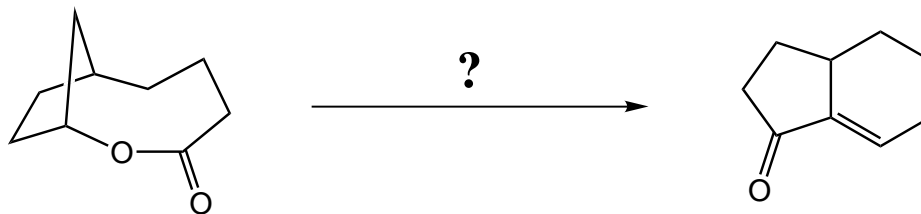


**Organic Chemistry c3444y**  
**Problem Set 5 - Enolates, Aldols, Mannich, Enamines**  
**Due in class Friday, March 29**

Relevant Book Problems: 22.23-22.25, 22.32, 22.33, 22.36-22.39, 22.45, 22.51, 23.26, 23.27, 23.33, 23.34, 23.41, 23.42, 23.44, 23.48, 23.49, 23.56-23.59.

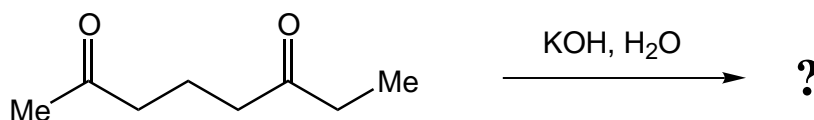
Relevant Reading: 23.1, 23.2, 23.3, 23.4, 23.6, 23.7, 23.11, 23.12, 23.13. See also 19.9 for enamine formation.  
 Current and future reading: Chapter 21 through 21.8.

1. Propose a synthesis to accomplish the following transformation:  
 (Hint: Work backwards from the product one step. Then try to find similarities in the carbon atom connectivity between that intermediate and the starting material.)

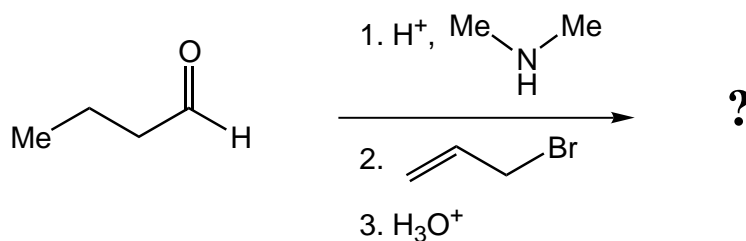


2. Predict the product of the following reactions:

a.

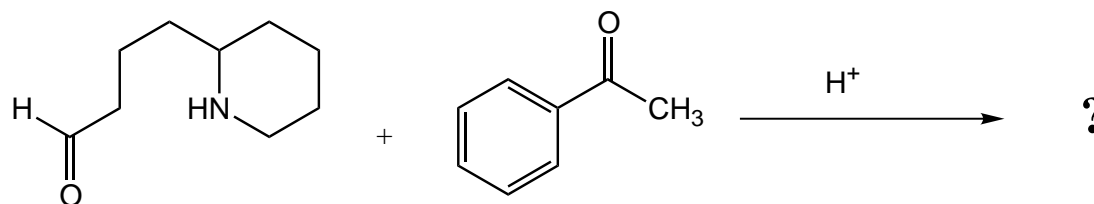


b.

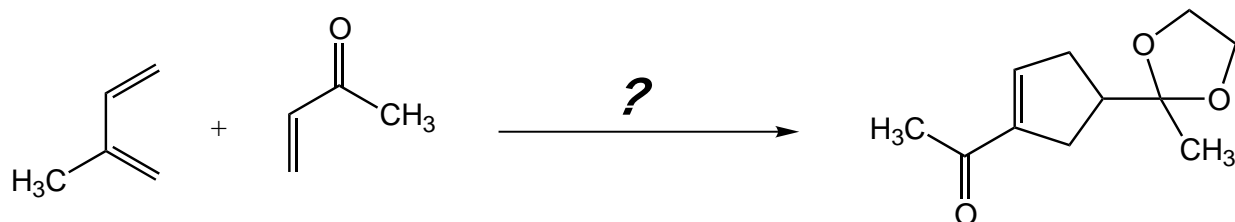


Why is this the best way to achieve this transformation?  
 There is, on paper, a one step method to achieve this, but it won't work here? Why not?

3. Write out a mechanism for, and predict the product of the following reaction:

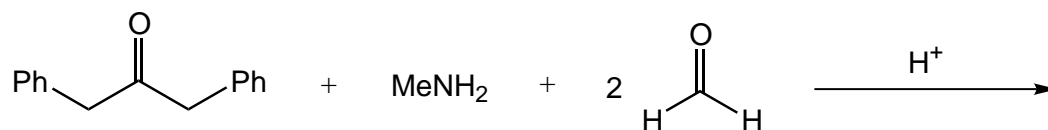


4. Propose a synthesis of the illustrated target from the provided starting materials. It will be helpful to work backward from the product one step and forward from the starting materials one step, and then see if you can link them.

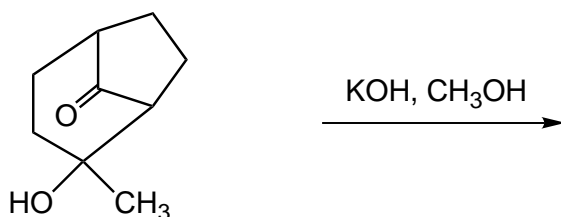


5. Predict the product of the following reactions:

a.



b.



6. When the following two molecules are allowed to react with each other, a condensation takes place to produce the rather complicated structure **A**, which precedes to the final product **B**, by way of an electrophilic aromatic substitution. Propose a mechanism for the conversion of the starting materials to compound **A**.

*Hint: Don't be put off by the seeming complexity. You know all of the reactions involved.*

