Chem 12 **Reading and Homework set 8**

Read Ch 10 sections 10.4 - 10.13.

Not for credit —

A. Ch 11, problems 34a,b, 38, 39, 41, 45, 46

B. Ch 10, problems 30 (calculate ΔS, ΔH, and q… what the heck, it's easy enough to calculate the PV work here too, just for comparison, but let's not bother with ΔE), 50b,c, 57, 59, 75, 91b,d.

To be turned in for credit
30 points; due Wed, April 6 at the beginning of class.

1. Ch 11, problems 34c,d (hint, for part d, consider oxidation of ferrous ion by air), 43, 51 (for 51d, keep in mind also that a car battery has 6 of these cells in series, so the change in voltage for the whole battery is 6x that for an individual Galvanic cell)

2. Ch 10, problem 25. (a) You can calculate q_{rev} without bothering to calculate T (think PV = nRT). After calculating q_{rev}, calculate T (from the gas law) and then ΔS for the expansion. There's a simpler way to calculate ΔS that doesn't require the temperature — calculate ΔS by that method. You should have gotten the same result. (b) If the initial pressure were 2.0 atm, what would the temperature of the gas be? What would ΔS and q_{rev} be for the expansion? (c) Repeat part b for an initial pressure of 15 atm.

3. Ch 10, problem 50a,d. Calculate ΔG° from ΔH° and ΔS°, and also from $\Delta G°_f$ values.

4. Ch 10, problems 52 and 53. For the latter, also calculate ΔG° at 90°C and at –50°C.

5. Ch 10, problem 68. Also, it's interesting to note that there are two half-cell reactions listed in table 11.1 that can be combined to give this reaction. Find them, combine them, and determine the ε° value for the reaction. Then use this to calculate ΔG°. Did you get the same value as you did for problem 68a? If not, discuss the reason for the difference.

6. Ch 10, problem 91a,c,e

7. Ch 10, problem 96

8. Ch 10, problem 44