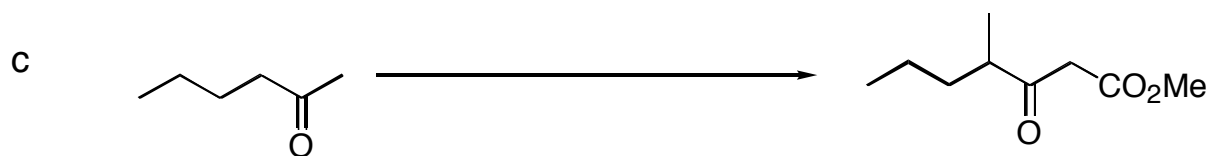
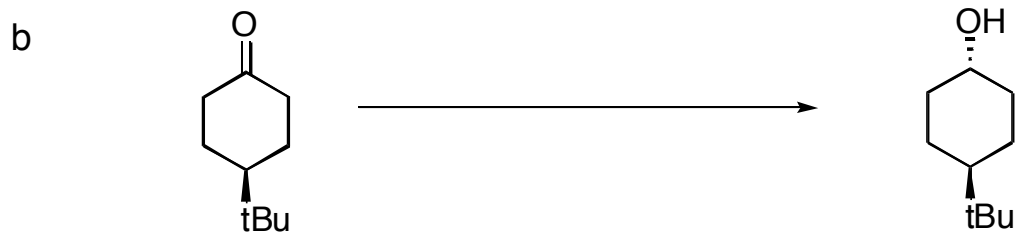


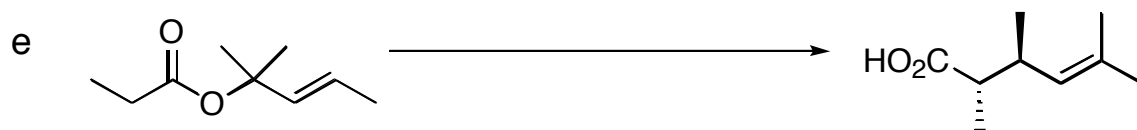
Chem 634  
Professor Fox  
Exam 1  
October 12, 2004  
3 hours

Your Name \_\_\_\_\_

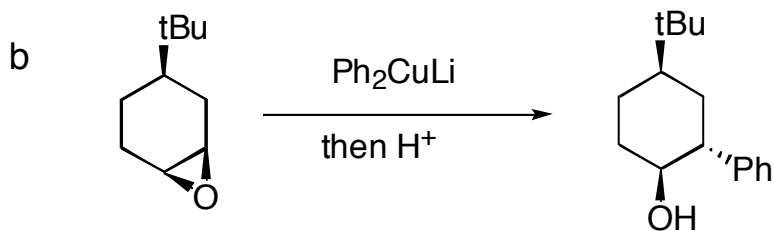
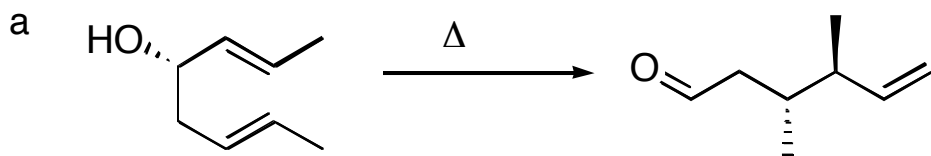
1. Provide reagents for the following transformations. More than one step may be required. Mechanistic details are not needed. (five parts; 3 pts each)



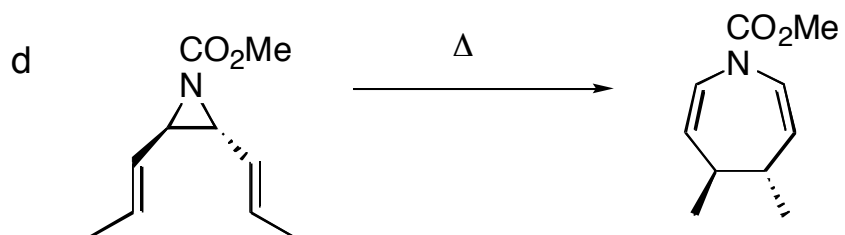
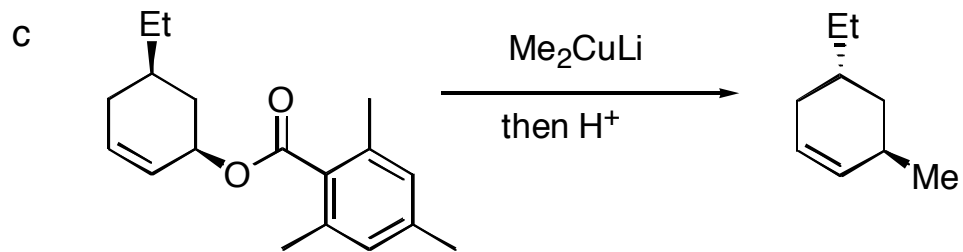
1. (continued)



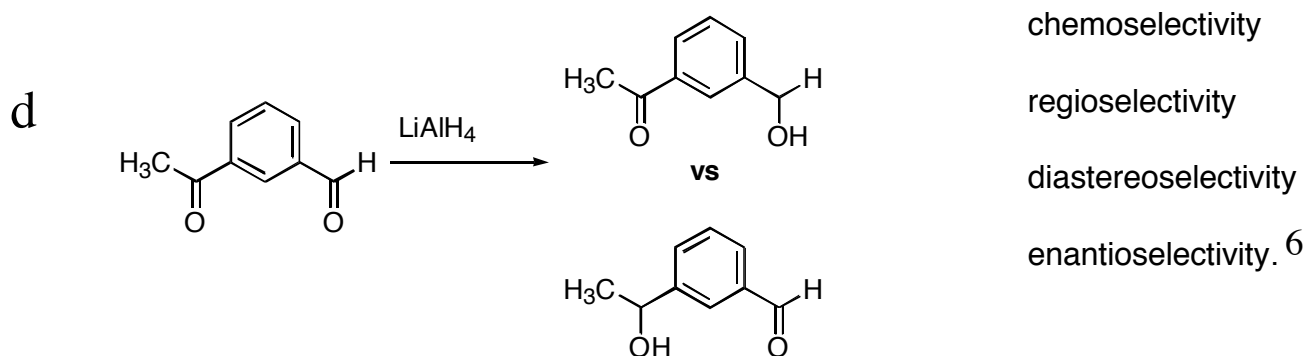
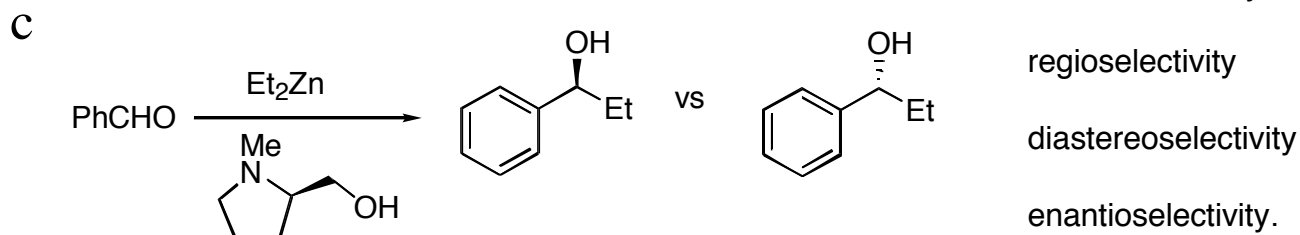
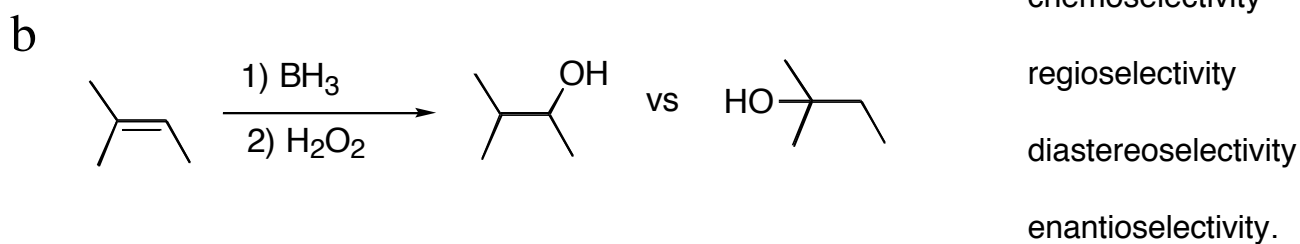
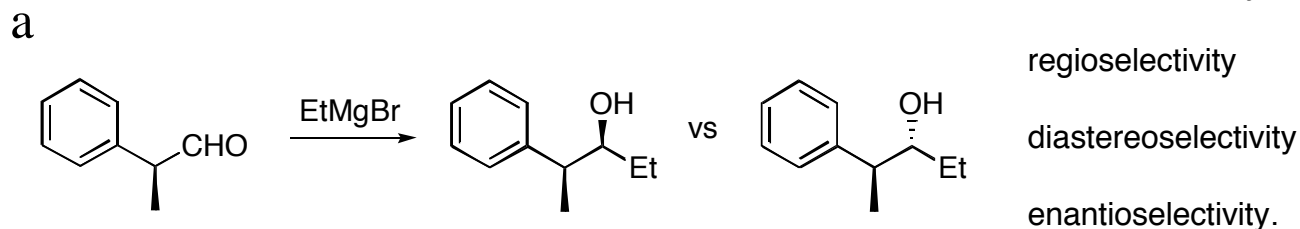
2. Predict if each of the following reactions would proceed as written. If you feel that the reaction would proceed, simply write "will proceed as written". If you feel that the reaction would not proceed as written, provide a brief but detailed explanation, and indicate the structure of the product(s) that would be formed instead of (or in addition to) the product that is drawn (3 points each).



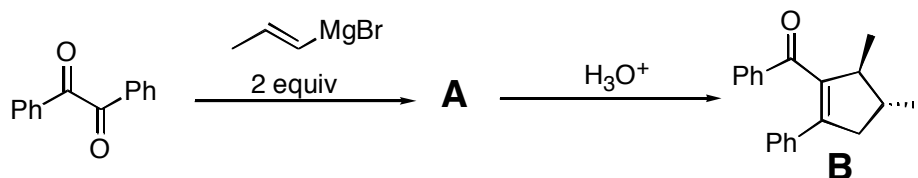
2. (continued).



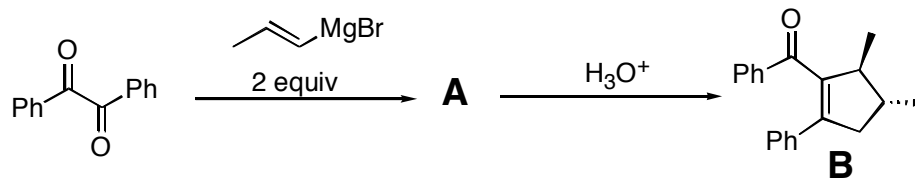
3. Identify the type of selectivity for each reaction.  
Circle the correct answer. 2 pts each.



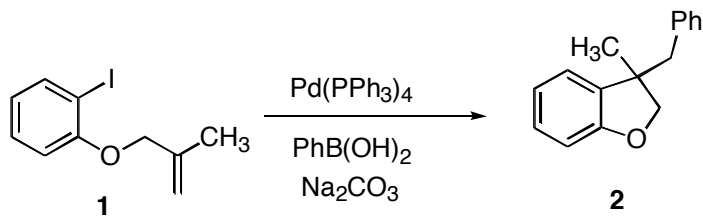
- 4a. Propose a structure for intermediate **A**. Propose an arrow pushing mechanism for the formation of **A** and **B**. For this part of the problem, it is not necessary to explain the stereochemical aspects of the reaction. Just push the arrows and show how the final product is formed. (9 pts)



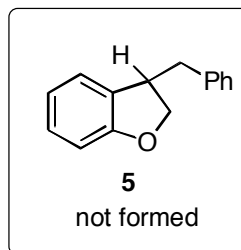
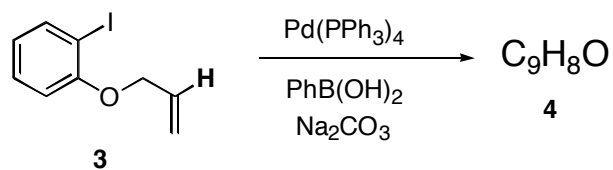
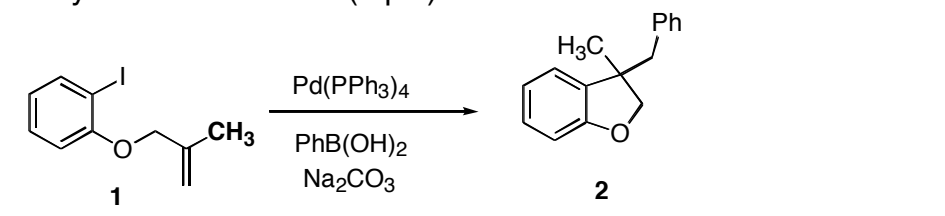
4b. Propose a model that explains the diastereoselectivity of the reaction (6 pts)



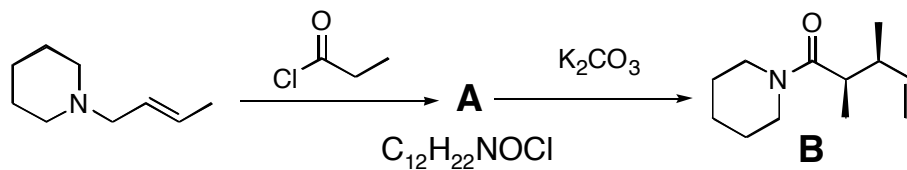
5 (a) Write a detailed mechanism for the reaction below. (8 pts)



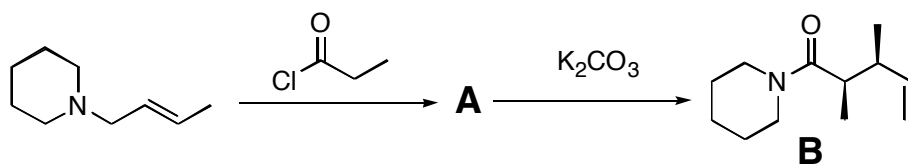
- 5 (b) Unlike the reaction of **1** to **2**, the reaction of **3** does not give the analogous product **5**. Instead, product **4** is obtained. Write a mechanism for the formation of **4**, and explain why **5** is not obtained. (7 pts)



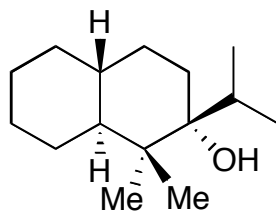
6 a. Propose a structure for intermediate **A**. Propose an arrow pushing mechanism for the formation of **A** and **B**. For this part of the problem, it is not necessary to explain the stereochemical aspects of the reaction. Just push the arrows and show how the final product is formed. (8 points)



6b. Provide a detailed model that explains the diastereoselectivity of the reaction. What conclusion can you make about the stereoselectivity of the enolization event? (7 points)



7. Outline a multistep synthesis using any materials with 6 carbons or less (20 points)



7. (cont)