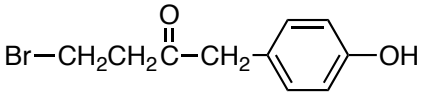
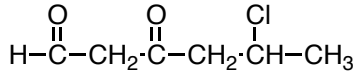
Long Island University, Department of Chemistry

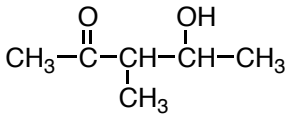
Chem. 122, Sect 009, Exam 2, 150 pts, Spring, 2012

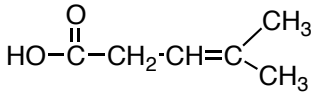
1. For the following molecule, predict (a) the number of carbon signals (b) the number of proton signals and their multiplicities and (c) give three significant IR absorptions and indicate what functional group each absorption corresponds to. (15 pts)



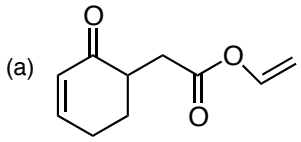
2. Name the following molecules. (15 pts)

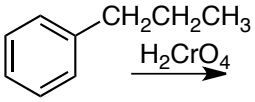
(a) 

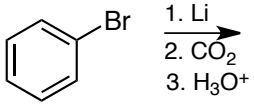
(b) 

(c) 

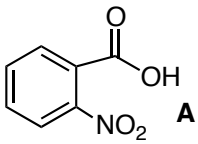
3. Give the product of the following reactions. It is not necessary to show the reaction mechanism but do show all intermediates formed. (15 pts,)

(a) 

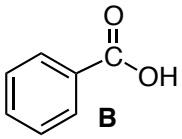
(b) 

(c) 

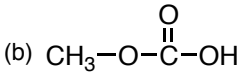
4. Look at the following pairs of molecules and in each case choose which is the stronger acid of that pair and briefly explain your reasoning. (10 pts)

(a) 

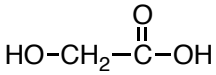
A



B

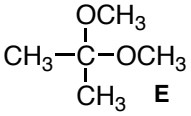
(b) 

C

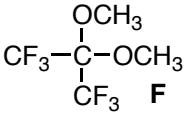


D

5. Which acetal would cleave faster? Explain your reasoning and show the complete cleavage reaction and mechanism for the molecule that you choose in H_3O^+/H_2O. (15 pts)

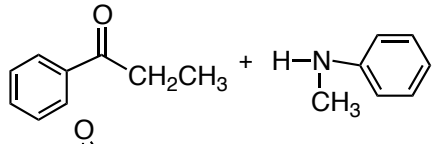


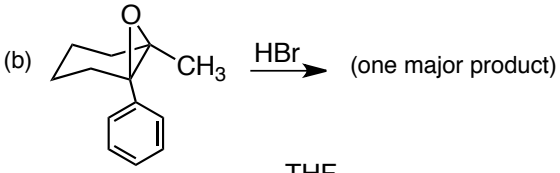
E

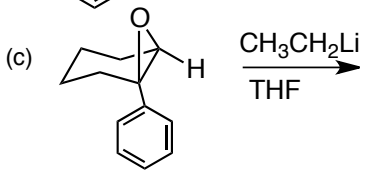


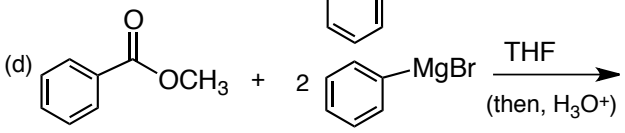
F

6. Give the product of the following reactions, showing all of the steps of the reaction mechanism. (60 pts)

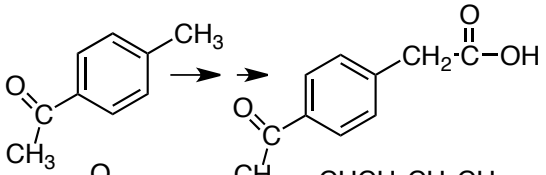
(a) 

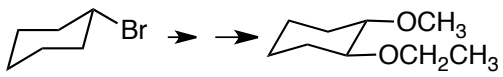
(b) 

(c) 

(d) 

7. Synthesize **two** of the following **three** molecules from the starting materials given on the left as shown. Do all **three** for extra credit. (20 pts)

(a) 

(b) 

(c)