CHE-371 Fall 2007

Homework #2

Chapter 17, McQuarrie and Simon
9, 11, 14, 17 (do in Excel and plot T vs. Cv/R), 32, 35, 43

Chapter 18, McQuarrie and Simon
a. 6, 11 (use Excel), 30, 37
b. M&S 18-9; Also answer/do the following:

1. Mark the vibrational temperature on the plot with a vertical line.
2. Mark the classical limit for the vibrational contribution to C_v on the plot with a horizontal line.
3. What fraction of the classical limit does the vibration contribute at twice the vibrational temperature, the vibrational temperature, and at half the vibrational temperature?

c. M&S 18-17; Does your graph correspond to J_{mp} as calculated using Eq 18.36?
d. M&S 18-21. Use the NIST webbook to find $\tilde{\upsilon}$ for H_2O. Use this information to determine which normal mode is contributing the most to C_V at 600 K.
(http://webbook.nist.gov/chemistry/)

For Review on 9/21
Group D = M&S, 17-32
Group E = M&S, 18-37
Group F = M&S, 18-21 (i.e., part d)