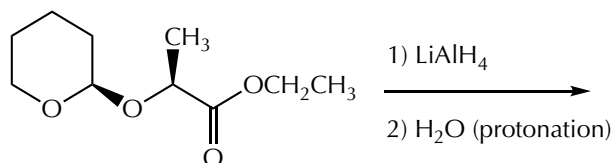
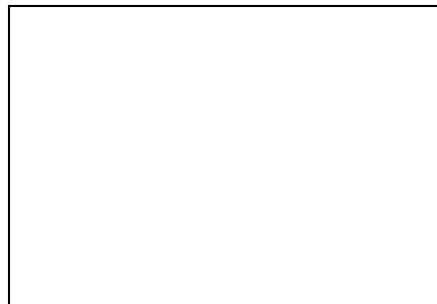
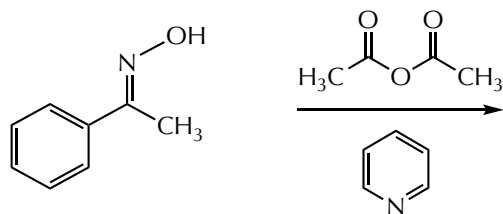


13.43 Complete the following transformations. Be sure to number sequential experimental steps.

(a) *Org Proc Res Dev*, **2002**, 6, 606.



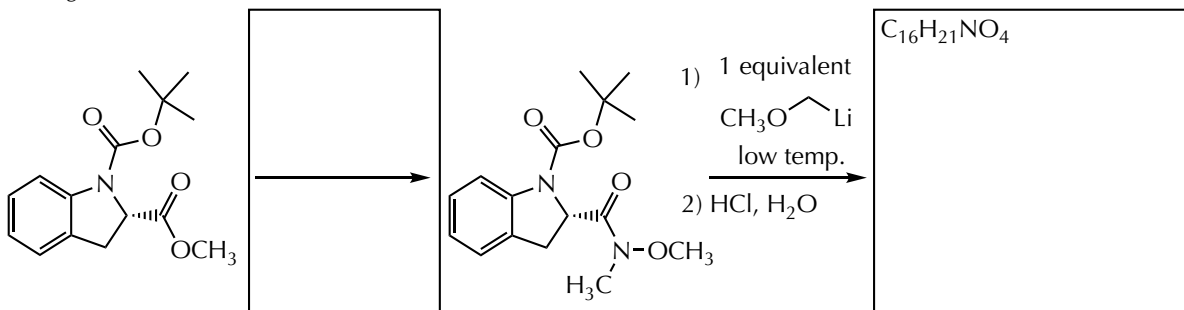
(b)



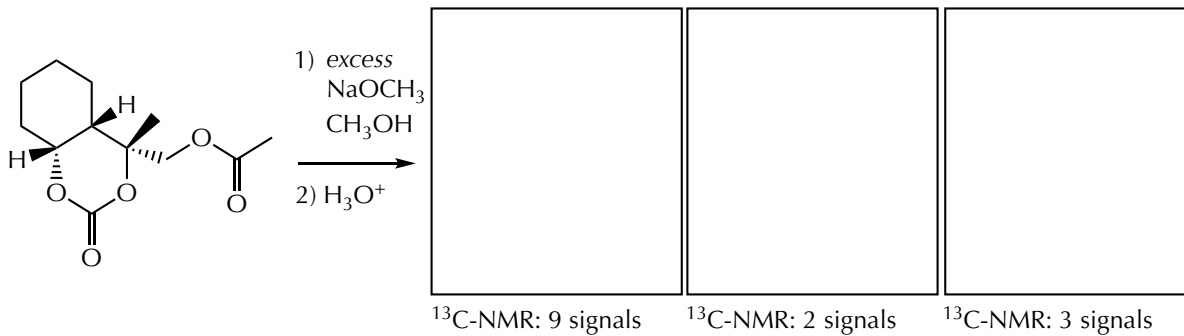
13.59

A. Provide the missing starting materials, reactants, or products for the following equations.

(a) *Org Lett*, **2003**, 5, 269.



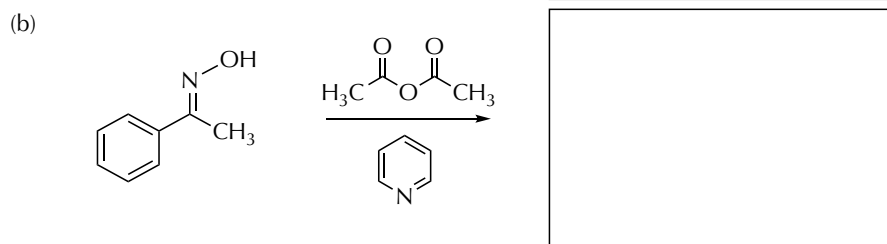
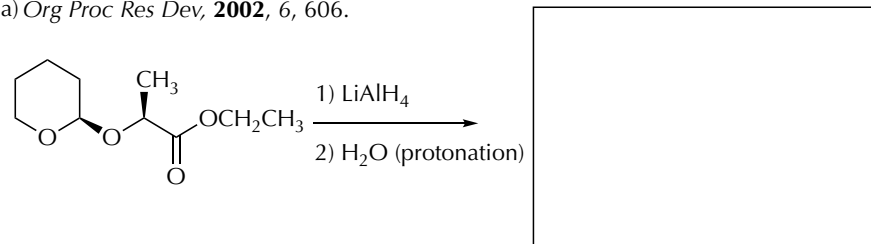
(b) *J Org Chem*, **2016**, 81, 11009.



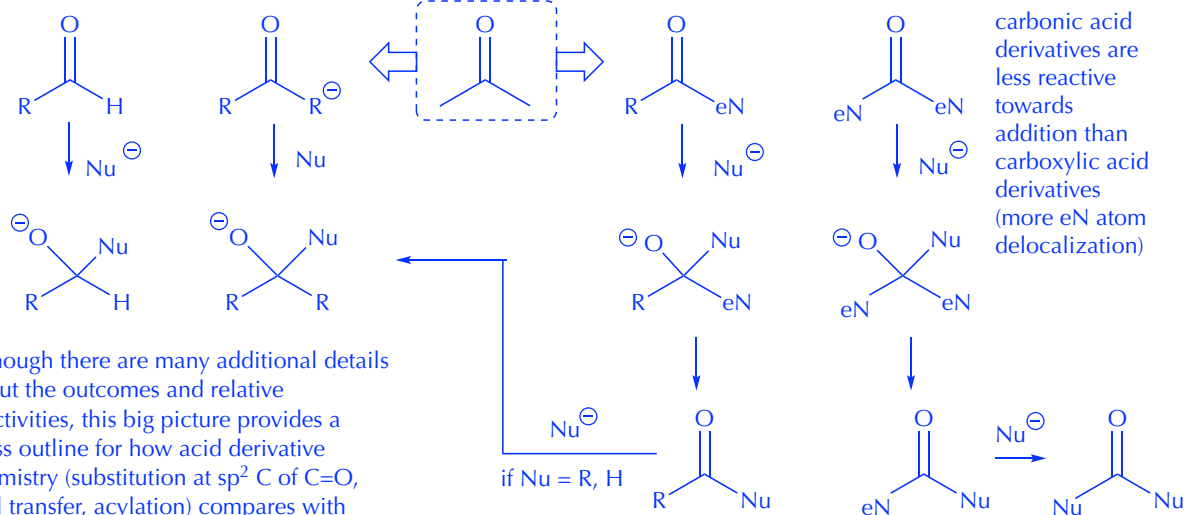
Chemistry 215 • Thinking in Blue • Week 05

13.43 Complete the following transformations. Be sure to number sequential experimental steps.

(a) *Org Proc Res Dev*, **2002**, 6, 606.



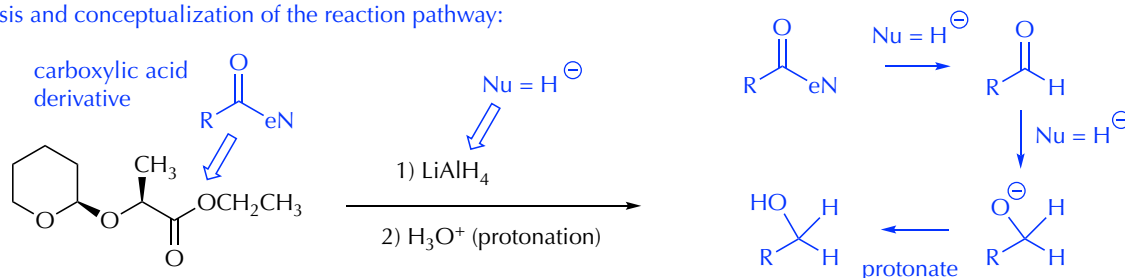
Carbonyl ($\text{C}=\text{O}$) chemistry divides according to whether the carbon atom is attached to at least one heteroatom or not. The reactions of aldehydes and ketones are dominated by nucleophilic addition reactions, while carboxylic acid and carbonic acid derivatives undergo substitution reactions by an addition-elimination mechanism. Correct identification of the carbonyl-containing functional group places the reactivity.



Although there are many additional details about the outcomes and relative reactivities, this big picture provides a gross outline for how acid derivative chemistry (substitution at sp^2 C of $\text{C}=\text{O}$, acyl transfer, acylation) compares with aldehyde/ketone chemistry

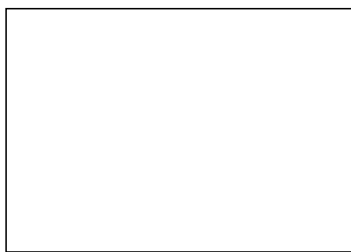
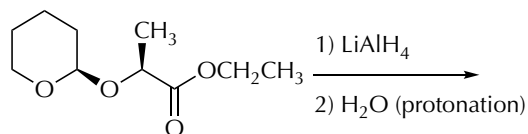
(addition to the $\text{C}=\text{O}$). The cross-over point is easy to see at this level: acylation of a carbon or hydrogen nucleophile creates a ketone or aldehyde, so a second, productive addition can occur.

Analysis and conceptualization of the reaction pathway:

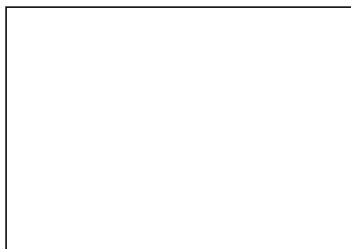
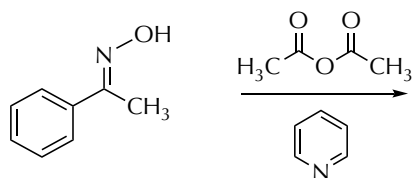


13.43 Complete the following transformations. Be sure to number sequential experimental steps.

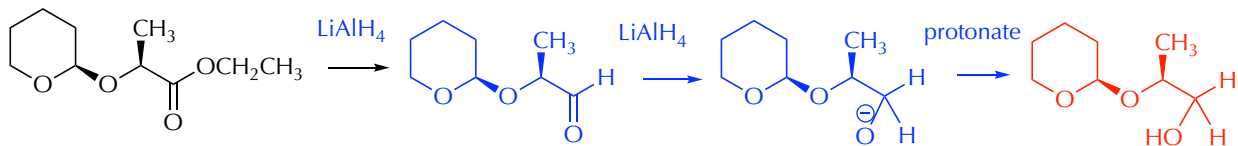
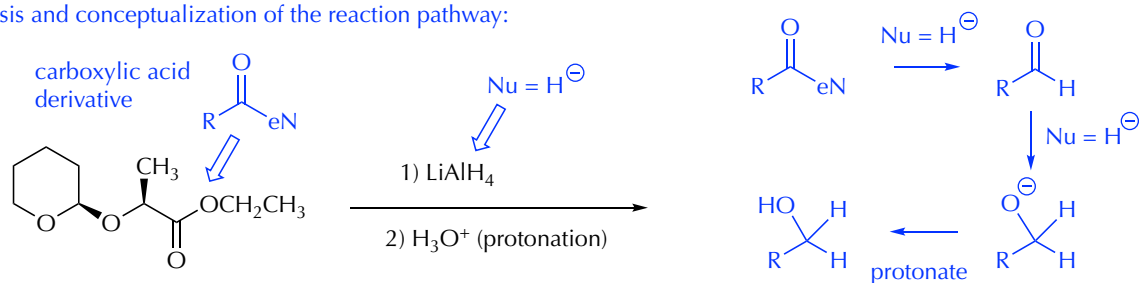
(a) *Org Proc Res Dev*, **2002**, 6, 606.



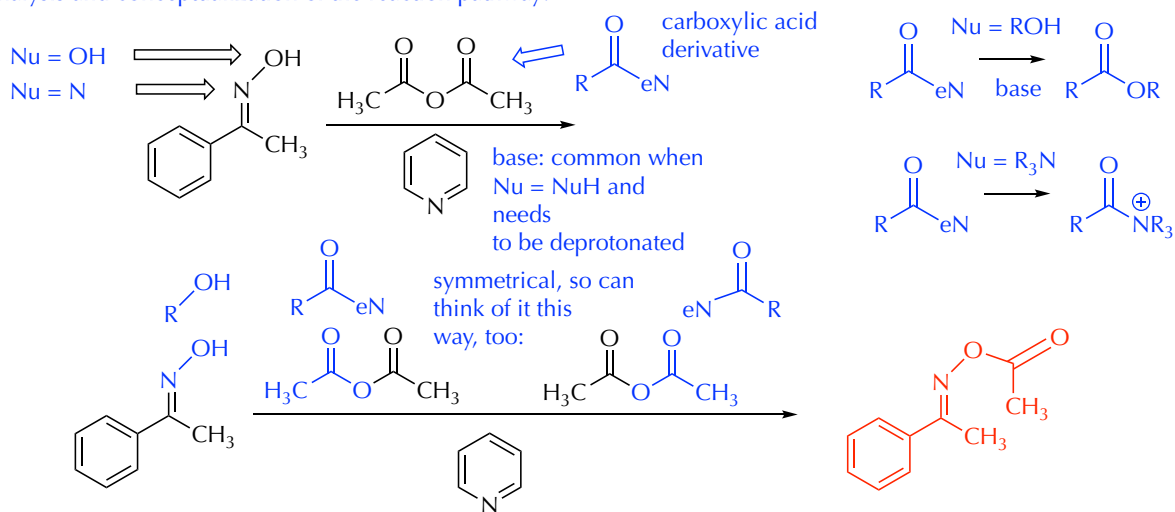
(b)



Analysis and conceptualization of the reaction pathway:



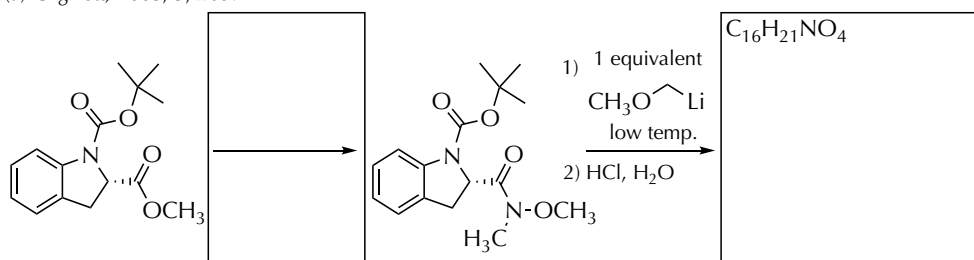
Analysis and conceptualization of the reaction pathway:



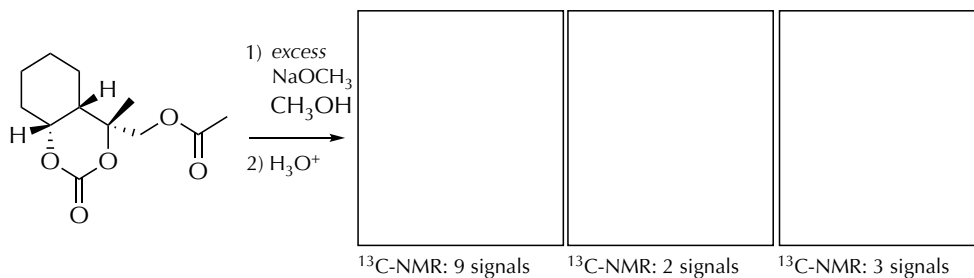
13.59

A. Provide the missing starting materials, reactants, or products for the following equations.

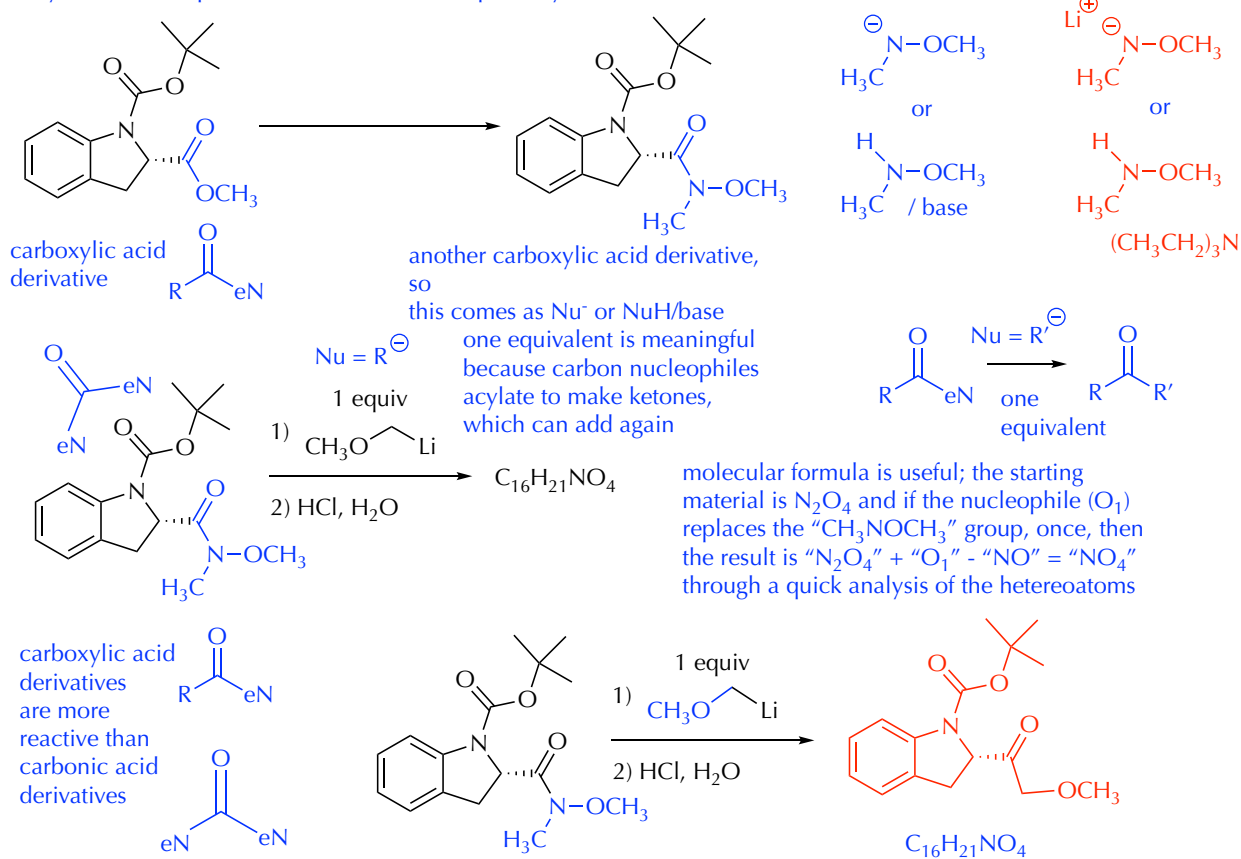
(a) *Org Lett*, **2003**, 5, 269.



(b) *J Org Chem*, **2016**, 81, 11009.



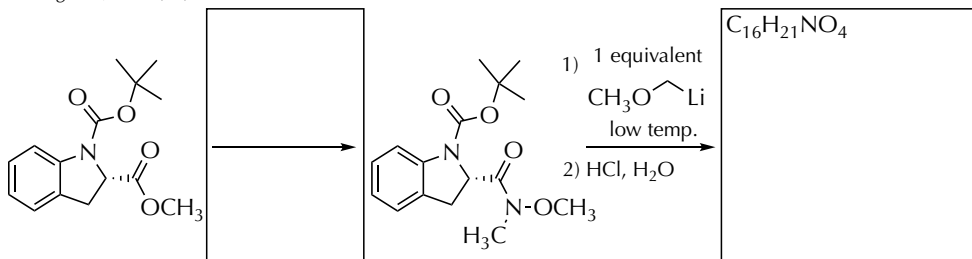
Analysis and conceptualization of the reaction pathway:



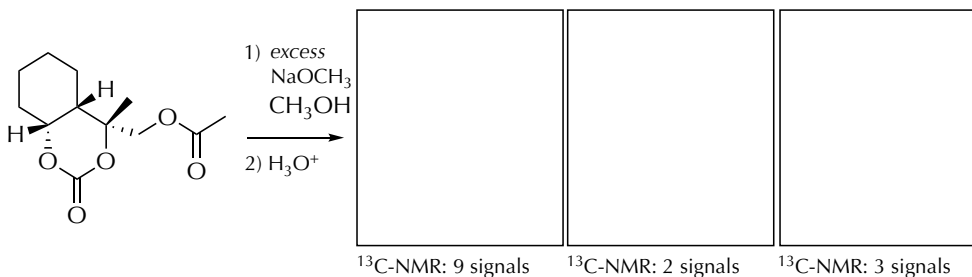
13.59

A. Provide the missing starting materials, reactants, or products for the following equations.

(a) *Org Lett*, **2003**, 5, 269.



(b) *J Org Chem*, **2016**, 81, 11009.



Analysis and conceptualization of the reaction pathway:

carboxylic acid derivatives are more reactive than carbonic acid derivatives, but this question specifically says "excess" of the nucleophile; three answer spaces is also a key clue about how far this reaction goes

