Organic Chemistry c3444y

2nd Hour Exam

Monday, Feb. 28, 2000
Prof. Leighton

Name:_____ **ID#**_____

Signature:_____

- Write your name on every page.
- The exam is 5 pages long (*not* including this one). Please make sure you have all of the pages.
- Write complete ***but succinct*** answers. **Good Luck!**

Question 1 (20 pts): _____

Question 2 (30 pts): _____

Question 3 (10 pts): _____

Question 4 (24 pts): _____

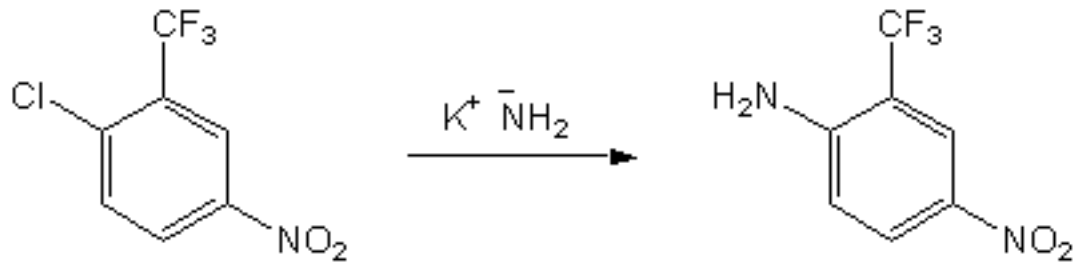
Question 5 (16 pts): _____

Total (100 pts):_____

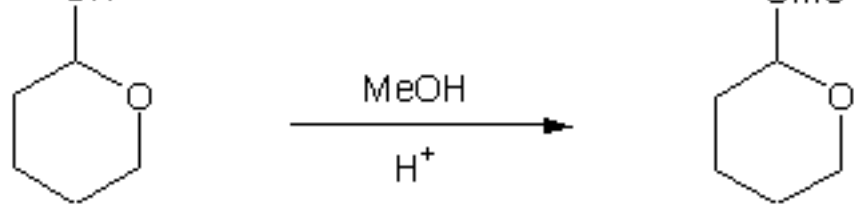
Name: _____

1. Provide detailed mechanisms for the following transformations:

a. (10 pts) (Just a simple mechanism, no long explanations needed here.)



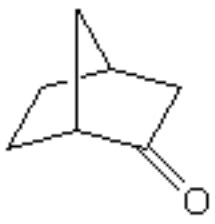
b. (10 pts)

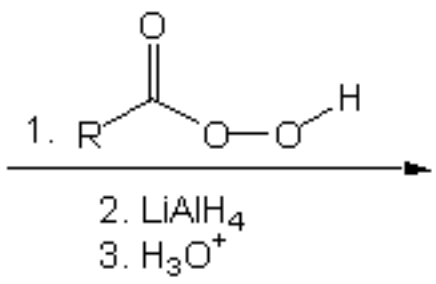


Name: _____

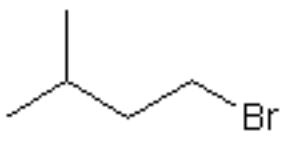
2. Predict the major product of the following reactions:

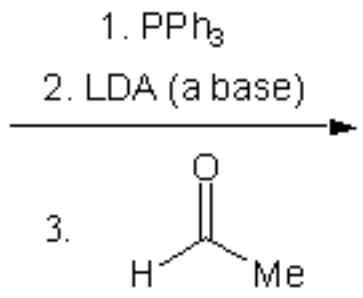
a. (10 pts)



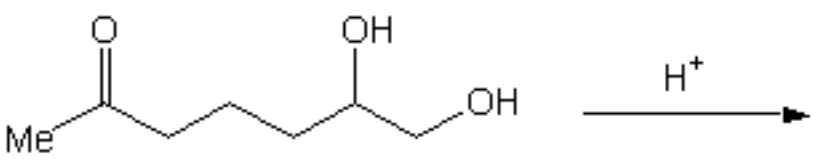


b. (10 pts)





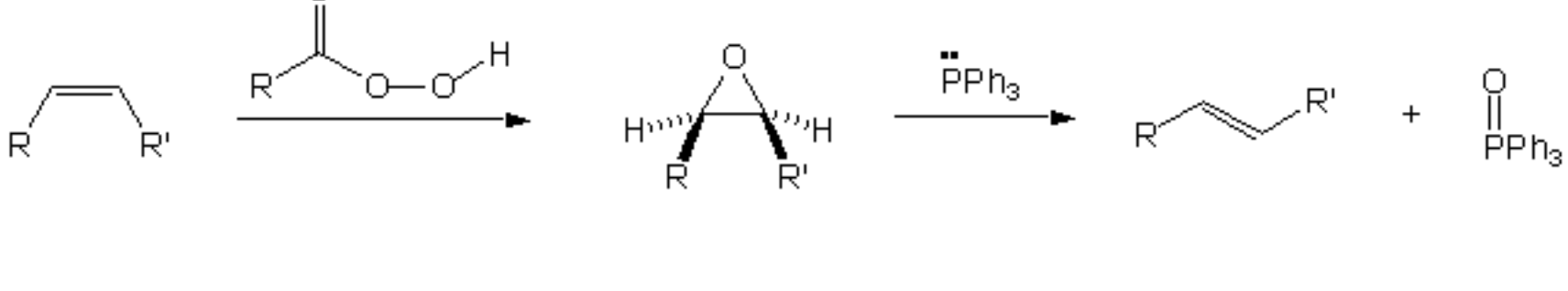
c. (10 pts)



Name: _____

3. (10 pts) Given that the Wittig reaction produces *cis* alkenes preferentially, it would be useful to have a method for the conversion of *cis* alkenes to *trans* alkenes. One such method is shown below. In the first step the *cis* alkene is epoxidized with a peracid. In the second step, the epoxide is treated with PPh_3.

Provide a mechanism for the second step and explain (briefly!) why a *trans* alkene is produced.



Name: _____

4. Provide the reagents necessary to accomplish the following transformations:

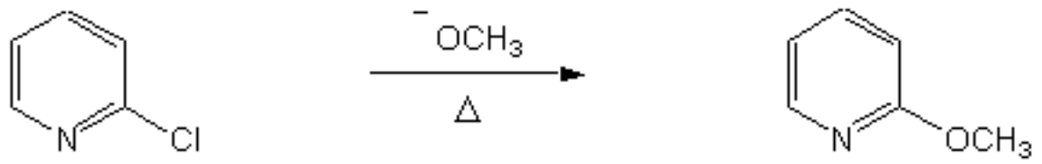
a. (8 pts)

b. (8 pts)

c. (8 pts)

Name: _____

5. Recall that 2-chloropyridine undergoes smooth S_NAr reactions:



a. (8 pts) This reaction can occur because the intermediate anion that is generated enjoys special stability. Explain with structures what is the nature of this special stability.

b. (8 pts) Would you expect 2-chlorofuran to undergo smooth S_NAr reactions?
(We will look at your work, but you must clearly write "yes" or "no.")