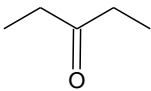
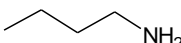
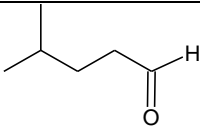
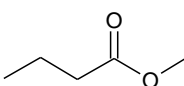
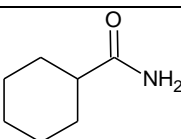


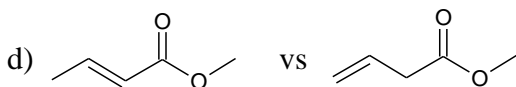
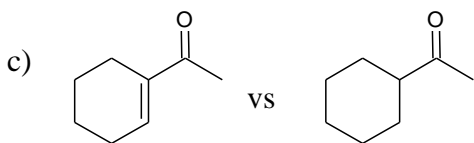
1. Approximately at what frequencies do expect to see in the IR that will help you identify the functional group in the following compounds. If it cannot be detected, then write so.

2-pentanol	1-pentyne	
		
	2-butyne	cyclohexene

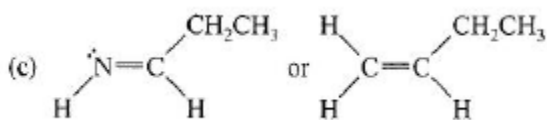
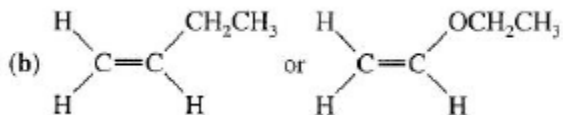
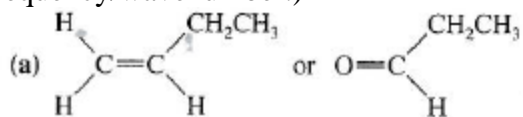
2. Which of the following pairs compounds will have a lower wavenumber in IR or will they be the same? (Note: higher conjugation leads to lower cm^{-1}).

a) Cyclohexene vs 1,3-cyclohexadiene

b) 1-hexene vs 1,4-hexadiene



3. All the following compounds absorb infrared radiation. Predict which compound has the higher wavenumber in the pairs given. (Note: higher dipole leads to higher frequency/wavenumber.)

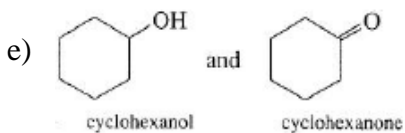
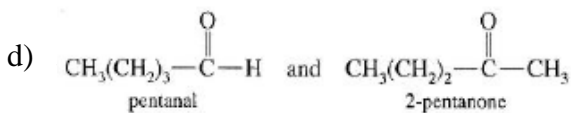


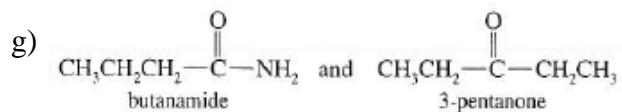
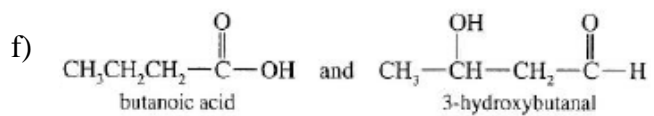
4. What is the characteristic infrared absorption frequencies that would allow you to distinguish between the following pairs of compounds. Give the approximate wavenumbers where possible.

a) 2,3-dimethyl-2-butene and 2,3-dimethyl-1-butene

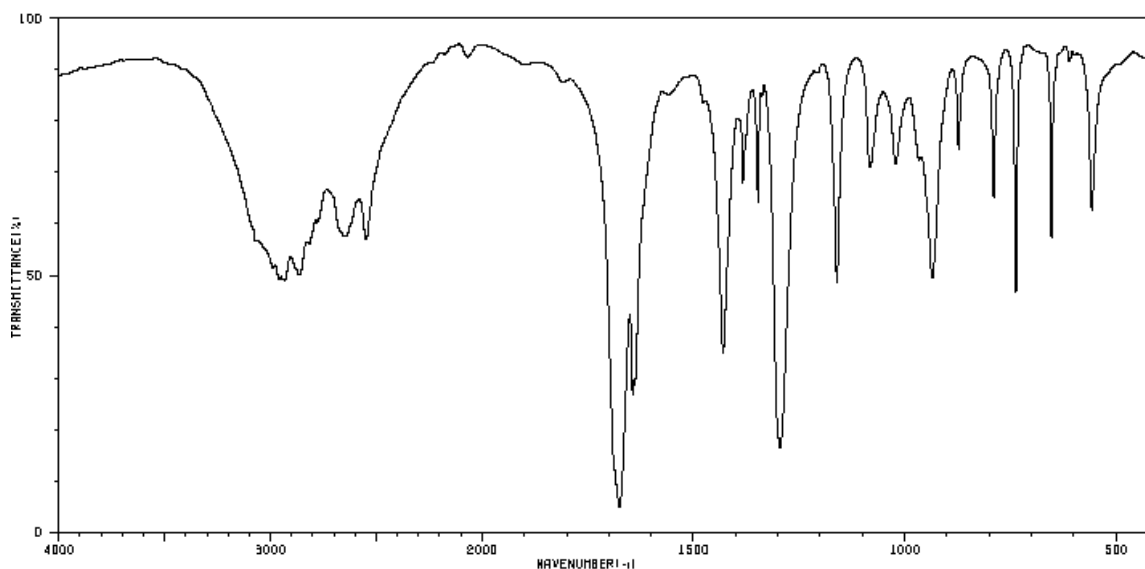
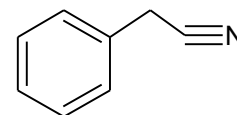
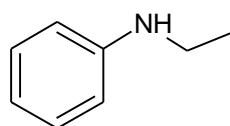
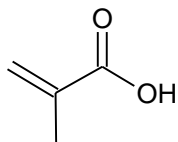
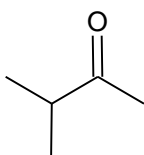
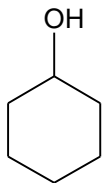
b) Cyclohexanol and cyclohexene

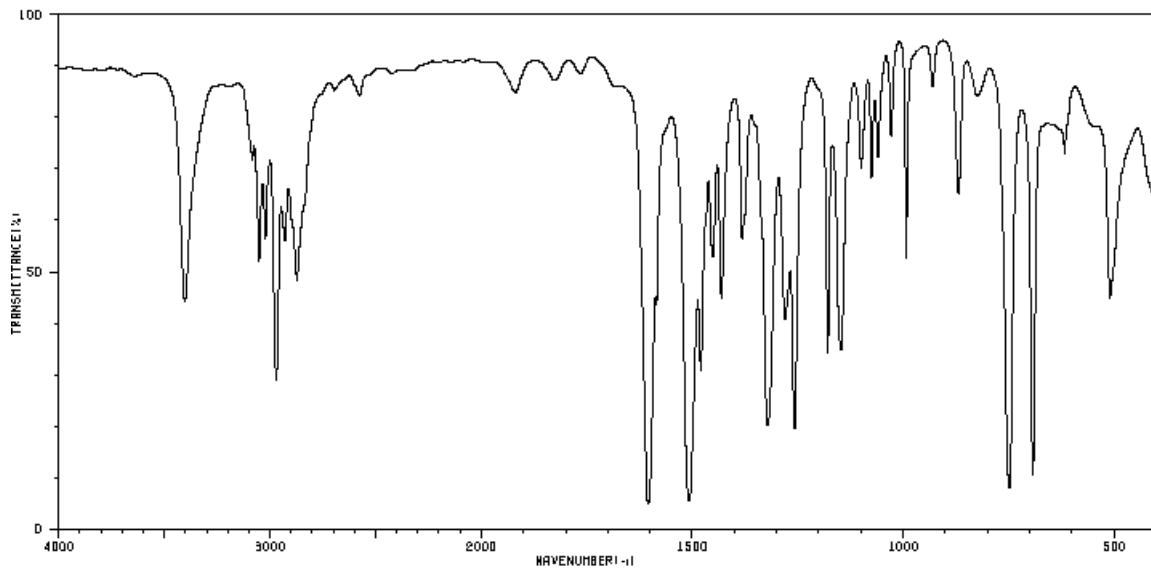
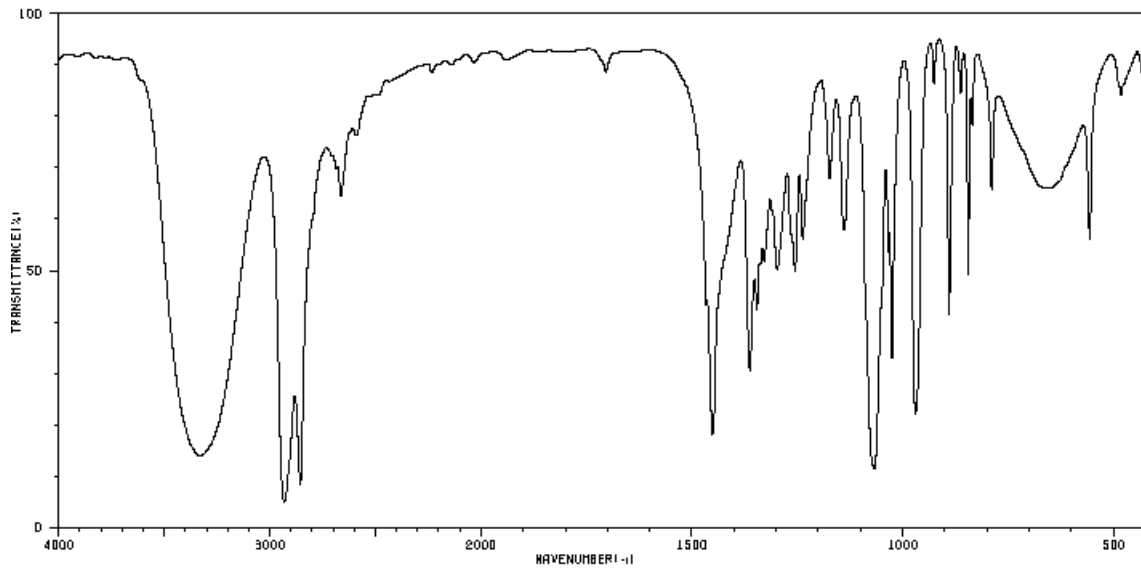
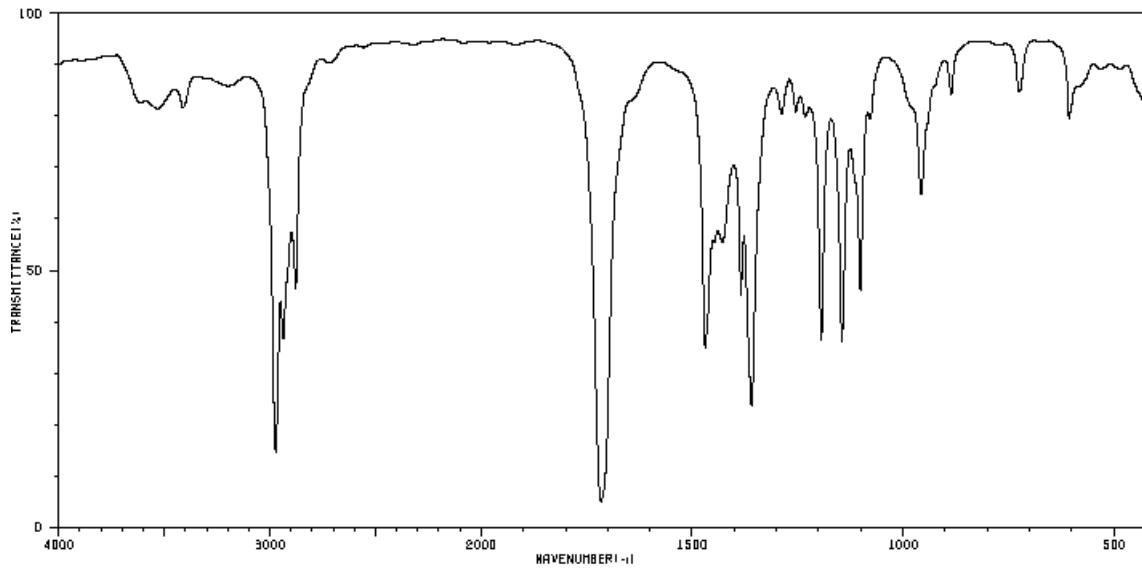
c) 1-octyne and 3-octyne

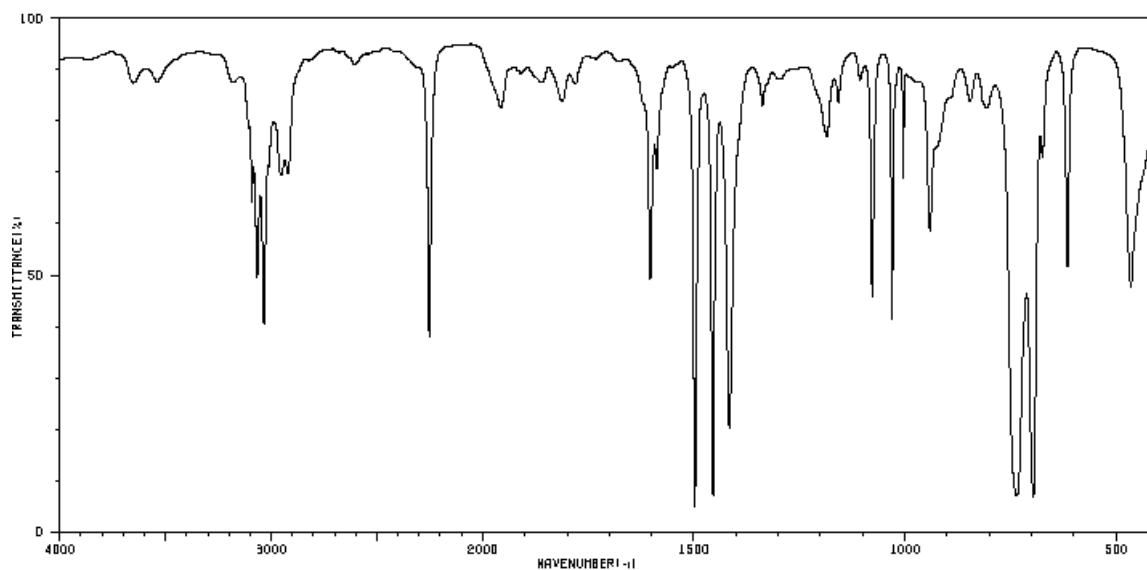




5. Five infrared spectra are shown below, corresponding to the following compounds. For each spectrum, determine the structure and explain how the peaks in the spectrum correspond to the structure you have chosen.







6. Which IR corresponds to the three compounds below? Circle the characteristic peaks.

