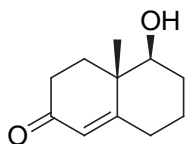
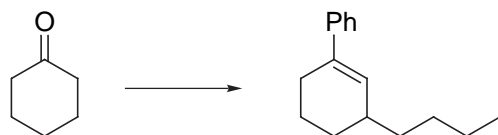


Literature references are required only for steps 1 and 2

1. Outline a synthesis from commercial materials. Provide a literature reference for each step, (20 pts)

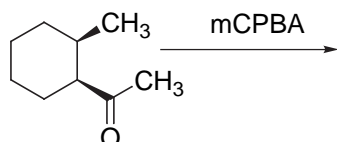


2. Outline a synthesis. Provide a literature reference for each step (20 pts)

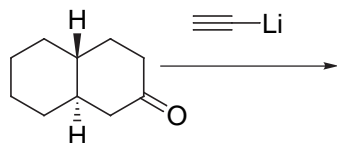


3. Predict the products

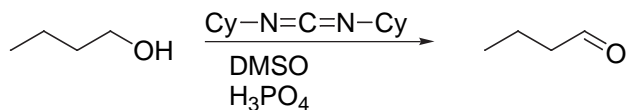
- a. (10 pts)



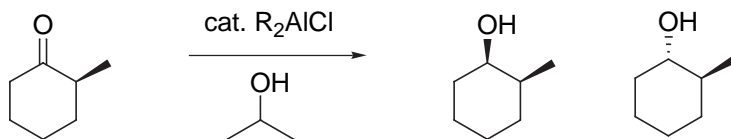
- b. (10 pts)



4. Provide a mechanism (10 pts)



5. Rationalize the following observation. (20 pts)



20 min 86% : 7% (+ 7% unreacted ketone)

3 h 5% : 95%

6. Use Beilstein commander to search the following structure: (10 pts)

