

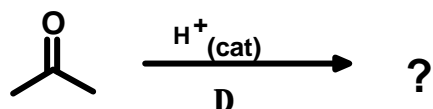
University of Windsor
Chemistry and Biochemistry

Chemistry 59-331/333
Test#2

Mar. 6, 2000
Time 50 min.

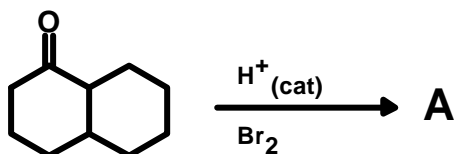
Answer all questions in the exam booklet. Tests written in pencil will be marked, but cannot be returned for remarking.

1. Give the complete mechanism of the acid catalyzed aldol condensation between two molecules of acetone. The complete answer will include the steps for formation of nucleophilic (*and* electrophilic) species in the condensation. (10 marks)

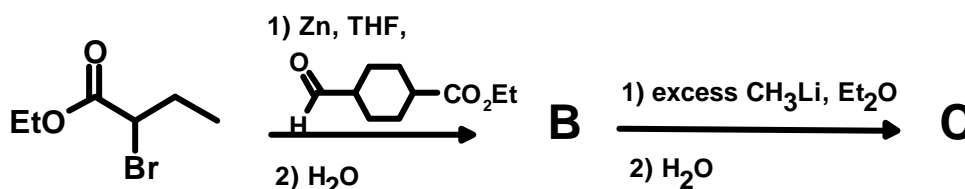


2. Give the expected major product of the following reactions. Include stereochemical features where they are applicable. It is *not* necessary to give mechanisms in your answers, but showing you work may be a help. (5 marks for each letter, 40 total).

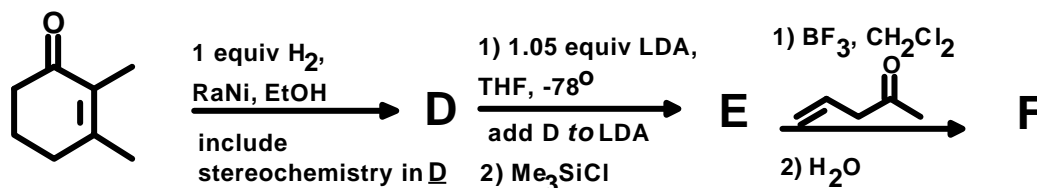
a.



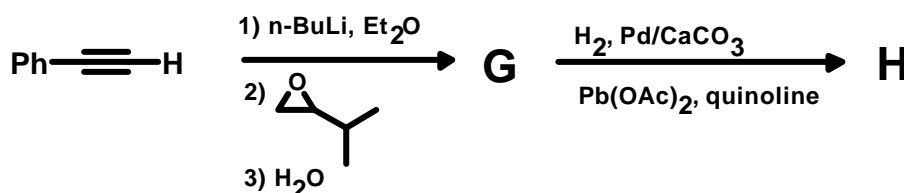
b.



c.

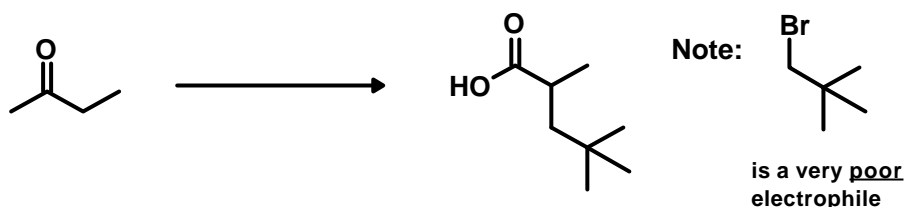


d.

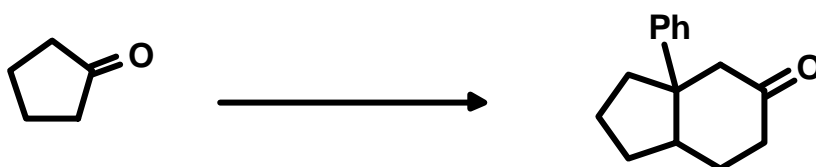


3. Give reasonable routes to accomplish the synthesis of the following products from the indicated starting materials. You may use any other reagents that you consider to be appropriate. Show all reagents, conditions, and any intermediates that could be isolated. Again, mechanisms are not necessary, but may be a help. (Do any three, 10 marks each, 30 total).

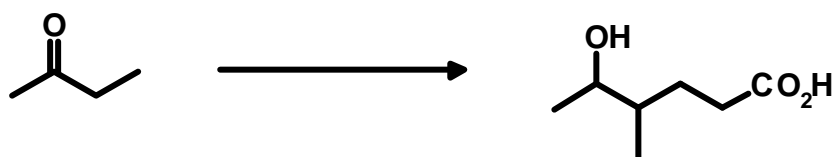
a.



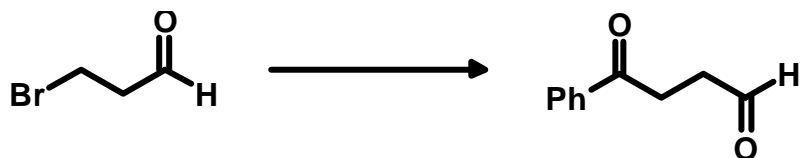
b.



c.



d.



Bonus: Professor Franklin Davis' research group has developed a now popular reaction of ketones with a base and a phenylsulphonyloxaziridine (you'll see it below). Based on analogy to some of the chemistry you've learned in this course, predict what you'd get and how you got it (i.e., mechanism). The most striking characteristics of the product of interest are a broad infrared absorption centred at 3400 cm^{-1} , and a sharp one at 1710 cm^{-1} .

