

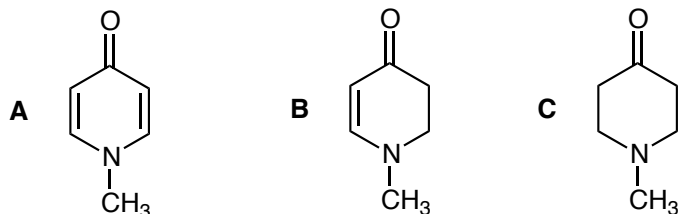
Name

L.I.U.

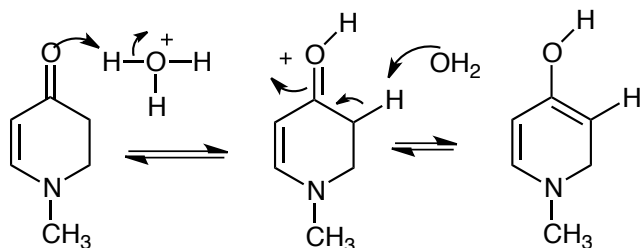
Chem. 122, Sect 009,

Quiz 4, 50 pts, Spring, 2012

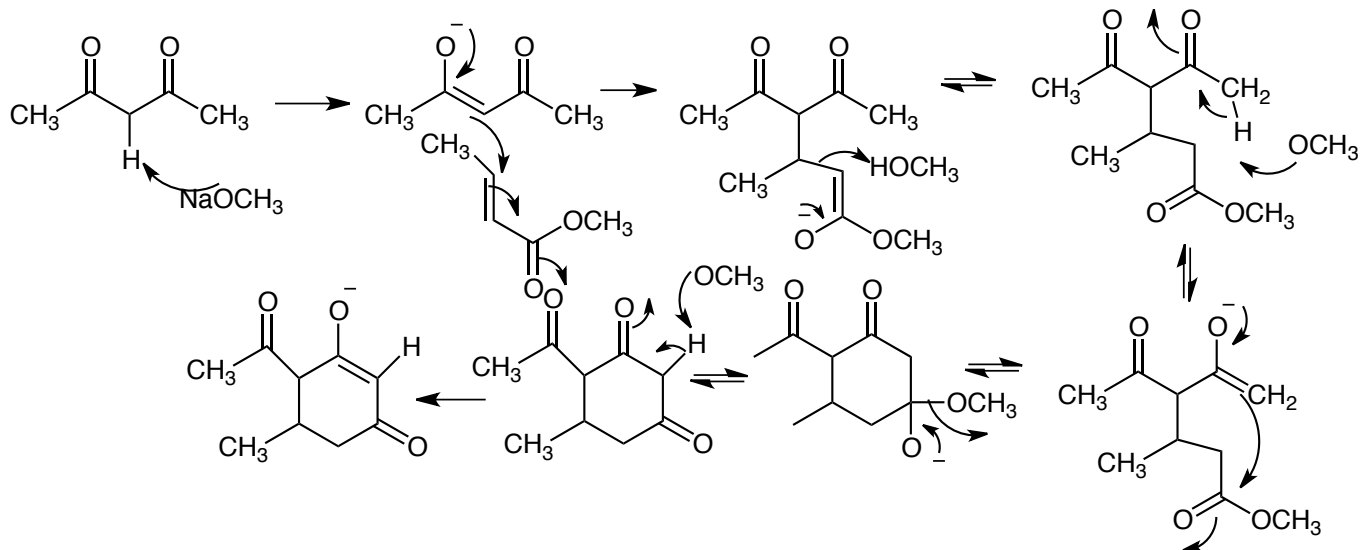
1. Which molecule can form the (a) greatest and (b) the least amount of enol in acidic conditions ($\text{H}_3\text{O}^+/\text{H}_2\text{O}$)? In each case briefly explain your answer and show the reaction that occurs in each case. (10 pts)



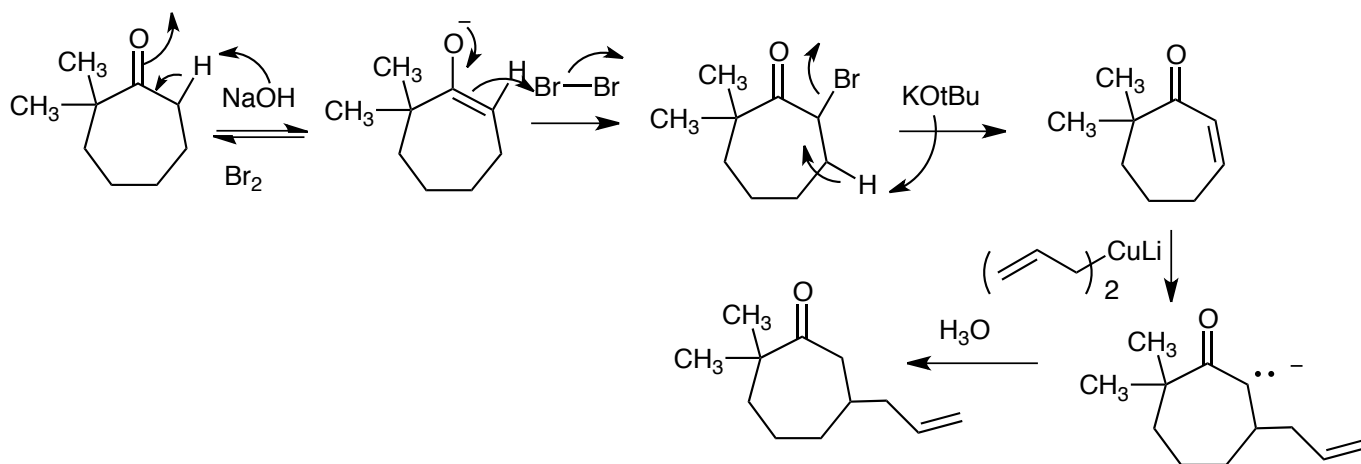
B will form the greatest amount of enol in acidic conditions since the enol will be conjugated with the existing double bond; **A** cannot enolize since it does not have any sp^3 alpha C-H bonds and you cannot form two double bonds to the same carbon when the carbons are constrained inside a ring.



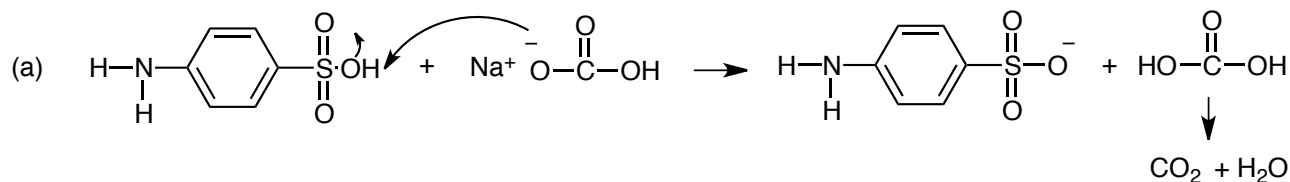
2. Show how the following transformation occurs, giving all of the steps of the reaction mechanism. (10 pts)



3. Synthesize the molecule on the right from the starting material given on the left. (10 pts)



4. In the preparation of methyl orange from sulfanilic acid ($\text{H}_2\text{NC}_6\text{H}_4\text{SO}_3\text{H}$), show the reaction that occurs when (a) sulfanilic acid is mixed with sodium carbonate. (b) How many mL of a 0.01 M solution would you need in order to react with 0.02 moles of sulfanilic acid? (c) Show the reaction that occurs between *N,N*-dimethylaniline and acetic acid ($\text{CH}_3\text{CO}_2\text{H}$). (d) Show the reaction that occurs when 1.0 M sodium hydroxide is added to the reaction mixture. (20 pts)



(b)
$$\frac{0.02}{0.01} \times 1000 \text{ mL} = 2000 \text{ mL}$$

