Organic Chemistry c3444y

2nd Hour Exam

Monday, Feb. 26, 2001
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 (20 pts): _____

Question 3 (20 pts): _____

Question 4 (20 pts): _____

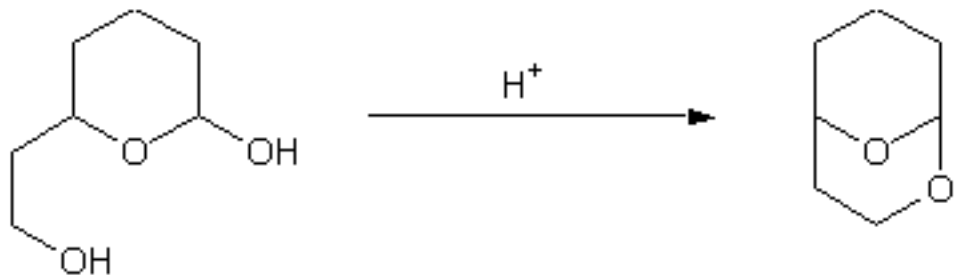
Question 5 (20 pts): _____

Total (100 pts):_____

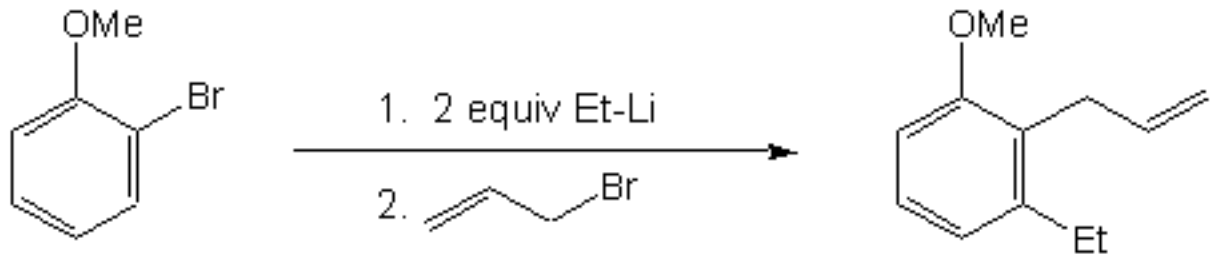
Name: _____

1. Provide detailed mechanisms for the following transformations:

a. (10 pts)



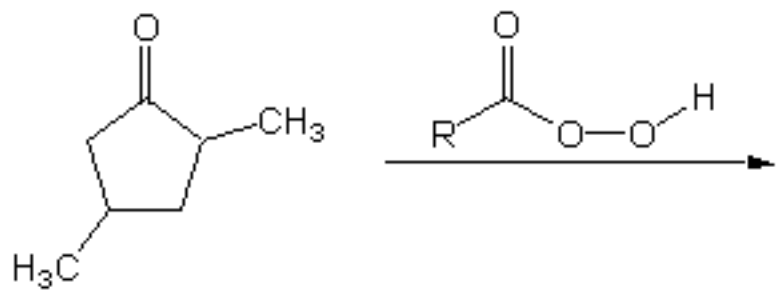
b. (10 pts)



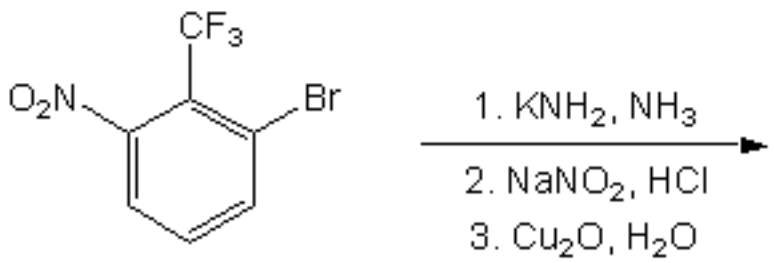
Name: _____

2. Predict the major product of the following reactions:

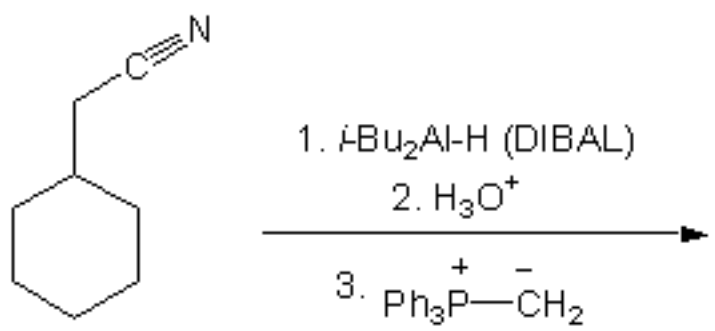
a. (7 pts)



b. (7 pts)

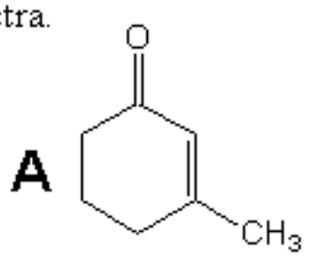


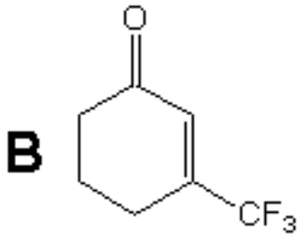
c. (6 pts)

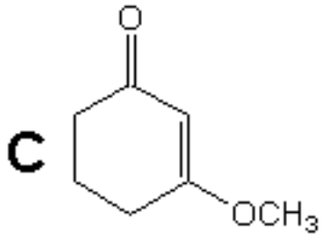


Name: _____

3. a. (10 pts) Rank the three ketones shown below in order of increasing C=O stretching frequency in the IR spectra.





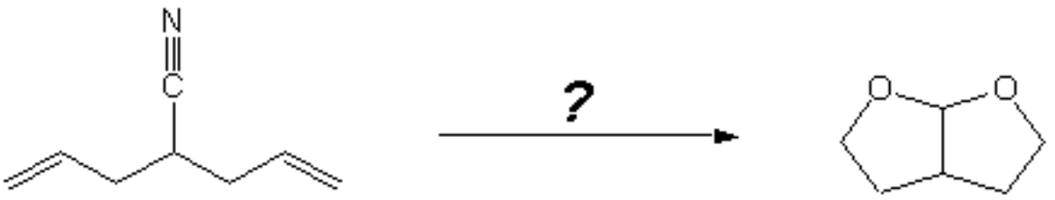


lowest frequency

intermediate frequency

highest frequency

b. (10 pts) Propose a synthesis to convert the given starting material into the product acetal. *(As we've discussed, it will prove helpful to work backwards from the product one step.)*



Name: _____

4. Provide the reagents necessary to accomplish the following transformations:
(More than one step will be required.)

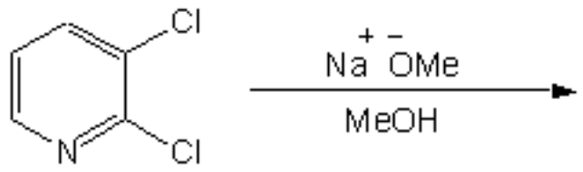
a. (7 pts)

b. (7 pts)

c. (6 pts)

Name: _____

5. a. (10 pts) Predict the product of the following reaction, and rationalize your answer with clear drawings demonstrating why you chose that product.



b. (10 pts) In contrast to phosphorous-based ylids, sulfur-based ylids typically react with ketones to give unusual products. For example, the illustrated ylid reacts with cyclohexenone to give the illustrated cyclopropane. Provide a mechanism for this reaction. (*Even though you haven't seen this reaction before, you know enough to be able to do this. To start, just try to decide what is a logical first step.)*