CHEM 535	**Pavel Jungwirth**
Problem Set #7	May 3, 2006
	due May 11 in class

1) CO bond length is 1.13 Å in the ground state and 1.37 Å in the first excited state. The corresponding vibrational frequencies are 2170 and 1172 cm^{-1}. Sketch the Franck-Condon profile of the CO absorption band. Estimate the peak frequencies and relative intensities.

2) Absorption spectrum of molecular iodine has the $v' = 0 \rightarrow v'' = 0$ transition at 15677 cm^{-1}. The onset of continuum of this spectrum is at 19735 cm^{-1}. You also know that the excited state dissociates to $I(^2P_{3/2}) + I(^2P_{1/2})$ which is 7589 cm^{-1} above the energy of two ground state iodine atoms ($I(^2P_{3/2}) + I(^2P_{3/2})$). What are the ground and excited state dissociation energies D_o' and D_o''?