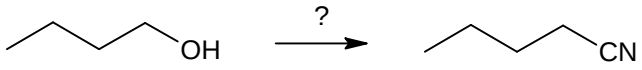
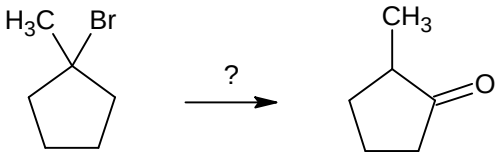
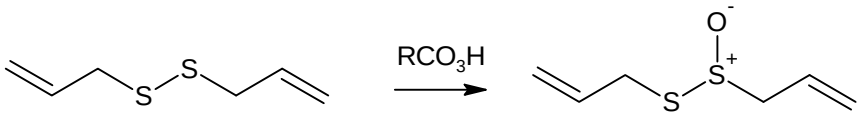
Please note the strange due date: Wednesday Nov 25. This problem set draws on chapters 10 and 12 (IR spectroscopy only).

#1. Outline a synthesis for each of the following compounds from the indicated starting material and any other commonly available reagents. FYI – none of these syntheses can be accomplished in a single step so please indicate what reagents you would use for each step and the product that you would expect to isolate at that step. Do not draw reaction mechanisms in your answer. And, it would be good practice if you tried to use different reagents to activate the OH group, i.e., don't rely exclusively on a single reagent.

a. 

b. 

c. Allicin, one of the "active" ingredients in garlic, can be prepared by oxidation of diallyl disulfide with a peroxycarboxylic acid (see below). Outline a synthesis of diallyl disulfide starting from allyl alcohol.



diallyl disulfide allicin

c. *addendum* Wikipedia describes allicin as chiral and says allicin occurs naturally as the (R) enantiomer. Draw this compound.

#2. Loudon, chapter 10: **40cd, 61B**
#3. Loudon, chapter 12:[1] **27, 32, 33A**

[1] "How do you know? Explain your choice." and the like should all be answered by assigning key bands in the IR spectra, i.e., by identifying bands at particular frequencies and stating the group of atoms + type of vibration that is most likely responsible for these bands.