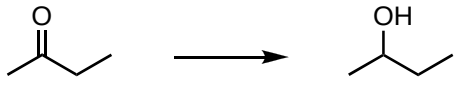
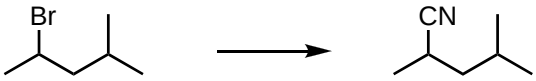
Library of Organic Chemistry Active Learning (LOCAL) Resources

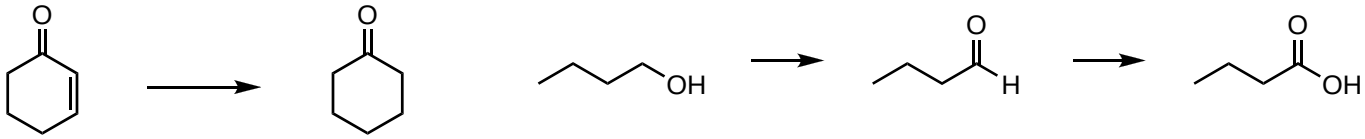
IR Spectroscopy Worksheet

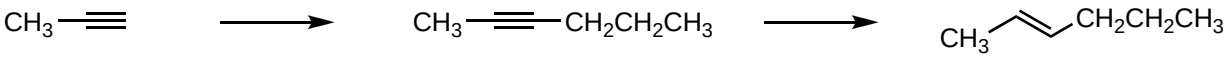
Name:_____ Section: _____ (day/time)

1. How could you use IR spectroscopy to determine whether or not each of the following reactions was successful? In other words, if you compared an IR spectrum of the starting material with an IR spectrum of the reaction product, what evidence would you have that the compound isolated is the structure shown? Which peak(s) do you expect to disappear and which peak(s) do you expect to appear? Refer to a correlation chart and list the significant peaks you would be looking for.

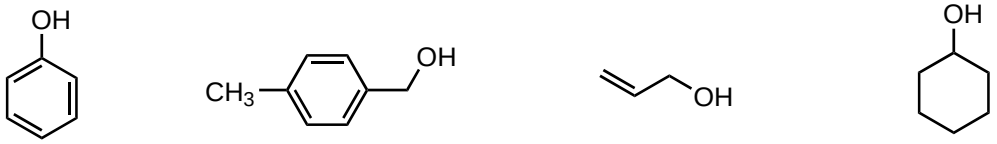




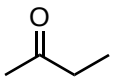




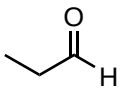
2. How could you distinguish the IR spectra for the following alcohols? List the significant, unique peaks.



3. Both ketones and aldehydes have carbonyl groups (~1700 cm^{-1}) so how can we distinguish between them?

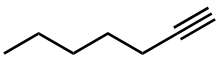


a ketone

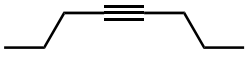


an aldehyde

4. The IR spectrum of heptyne has peaks at 3312 and 2119 cm^{-1}. Why do these peaks disappear in 4-octyne?



1-heptyne



4-octyne