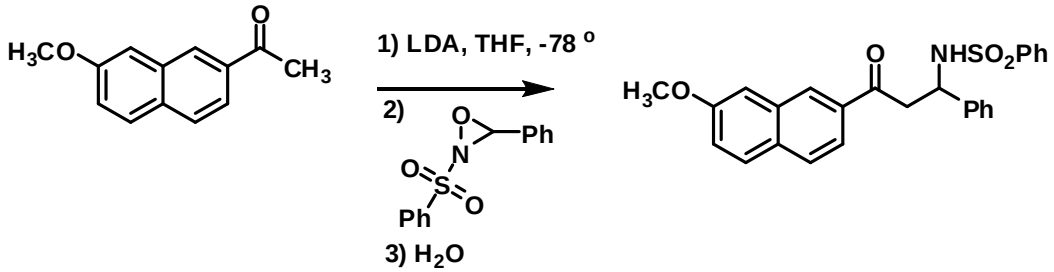
University of Windsor
Department of Chemistry and Biochemistry
59-431 Midterm

Time 60 min **Oct. 26, 2011**

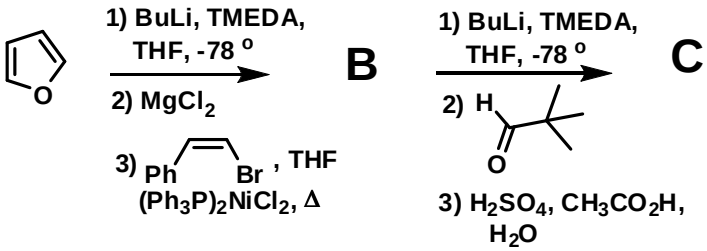
1. An outstanding scholar student got a little sloppy with their enolate + Davis oxaziridine reaction, and used LDA because that was the easier base to lay his/her hands on. As a result, in addition to the intended product, the student got 40% yield of the indicated compound. Mechanistically, show (completely) how the formation of this side product occurs. What simple change needs to be made to get the intended product? (10 marks)



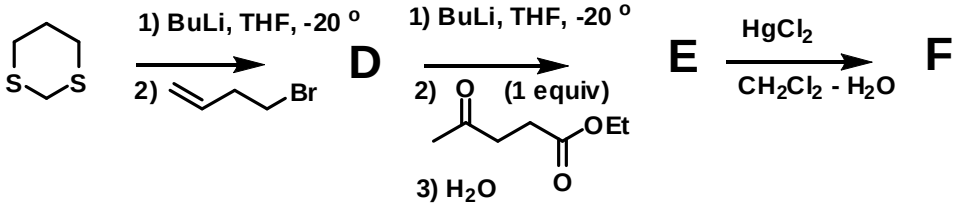
2. Indicate the structure of the major expected product of each of the following transformations. Include the product stereochemistry where it applies. Give the reasoning behind you answer (i.e., show your work) to the degree possible in a 60 min exam. *I also expect to see any intermediates that could be isolated along the way* (40 marks).

a)

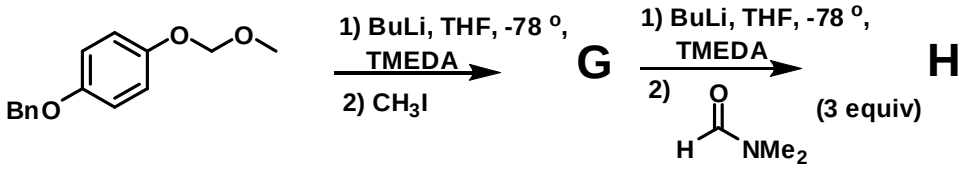
b)



c)



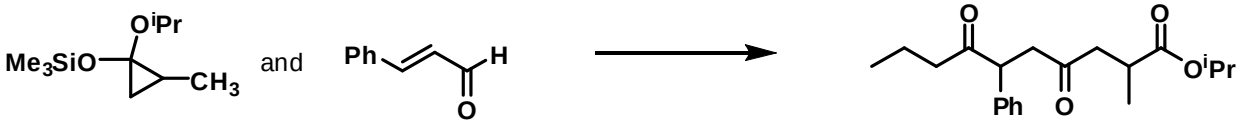
d)



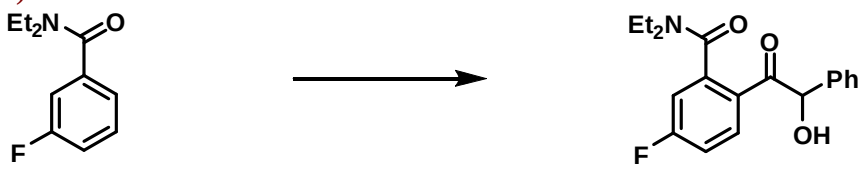
For directing ability,
BnO ≈ MeO

3. Show by equation how you would prepare the products illustrated from the given starting material. All will require >1 step. You may use *any* other reagent you deem fit as long as it makes chemical sense and is stable. Show all reagents, conditions, and intermediates that could be isolated. Mechanisms are not necessary, but showing your work may be a help. (30 marks)

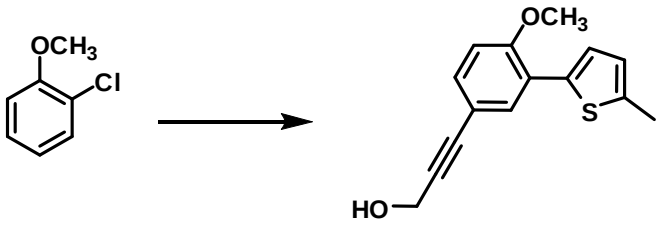
a)



b)



c)



Bonus:

A determined but unlucky student attempted to force C-2 directed lithiation of a pyridine by blocking the C-4 site as follows. Instead of the intended C-2 electrophile incorporation, the student obtained an isomer, shown below. What has happened here to afford this compound? (Note: LDA is often used with pyridines due to potential nucleophilic attack by BuLi).