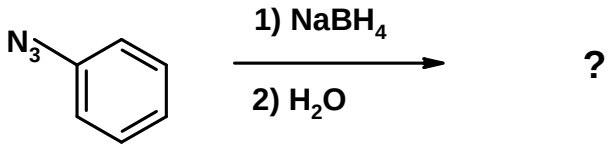
University of Windsor
Department of Chemistry and Biochemistry
59-431/531 Midterm

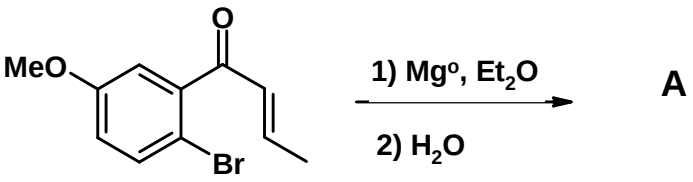
Time 80 min **Nov. 8, 2010**

1. Provide a reasonable mechanism for the following process. The complete answer will show at least one correct resonance structure for the azide group. Include all mechanistic steps and show any small molecules 'coming off' the larger one. (10 marks)

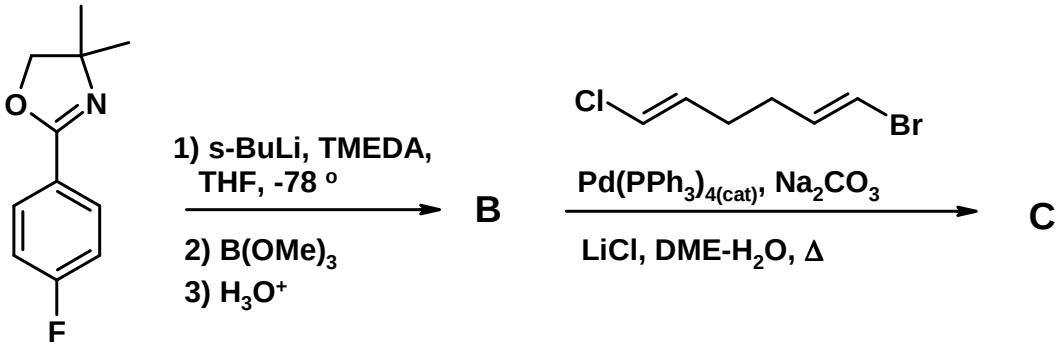


2. Indicate the structure of the major expected product of each of the following transformations. Include the product stereochemistry where it applies. Give the reasoning behind you answer (i.e., show your work) to the degree possible in a 80 min exam. *I also expect to see any intermediates that could be isolated along the way* (40 marks).

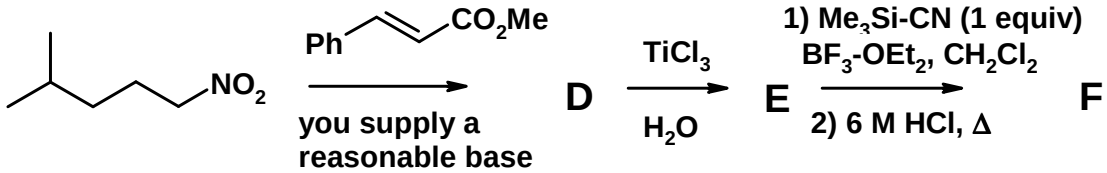
a)



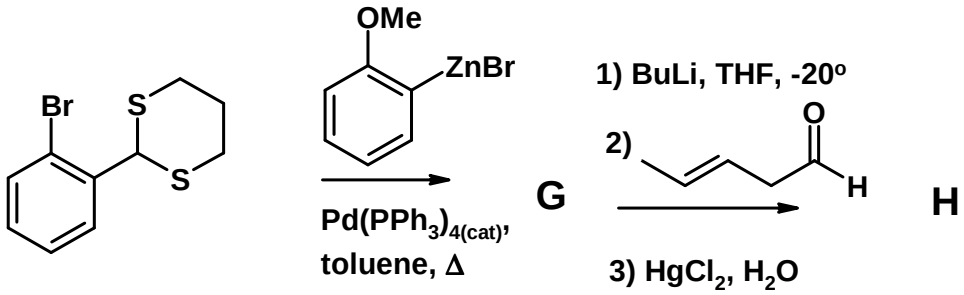
b)



c)

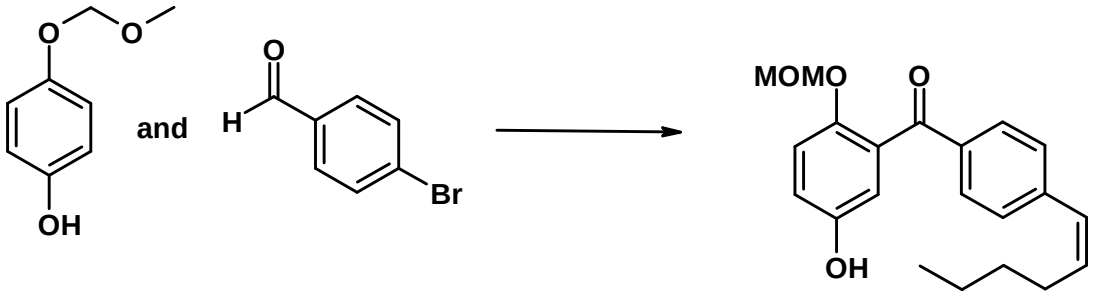


d)

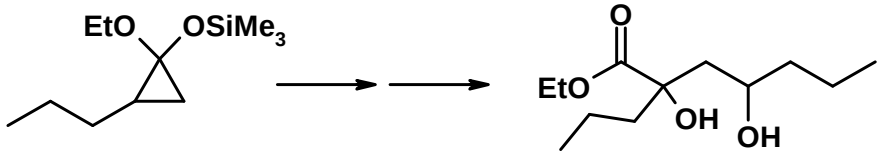


3. Show by equation how you would prepare the products illustrated from the given starting material. All will require >1 step. You may use any other reagent you deem fit. Show all reagents, conditions, and intermediates that could be isolated. Mechanisms are not necessary, but showing your work may be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

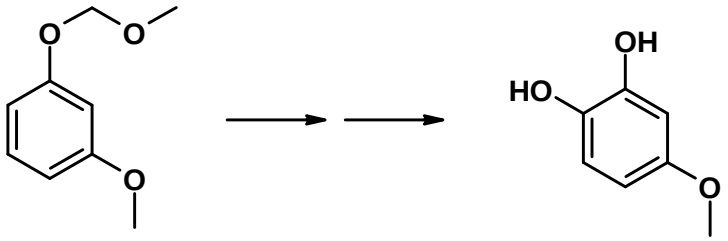
a)



b)



c)



Bonus:

In our discussion of dithianes as acyl anion equivalents (i.e., 2d), we discussed and then excluded dithiolanes (the 5 membered ring analogues, see below) as being useful. In other words, in the presence of a strong base, something goes very wrong with these compounds. Can you show are reasonable decomposition process, preferably including mechanism?