

Accelerated General Chemistry
Problem Set 10
Due Wednesday, December 9, 2009 (at 4:00 p.m.)
Total Points on This Assignment = 55

1. (10 points) Hanson and Green Problem 8.14. Hints: (1) The standard entropies you are correcting are listed in Table 7.1. (2) Use the pressure conversion factors on the inside back cover of Hanson and Green.
2. (9 points) Problem 8.20. Again, you will need to use Table 7.1.
3. (6 points) Problem 9.1. Briefly explain your answers to part (a).
4. (3 points) Problem 9.6
5. (9 points) Problem 9.11
6. (6 points) Problem 9.14 (a) and (c). Note that the units of ΔH and ΔU should be kJ mol^{-1} , not merely kJ! This is because Δn_{gas} has units of (mol gas/mol rxn as written)—that is, it is effectively unitless.
7. (12 points) Problem 10.16 (c) and (d). Comments:
 - You should assume that you have 1.000 g of water (*i.e.*, the mass is known to four significant figures).
 - Assume that each temperature is known to the nearest 1°C.
 - I will tell you that $\Delta S_{\text{universe}} = 0$ at 100°C. (The original intent of the problem was to determine this temperature by fitting a straight line to a plot of $\Delta S_{\text{universe}}$ vs. T .) Your calculations should show that the vaporization of 1.000 g of water is not spontaneous below 100°C, and is spontaneous above 100°C—if we keep the water at standard pressure (1 bar).

You should also know how to do Hanson and Green Problems 10.3 and 10.8 (see the solutions in the back of the book), but you will not turn in solutions to these problems for credit. (We will cover the topics covered by these problems after this problem set is due.) You will be responsible for knowing how to do problems like these for your final unit test.