials for each of the $Cu|Cu^{+2}$ half cells paired with the half-cells paired with. $Zn|Zn^{+2}$ (1.0 M) half cell. Create a table such as this:

	A	B	C	D
1	Solution:	$[Zn^{+2}]$	$[Cu^{+2}] = M_cV_c/V_f$	E
2	1	1.0 M	1.00 M	
3	2	1.0 M		
4	etc.			

   (6 pts) Create a graph in Excel of $\log(1/[Cu^{+2}])$ on the x-axis vs. E on the y-axis. Add a trend line. Attach graph to lab report. This is different from the instructions given in the lab manual. This way stays "truer" to the Nernst equation. By rearranging y = mx + b to y = b + mx, we can see how our plot gives the value of E^o:

$$E = E^o - \frac{0.0592}{n}\log(\frac{[Zn^{+2}]}{[Cu^{+2}]})$$

$$y = b + m\ x$$

3. Calculations   12 pts

   - (5 pts) all equations used in the Excel spreadsheet listed in the lab manual (e.g. "The equation used in Cell C2 is…"
   - (3 pts) proper use of significant figures throughout report
   - (3 pts) proper use of units throughout report
   - (3 pts) Describe the graphical results and the equation of the line and how this was used to determine E^o for the potential for $Zn|Zn^{+2}(1.0\ M)||Cu^{+2}(1.0\ M)|Cu$.

5. Sources of error   3 pts

   - If everything goes well and you think you have the correct results, simply write, "None experienced."
   - If errors occur that you notice (for example, one of the concentrations seemed off), you should note in your lab book that this particular trial was aborted due to (describe the error)." Then start afresh.
   - Once in awhile, no obvious errors in the experiment are noted, however the results do not seem right. At this point, check with Doc M or the TAs or see the syllabus.

E. Appearance, clarity, easy-to-follow calculations   5 pts

Written parts: Organized, easy-to-read and follow work, and calculations complete with adequate detail.

Grader's Assessment: 5 = Strongly agree; 4 = for the most part; 3 = some parts; 2 = numerous issues; 1 = disagree   *TA rating: _____*

Part B. Post-lab questions (include these at the end of your lab report)   **8 pts**

1. Compare the standard reduction potential for E^o with the value in your textbook, 1.10 v. Calculate percent error or otherwise comment on the results.

2. Compare the numerical value of the slope with $-0.0592/n$. Calculate percent error or otherwise comment on the results.

3. Use the Nernst equation to calculate E if cell $Zn|Zn^{+2}(1\ M)||Cu^{+2}(2.0\ M)|Cu$.

4. Use the Nernst equation to calculate E for the reaction that takes place between the cell $Al|Al^{+3}(0.25\ M)||Co^{+2}(0.050\ M)|Co$.

Part C. Penalty Points: (deducted from earned points)   **Penalty:**
1. Lack of participation in pre-lab (absent or inattentive)   5 – 10 pts
2. Lab report late   5 – 20 pts
3. Safety violations   5 – 50 pts
4. Misuse of laboratory time (e.g., using cell phone)   5 – 10 pts
5. Failure to clean up equipment, glassware and work area   5 pts

BEFORE YOU LEAVE TODAY: 1. Enter your Kc value into the computer   *TA Initials: _____*

TA initials indicating that no penalty points apply: *TA Initials: _____*

Earned points: _____

Penalty points: _____

Total score: _____