Chem 370 - Spring, 2019
Assignment 4

Test 1

Assuming no class cancellations from snow storms, etc., Test 1 will be given during our morning lecture time on Monday, March 4th. It will cover all of the material through Chapter 4, as presented in class. It will also cover some of the review material included in Assignment 1. Review all assignments, including this one, to prepare for the test. It will not cover any of the material on molecular orbitals (Chapter 5). I have posted an old test and key under Information on the website to give you an idea of what to expect in terms of level and coverage.

Reading Assignment

Read Chapter 5, if you have not already done so. I may gloss over certain topics in this chapter and give greater emphasis to others. Looking ahead to Chapter 6, I have noted that the authors have significantly rearranged and added to this material in the 5th edition relative to the 4th edition. We will cover most of the material in sections 6.1 through 6.5 (sections 6.1, 6.2, and 6.4 in the 4th edition). We will skip section 6.6 (6.3 in the 4th edition) on Hard and Soft Acids and Bases.

Homework Assignment

As with Discussion 3, we are shifting our meeting on this assignment to Friday, March 1st. This discussion will also be a good opportunity for you to ask any lingering questions about the material before the test on Monday.

For each of the following, determine the number of frequencies, their symmetries, and the infrared and Raman activities of the normal modes. Indicate the number of polarized Raman bands and the number of frequencies that should be coincident in the two spectra. Note any silent modes.

(a) NH_3, (b) $PtCl_4^{2-}$ (square planar), (c) H_2CO, (d) PF_5, (e) C_2H_6 (staggered configuration),

(f) H_2O_2, (g) SeF_5^-, (h) AsF_4^-, (i) BeF_3^-, (j) *trans*-FNNF, (k) *cis*-FNNF, (l) $S_2O_3^{2-}$, (m) B_2H_6