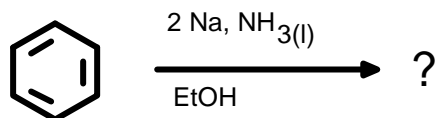


University of Windsor
School of Physical Sciences
Chemistry and Biochemistry

Chemistry 59-331/333
Test #3

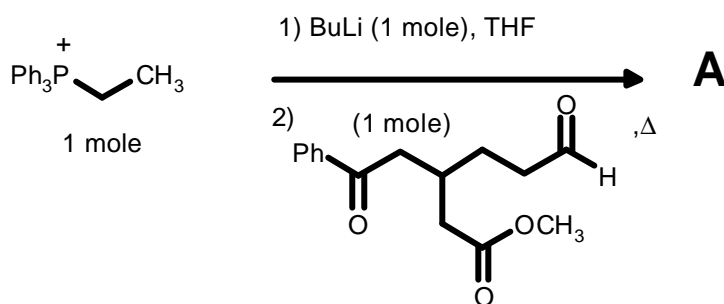
Apr. 1, 1998
50 minutes

1. Show the complete mechanism for the Birch reduction of benzene (10 marks).

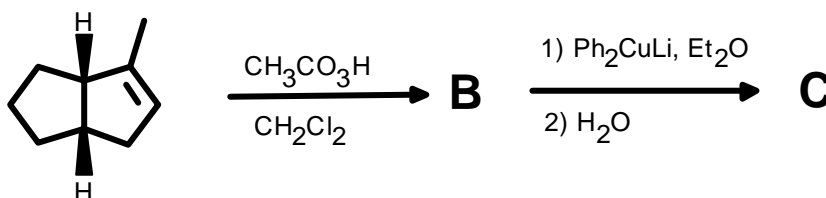


2. Indicate the structure of the major expected product of each of the following transformations. Include the product stereochemistry where it applies. Mechanisms are not necessary, but may be a help. (40 marks)

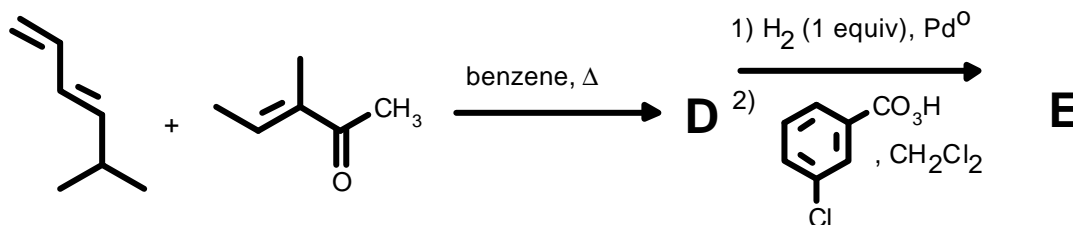
a.



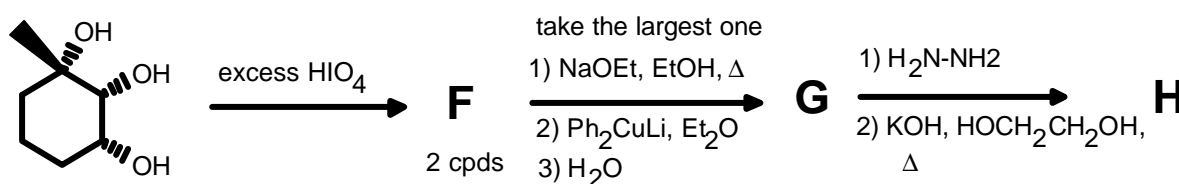
b.



c.

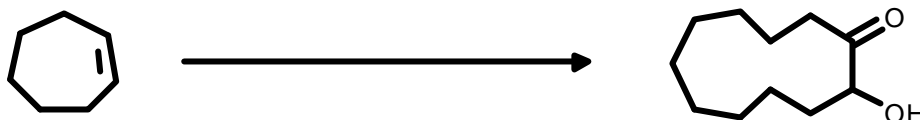


d.

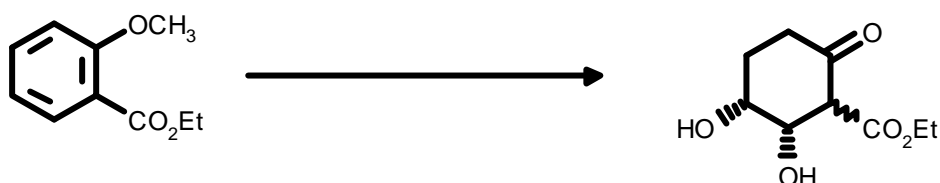


3. Show by equation how you would prepare the products illustrated from the given starting material. You may use any other reagent you deem fit. Show all reagents, conditions, and isolable intermediates. Mechanisms again are not necessary, but may be a help. (40)

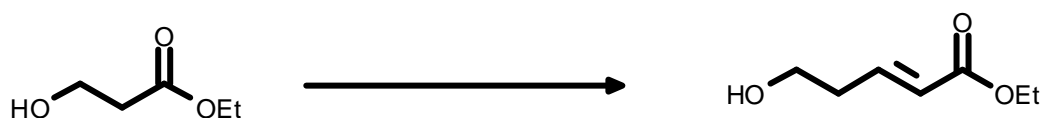
a.



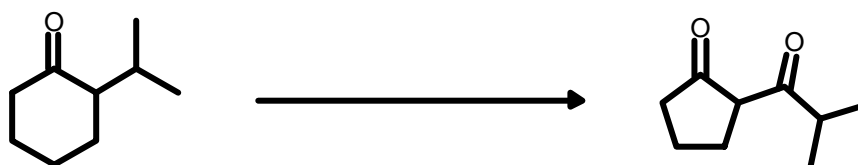
b.



c.



d.



Bonus The normal way to make the phosphonate esters employed in Wadsworth-Horner-Emmons reactions is by the Arbuzov reaction of a trialkyl phosphite and an organic halide. Propose a reasonable mechanism for this reaction.

