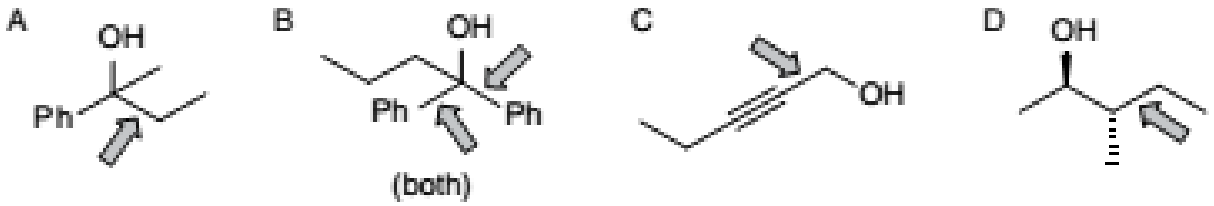
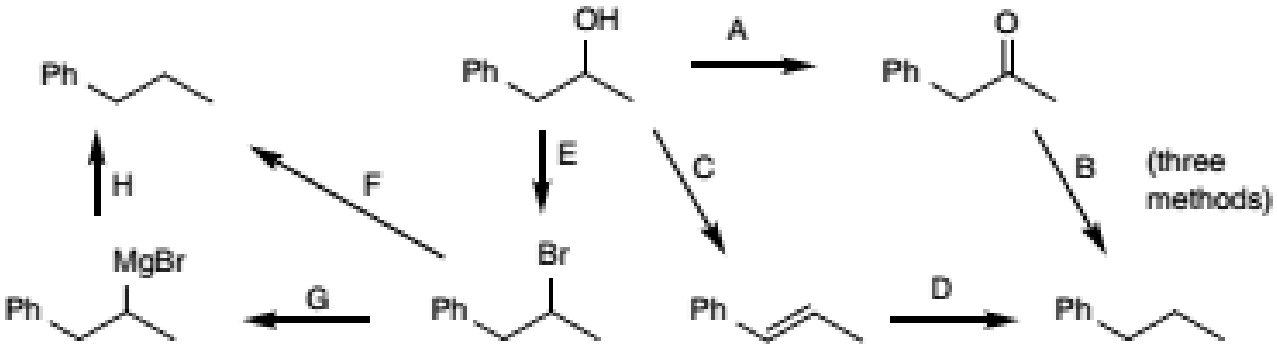
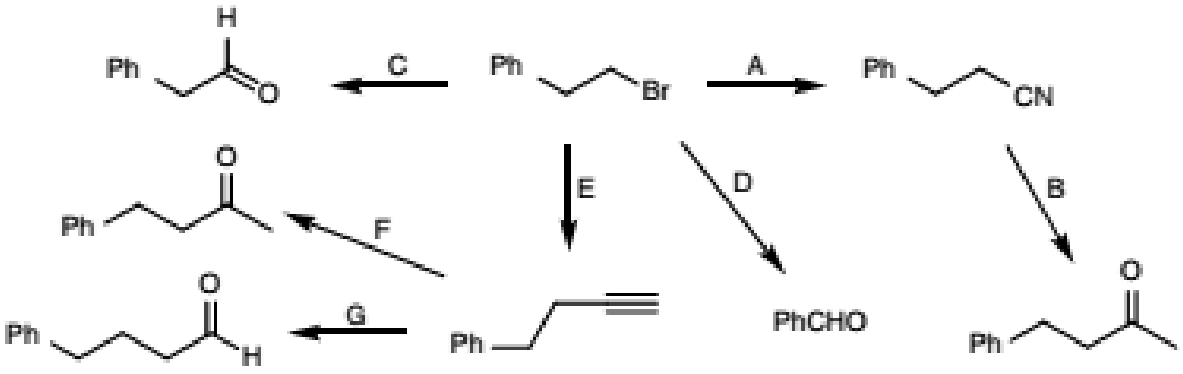
3.1b Each of the following TMs has a disconnection shown. Provide the starting materials needed to create the indicated bond.



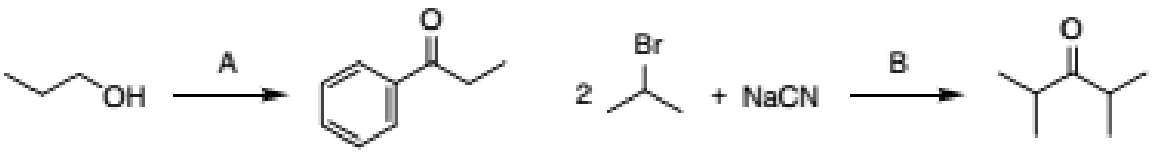
3.8A Provide the missing reagents.



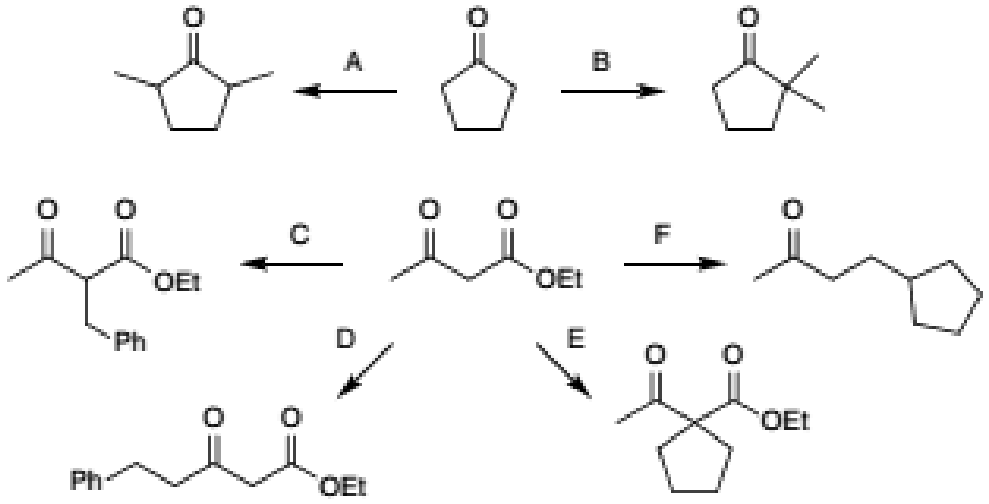
3.9A Provide the missing reagents.



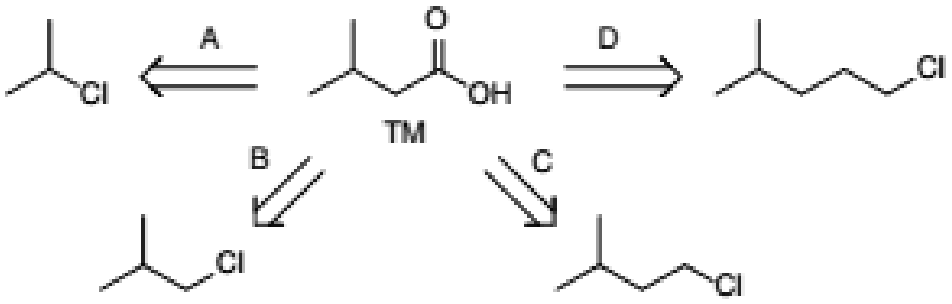
3.9B Provide the reagents needed for each of the following transformations (more than one step may be required).



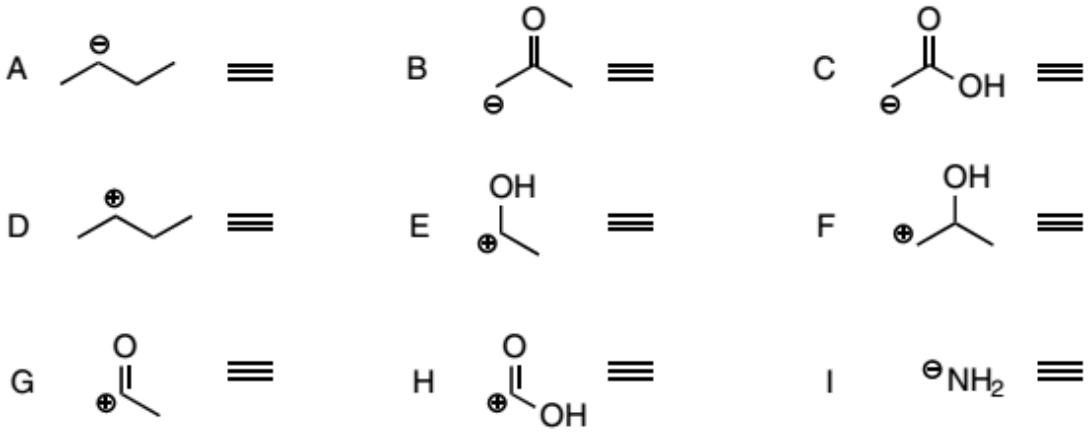
3.9C Provide the reagents needed for each of the following transformations (more than one step may be required).



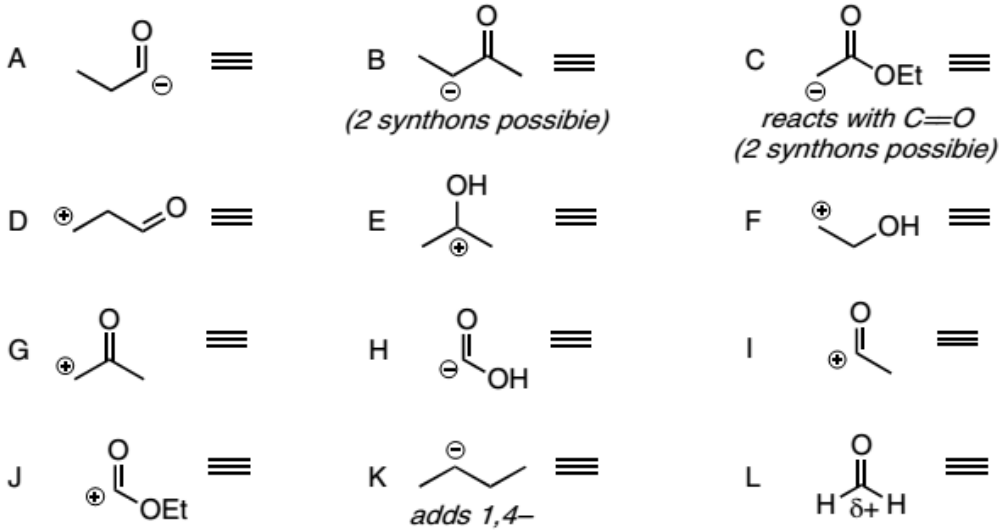
3.10 For each problem, provide a synthesis of the TM, using the given retrosynthesis.



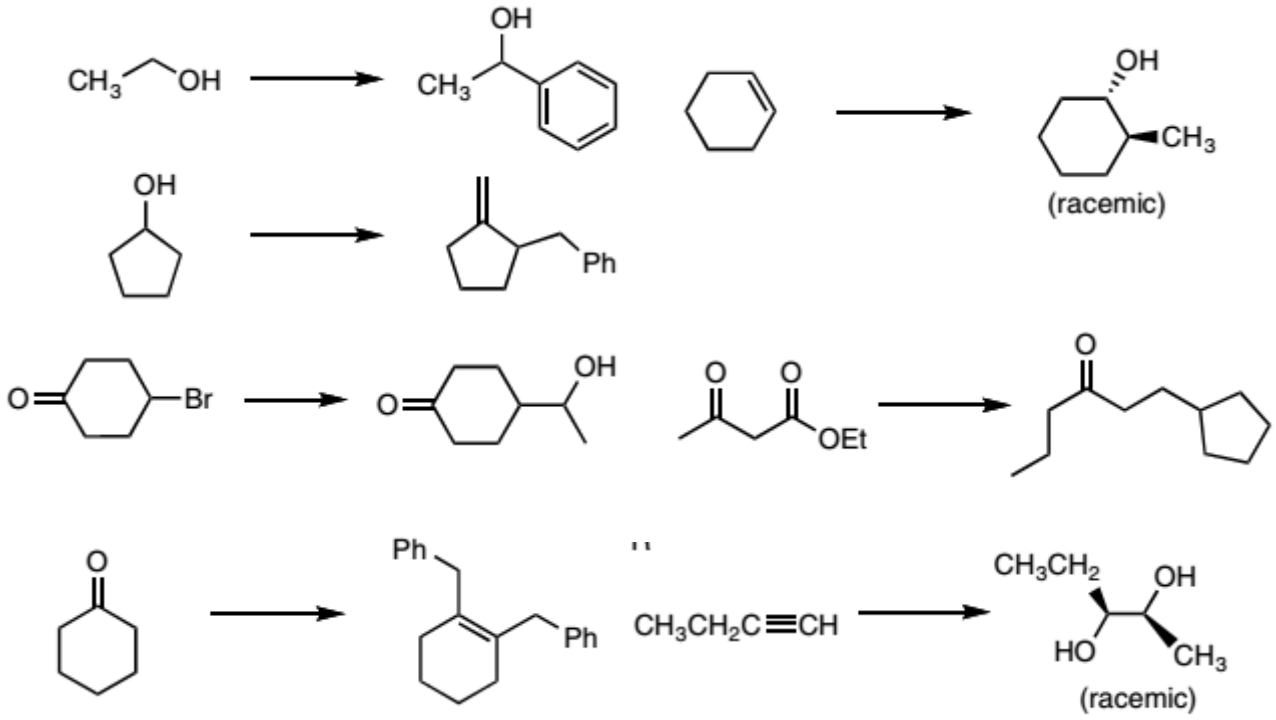
3-1. Provide the corresponding synthetic equivalent for each of the following synthons. In other words, what starting material would have the desired reactivity?



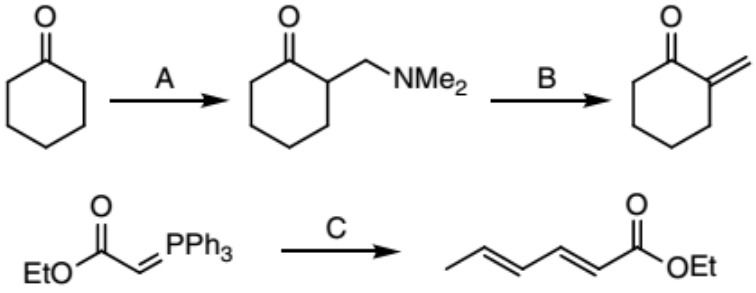
4-1. Provide the corresponding synthetic equivalent for each of the following synthons. In other words, what starting material would have the desired reactivity?



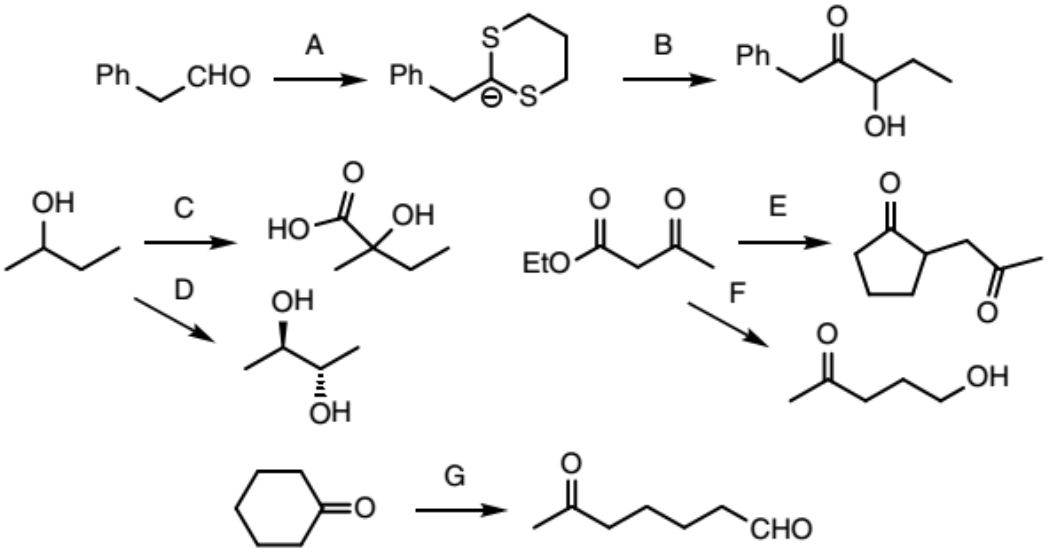
3-3. Provide the reagents necessary to transform the given starting material into the desired product. If more than one step is required, show the structure of each intermediate product. Consider both regiochemistry and stereochemistry when planning the synthesis; it may help to first do a retrosynthesis of the product.



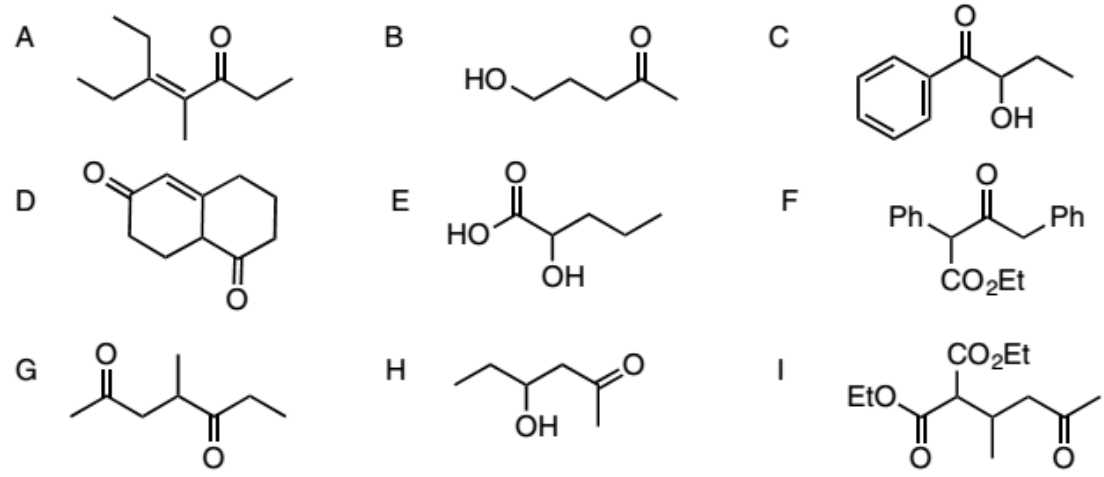
4.1B Provide the reagents needed for each of the following transformations (more than one step may be required).



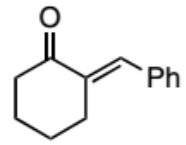
4.3 Provide the reagents needed for each of the following transformations (more than one step may be required).

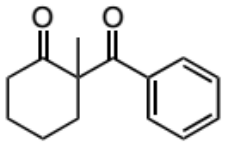


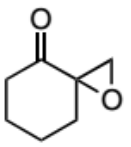
4-2. Propose a possible disconnection/retrosynthesis for each of the following target molecules. Consider the pattern of functional groups when determining the best site for a disconnection.

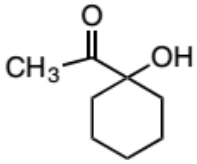


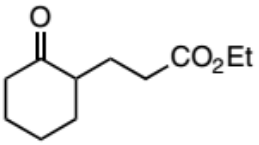
4-3. Starting with cyclohexanone, provide a synthesis for each of the following target molecules. It may help to first do a retrosynthesis of the TM.

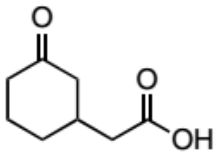
A 

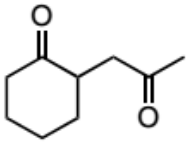
B 

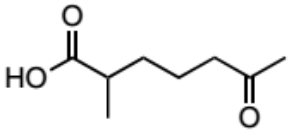
C 

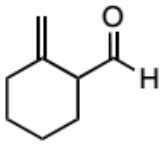
D 

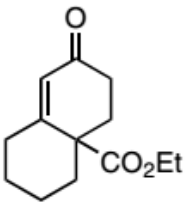
E 

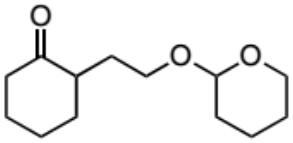
F 

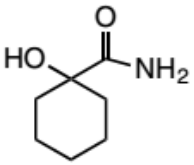
G 

H 

I 

J 

K 

L 

Provide the reagents necessary to transform the given starting material into the desired product. If more than one step is required, show the structure of each intermediate product. It may help to first do a retrosynthesis of the product.