

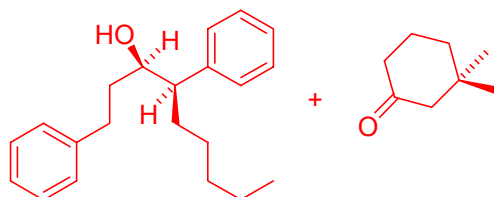
**U. of Kentucky Chemistry 535 Synthetic Organic Chemistry Spring 2007  
Final Exam Open Notes**

1. Consider the reaction below.

a. (35 pts.) Work out a forward synthesis of the following molecule (one diastereomer).

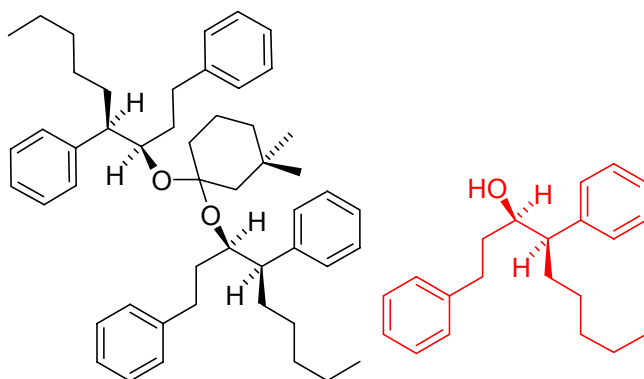
b. (5 pts.) Explain the logic behind your very first disconnection.

Disconnect at the ketal. This simplifies the problem greatly because the target molecule breaks down to:



c. (10 pts.) How much more difficult would an enantiospecific synthesis be? Explain.

The target is complicated by remote stereochemistry. We need the component alcohol as one enantiomer if we are going to make one diastereomer of the desired material. So there is no difference in difficulty between a diastereospecific and an enantiospecific synthesis.



3,3-dimethylcyclohexanone by  
1,4-addition

The molecule at left needs to  
be constructed enantiospecifically  
because we want only one  
diastereomer in the end.

There are many ways that we have studied to make the alcohol.

RULES: Use no fragments greater than seven carbons atoms.