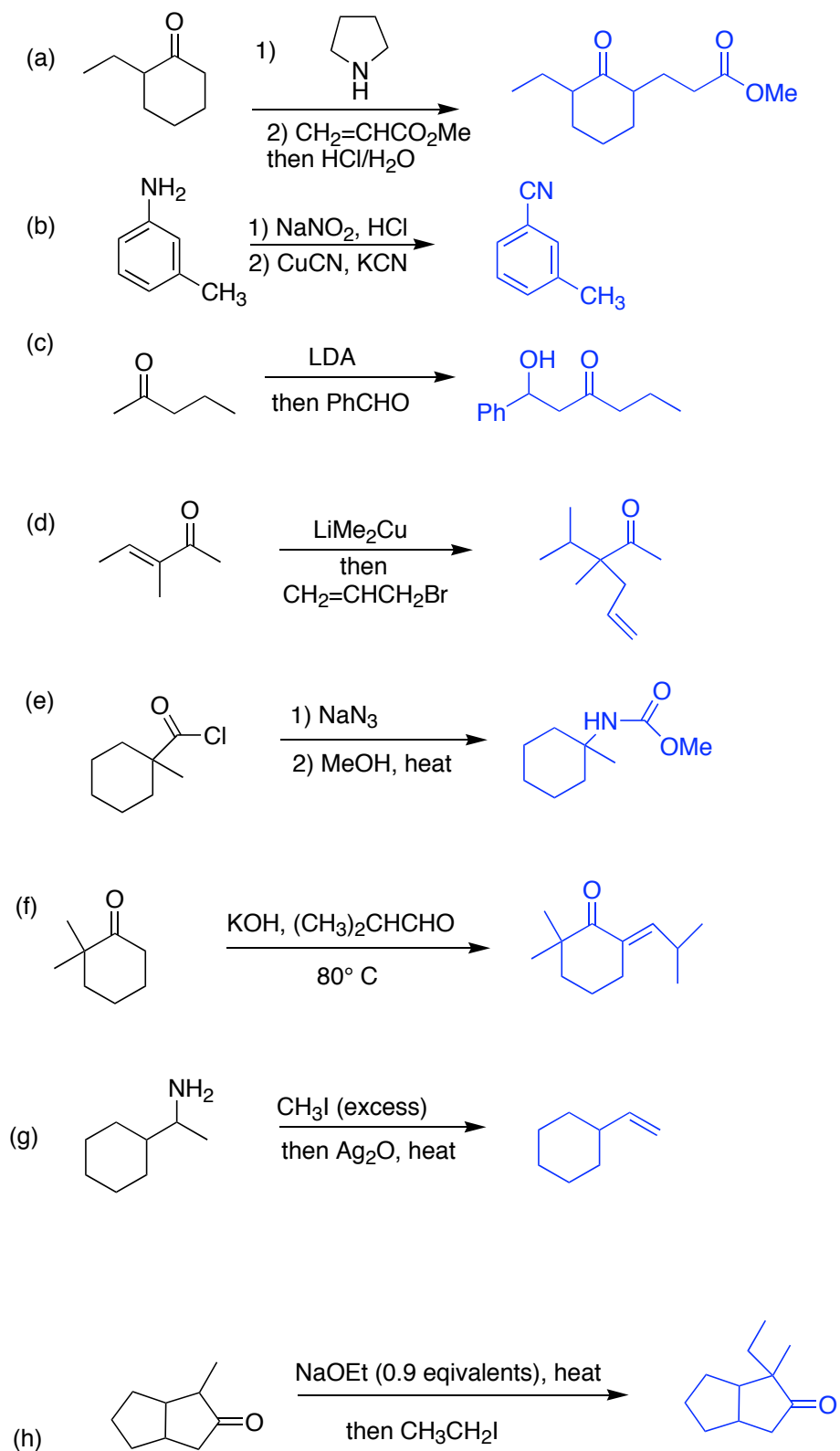
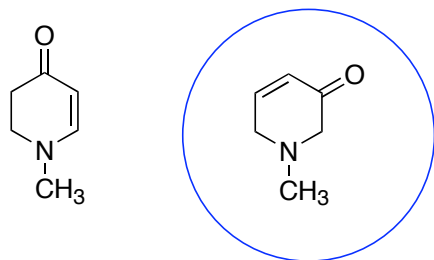


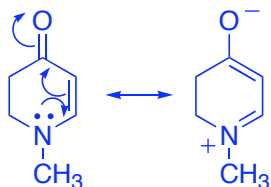
(1) Predict the major product from each reaction. If you expect no reaction, indicate.



(2) Which of these two compounds is more basic and why?

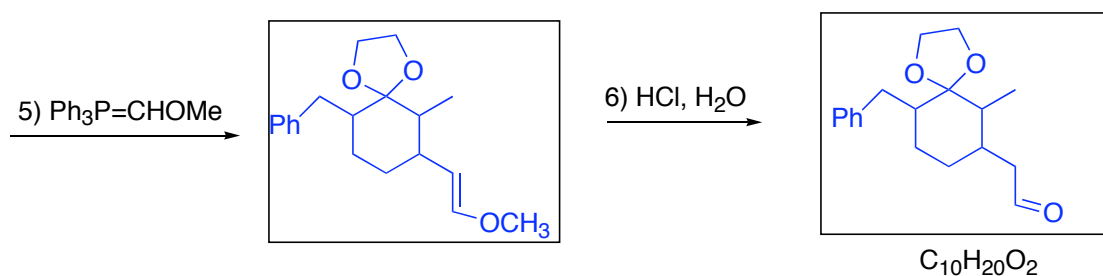
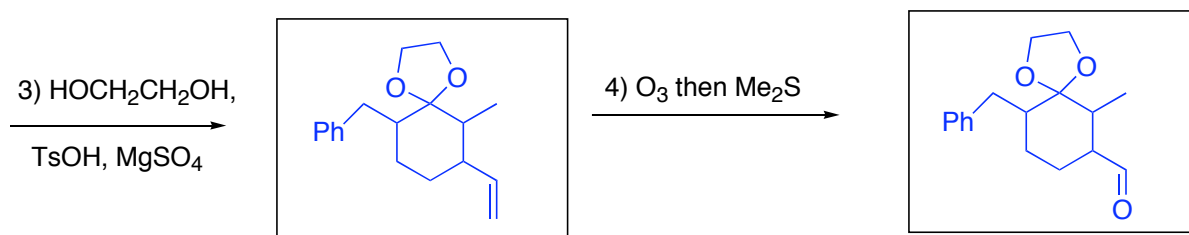
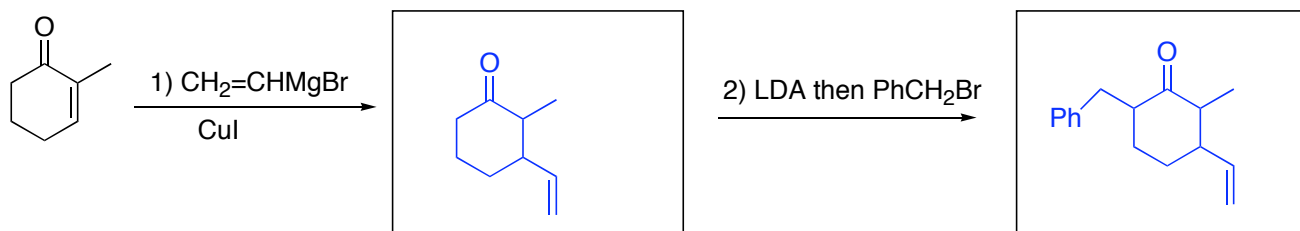


In the first compound, the lone pair on the nitrogen is tied up in resonance with the carbonyl group

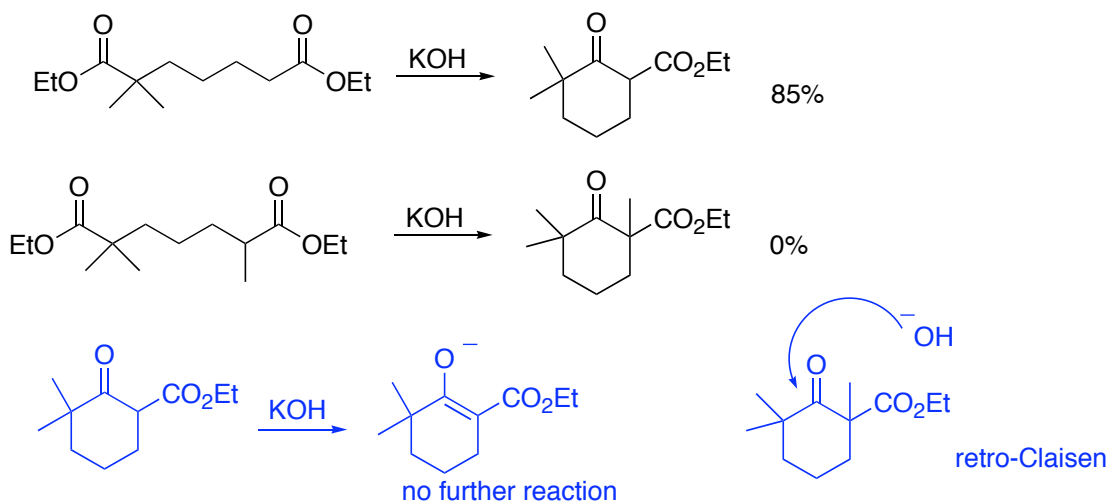


and is not as available for accepting a proton

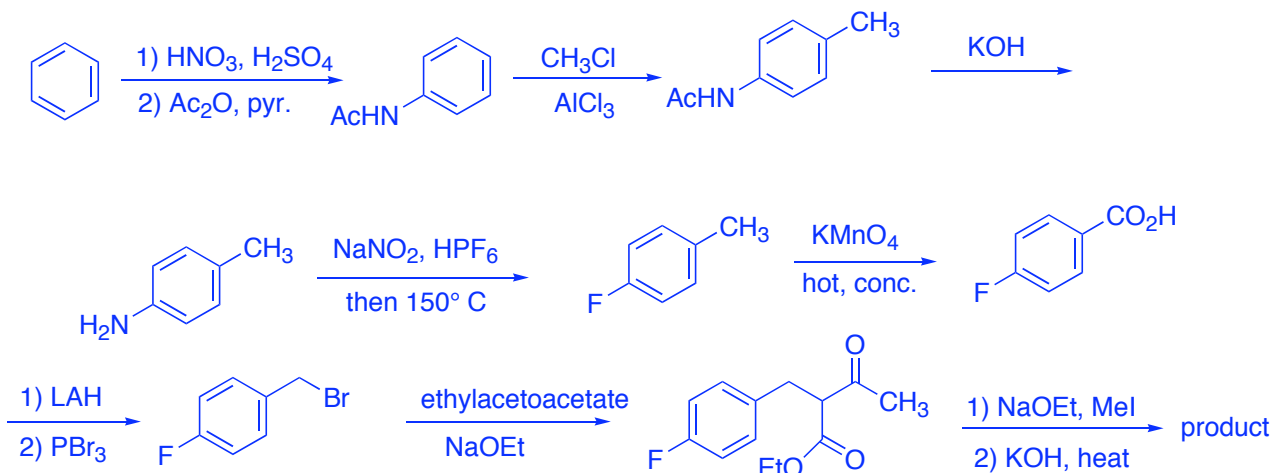
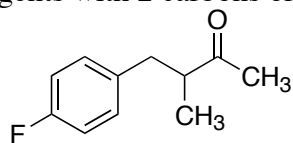
(3) Fill in the compounds in the following roadmap (only show the major product for each step)



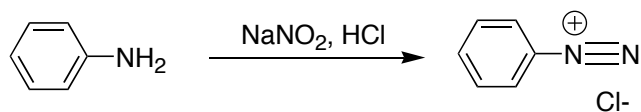
(4) Explain the following observations



(5) Using benzene and ethylacetoacetate, synthesize the following molecule. You may use any inorganic reagents or organic reagents with 2 carbons or less.

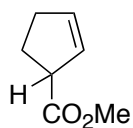
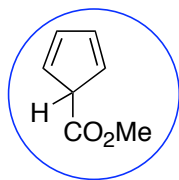


(6) Give a detailed mechanism for the following reaction



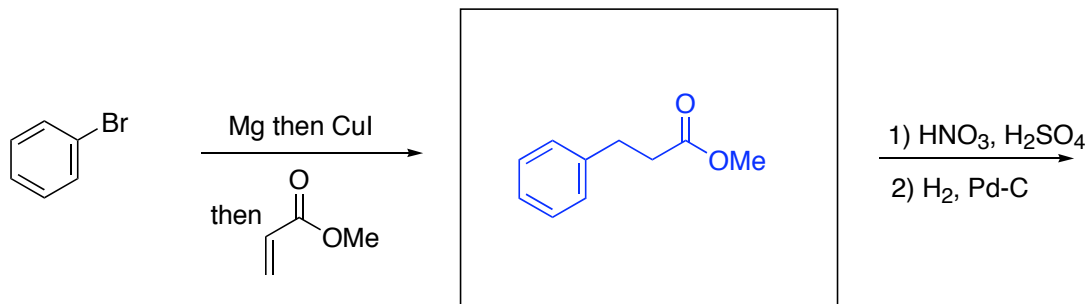
see your notes

(7) Which compound has the most acidic hydrogen and why?

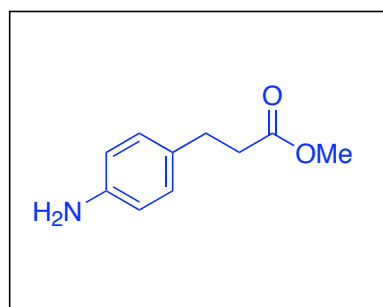


the anion from this molecule is aromatic

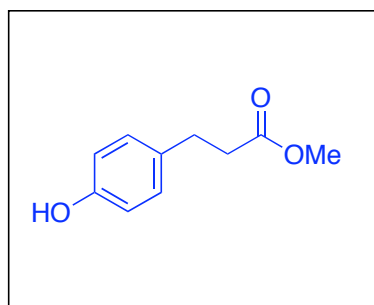
(8) Fill in the compounds in the following roadmap (only show the major product for each step)



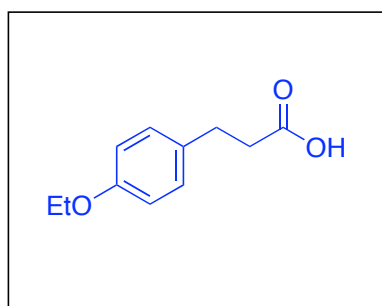
1) HNO₃, H₂SO₄
2) H₂, Pd-C



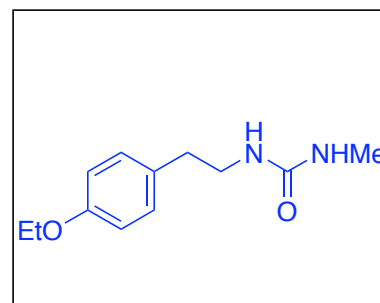
1) NaNO₂
2) Cu₂O, H₂O



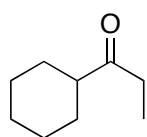
1) NaH, EtBr
2) KOH, heat



1) SOCl₂
2) NaN₃
3) 150° C, CH₃NH₂



(9) List the reagents (in order) needed to accomplish the following transformations



1) LDA, -78° C
2) PhCHO

