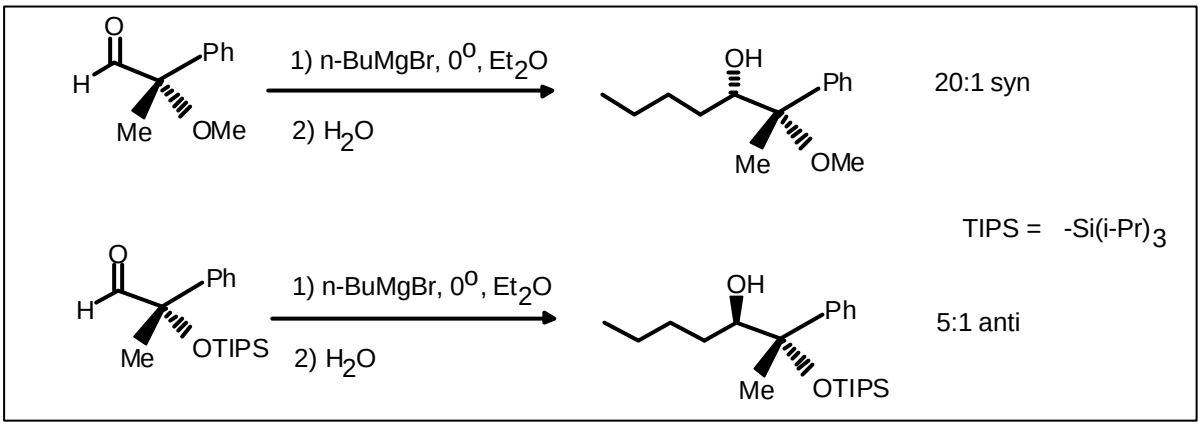
University of Windsor
School of Physical Sciences
Chemistry and Biochemistry

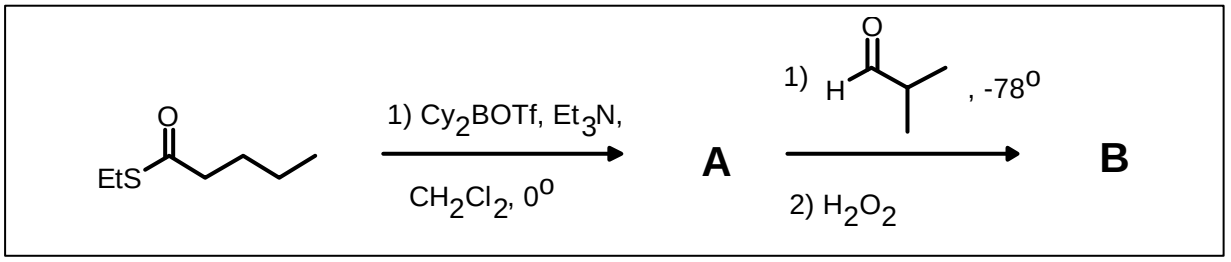
Chemistry 59-531/431 **Nov. 5, 1998**
Midterm Test **50 minutes**

1. Explain the following apparent oddity in terms of mechanistic/transition state arguments. The two apparently closely related substrates are attacked by the identical reagents under similar conditions to give the opposite diastereomeric products (predominantly). Feel free to use the conformational A value table for assistance. (**10 marks**)

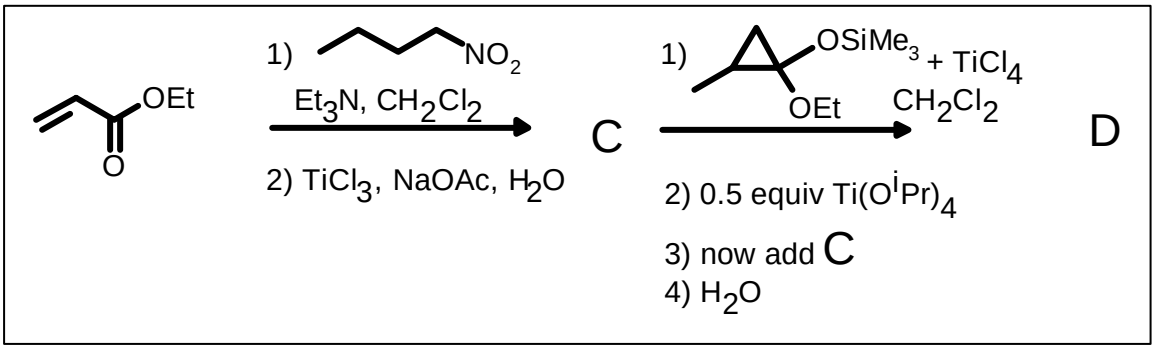


2. Indicate the structure of the major expected product of each of the following transformations. Include the product stereochemistry where it applies. Mechanisms are not necessary, but may be a help. *I also wish to see isolable intermediates along the way.* (**30 marks**)

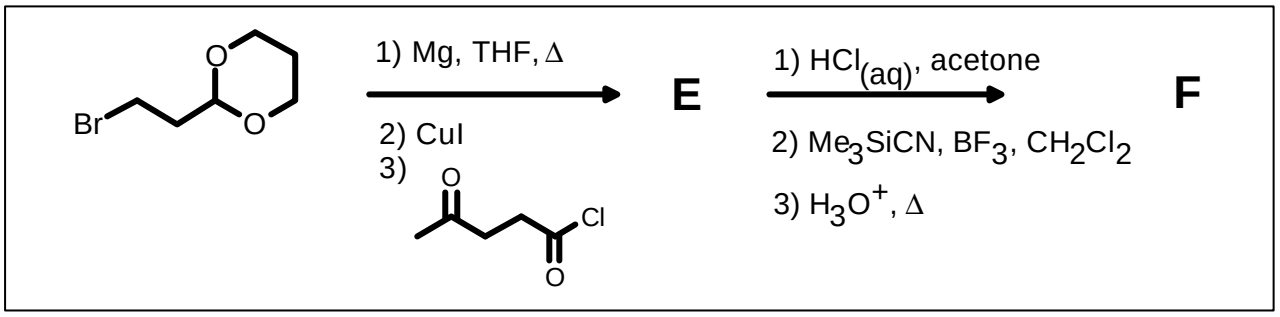
a.



b.

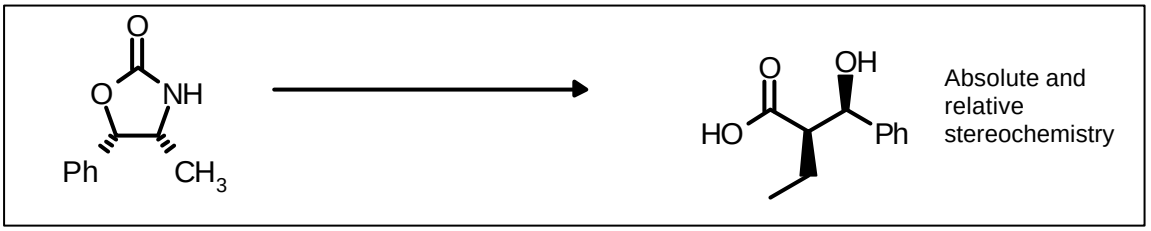


c.

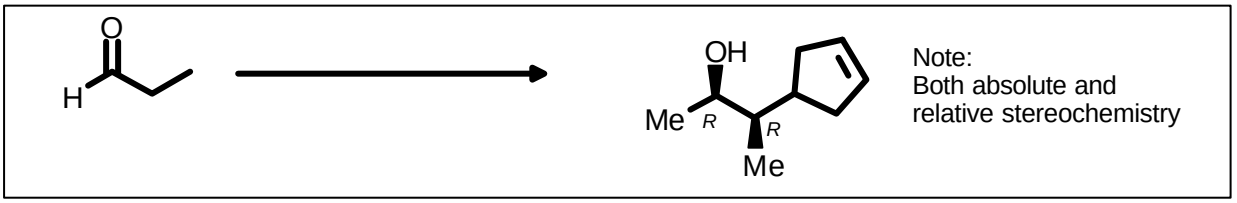


3. Show by equation how you would prepare the products illustrated from the given starting material. You may use any other reagent you deem fit. Show all reagents, conditions, and isolable intermediates. Mechanisms again are not necessary, but may be a help. (**30 marks**)

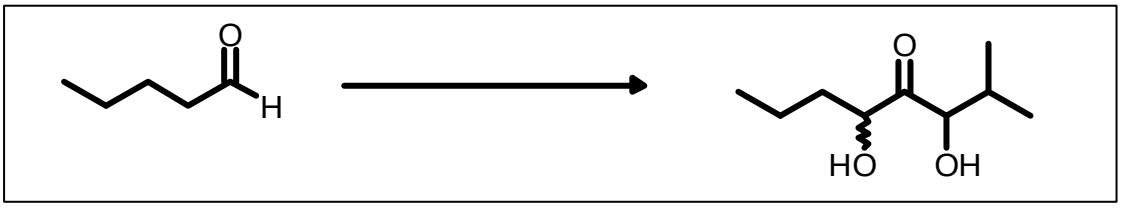
a.



b.



c. Note: I envision an oxygenating reagent in this synthesis. Its structure should be shown.



4. Two of the following are likely to give highly diastereoselective reductions with Me_4N^+ $BH(OAc)_3^-$ (MeCN/HOAc/-40°). Rationalize by transition state arguments the 'good ones' and the 'bad one', and show the expected major products. (**10 marks**).