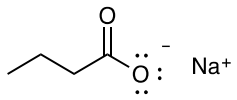
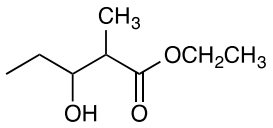
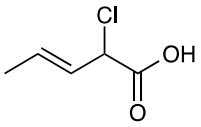
L.I.U.

Chem. 122, Sect 007 and Sect. 008 Final, 250 pts, Spring, 2015

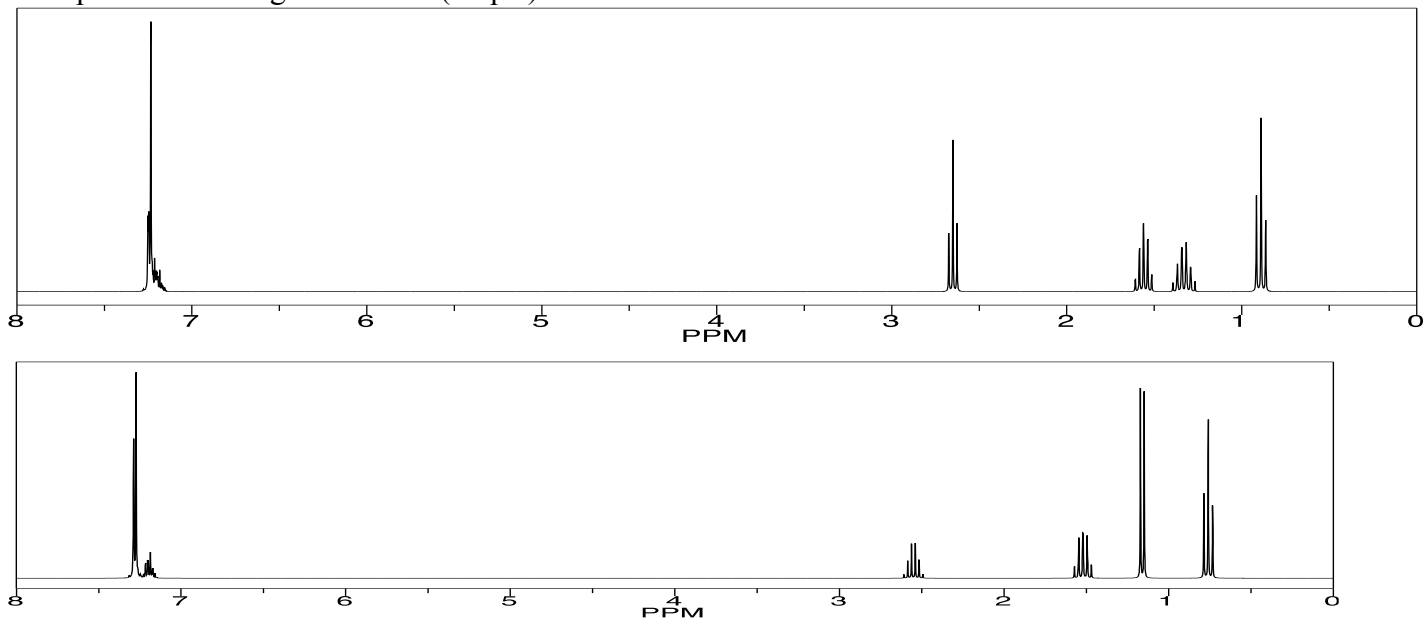
1. Name the following molecules. (15 pts)

(a) 

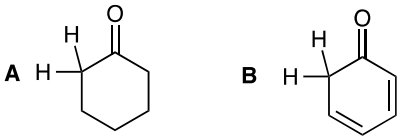
(b) 

(c) 

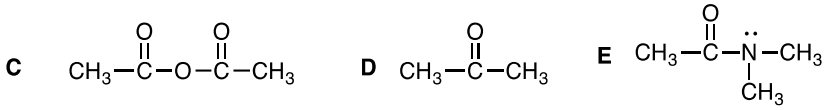
2. The two following molecules, **A** and **B**, are isomers with the formula $C_{10}H_{14}$. Find their structures based on the proton NMR's given below. (20 pts)



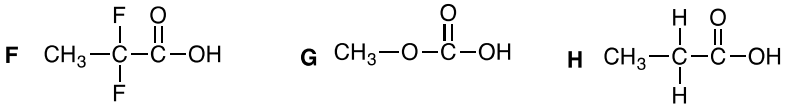
3. Which molecule would form the greatest amount of enol in acidic conditions (H_3O^+/H_2O)? Briefly explain your answer and show the reaction that occurs for the molecule that you choose. (10 pts)



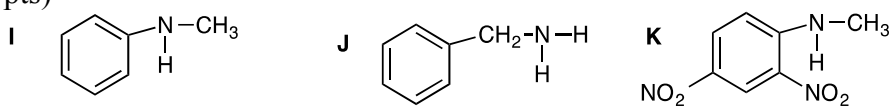
4. Which molecule would undergo the (a) fastest (b) slowest hydrolysis in basic conditions ($NaOH/H_2O$)? Briefly explain your choices and show the reaction that occurs for **BOTH** of the molecules that you choose. (15 pts)



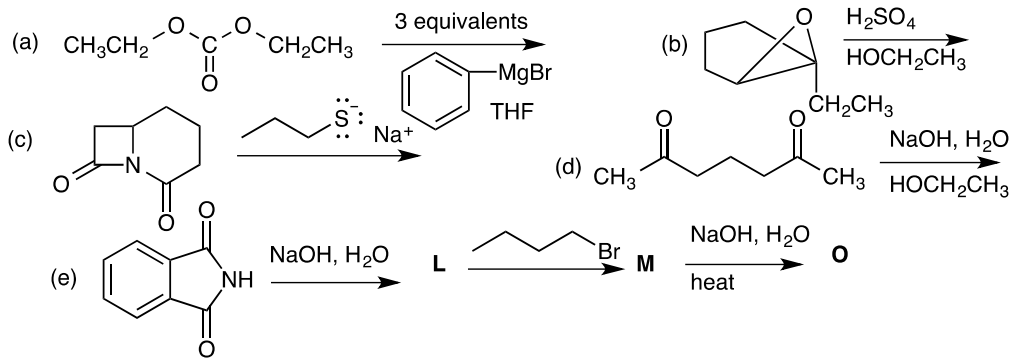
5. Which molecule is the (a) strongest acid (b) weakest acid? Explain your answer briefly in each case. (10 pts)



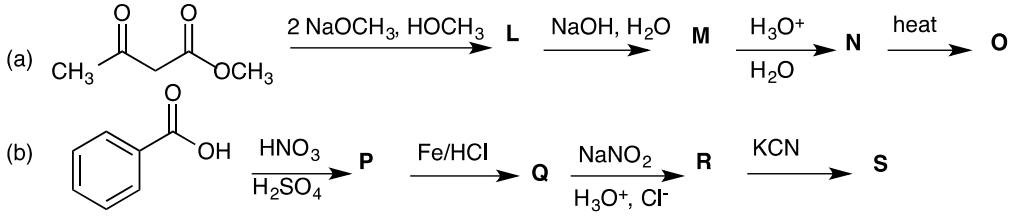
6. Which molecule is the (a) strongest base (b) weakest base? Briefly explain your answer in each case. (10 pts)



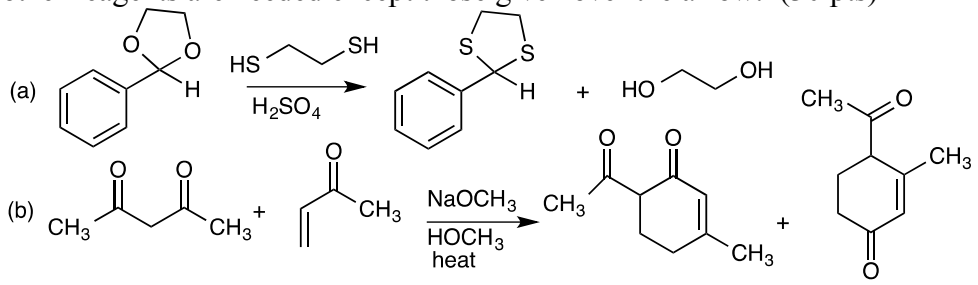
7. For the following reactions, give the product and show the complete reaction mechanism by which it is formed. (15 pts each 75 pts)



8. For the following reactions, show all of the intermediates. You do NOT need to show the mechanisms. (25 pts)



9. Show how the following reactions occur, giving all of the steps of a reasonable reaction mechanism. No other reagents are needed except those given over the arrow. (30 pts)



10. Synthesize **four** of the following molecules from the starting materials given on the left. Do all **five** for extra credit. (40 pts)