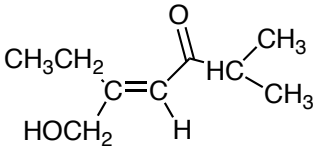
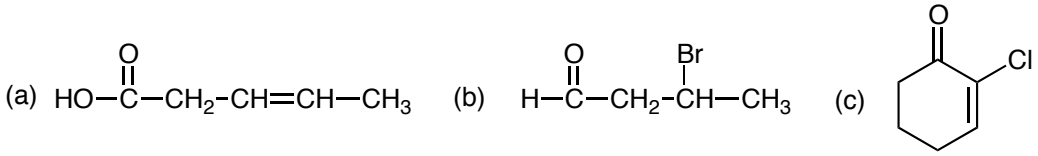
Long Island University, Department of Chemistry

Chem. 122, Sect 012, Exam 2, 150 pts, Spring, 2011

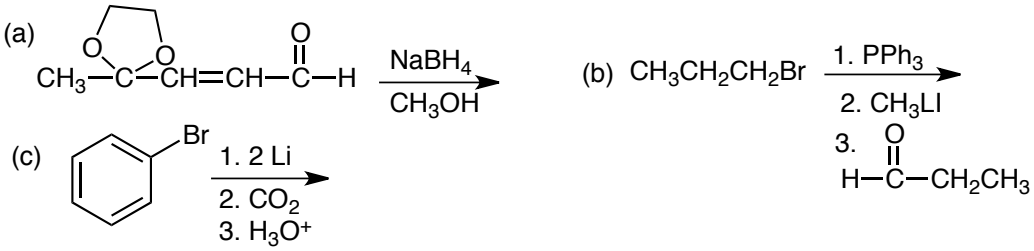
1. For the following molecule, predict (a) the number of carbon signals (b) the number of proton signals and their multiplicities and (c) give three significant IR absorptions and indicate what functional group each absorption each corresponds to. (15 pts)



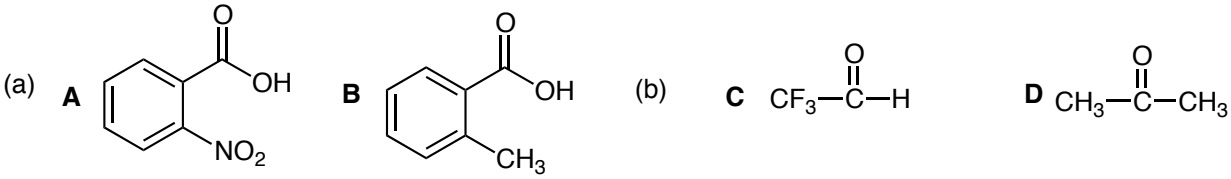
2. Name the following molecules. (15 pts)



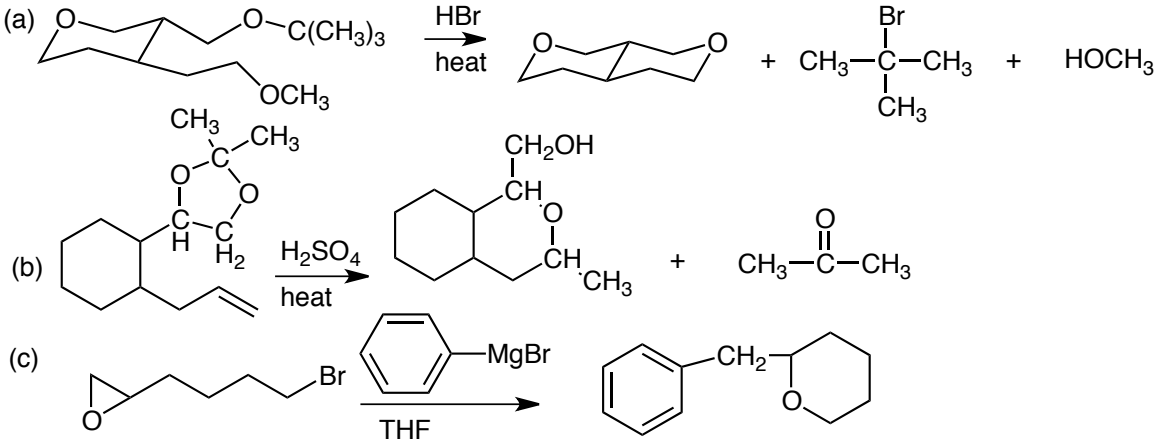
3. Give the product of the following reactions. It is not necessary to show the reaction mechanism but do show all intermediates formed. (30 pts, 10 pts each)



4. (a) Look at **A** and **B** and choose which is the stronger acid and briefly explain your reasoning. (b) Look at **C** and **D** and choose which one would form the greater concentration of hydrate in acidic (H_3O^+/H_2O) conditions and show the reaction that occurs, including all steps of the mechanism. Again, briefly explain th reasoning behind your choice. (15 pts)



5. Show how the following transformations occur, giving all of the steps of the mechanisms. No other reagents are needed except those given. (45 pts)



6. Synthesize **two** of the following **three** molecules from the starting materials given on the left as shown. Do all **three** for extra credit. (30 pts)