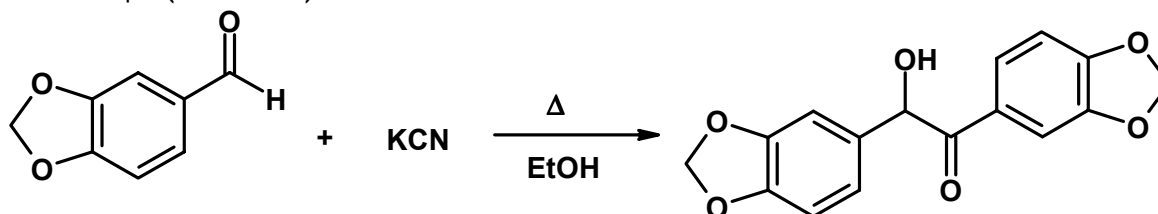


University of Windsor  
Department of Chemistry and Biochemistry  
59-531 Midterm Exam

Time: 55 minutes

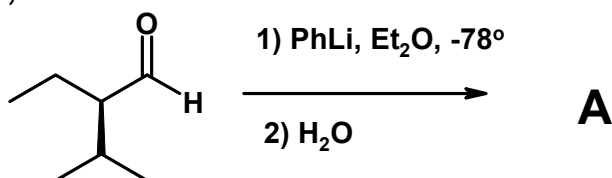
Feb. 21, 2005

1. The problem with base induced cyanohydrin formation is often competition from a benzoin condensation. If you attempt it under the *following* conditions you get entirely the benzoin condensation product. Provide a reasonable mechanism for the process. Include all steps (10 marks).



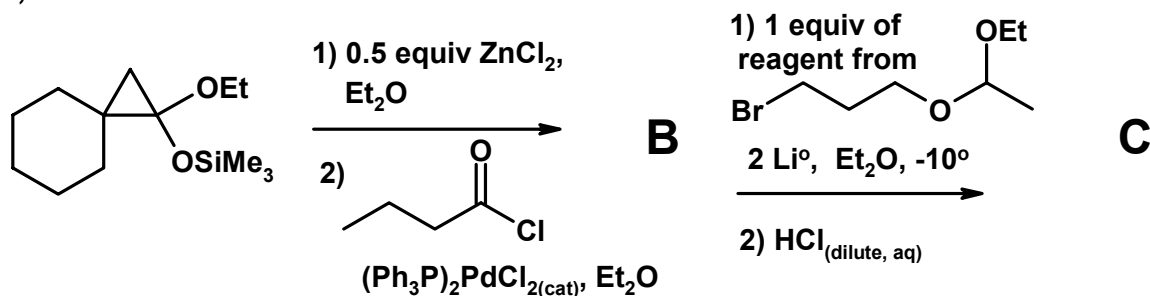
2. Indicate the structure of the major expected product of each of the following transformations. Include the product stereochemistry where it applies. Give the reasoning behind your answer (i.e., show your work) to the degree that's possible in a 1h exam. *I also wish to see any intermediates that could be isolated along the way* (35 marks).

a)

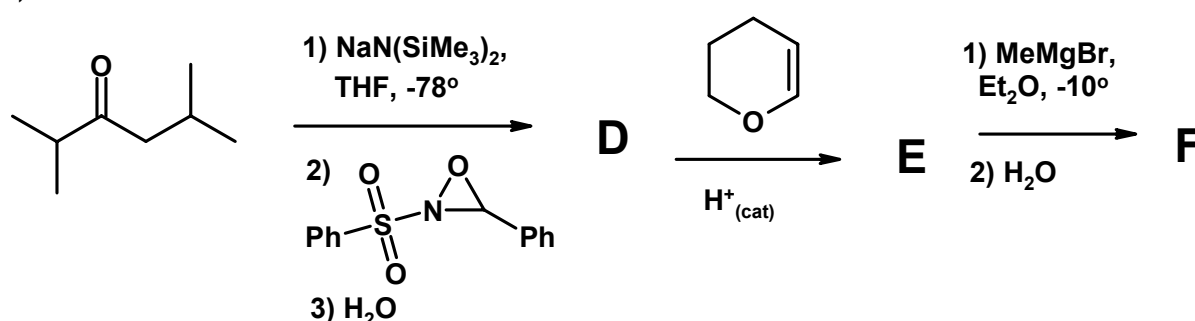


Also.....Is the above a stereospecific or stereoselective process. Why?

b)



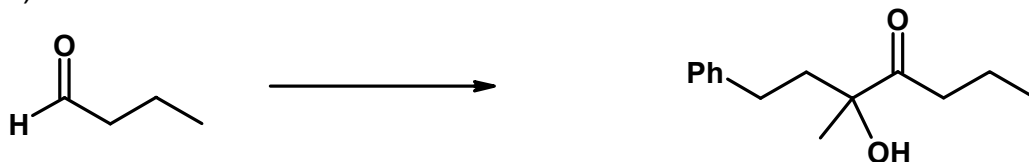
c)



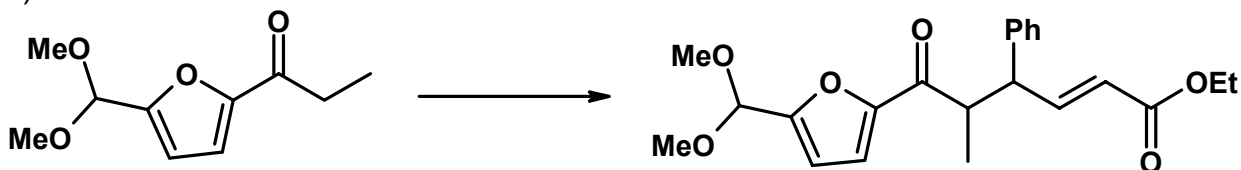
Also: assign the appropriate stereochemical descriptor to major diastereomer in F

3. Show by equation how you would prepare the products illustrated from the given starting material. You may use any other reagent you deem fit. Show all reagents, conditions, and intermediates that could be isolated. Mechanisms are not necessary, but showing your work may be a help (30 marks).

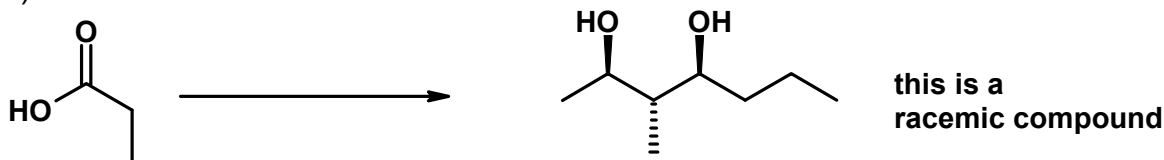
a)



b)



c)



**Bonus:** The Lewis acid mediated reaction of substituted allyltins or allylsilanes with aldehydes gives reasonably good diastereoselectivity, and gives the same diastereomer predominantly regardless of the stereochemistry of the double bond stereochemistry. Provide a reasonable rationale (i.e. transition state) for the transformation.

