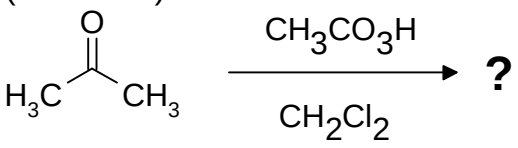
University of Windsor
Department of Chemisty and Biochemistry

Chemistry 59-331/333 **Apr. 3, 1996**
Second Test **Time: 50 minutes**

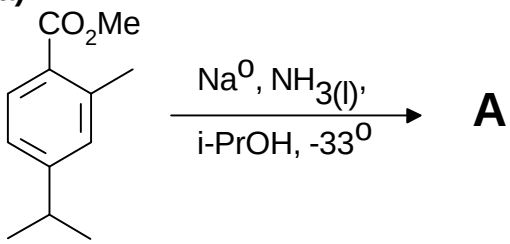
Answer all questions in the exam booklet

1. Show the mechanism of the Baeyer Villager oxidation of ketones (using acetone as a model). The full answer will include any small molecules entering or leaving in each step. (**10 marks**)

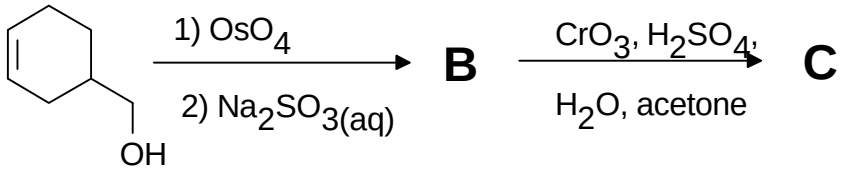


2. Indicate the structure of the major product from each of the following reactions. Include stereochemistry where relevant. Mechanisms are not necessary, but showing your work may be a help. (**40 marks**)

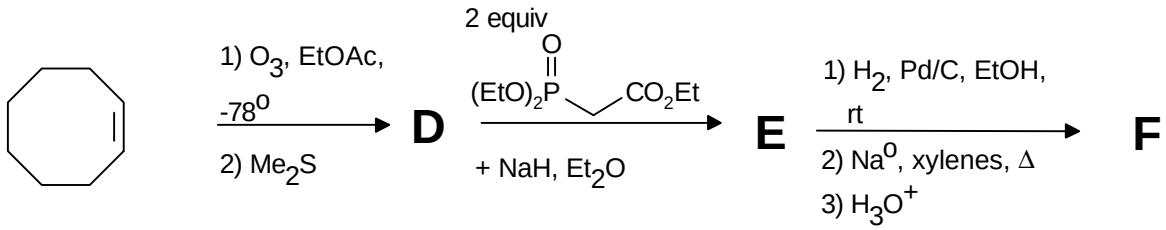
a)



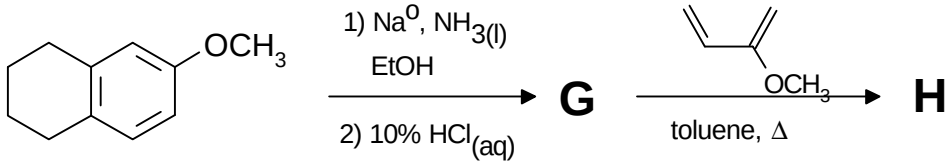
b)



c)



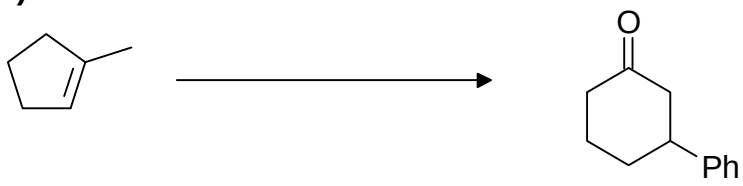
d)



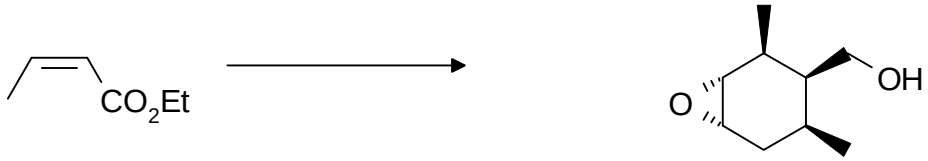
3. Show by equation how you could prepare the products illustrated below from the given starting materials. You may use any other reagents which you deem fit. Show all reagents, conditions, and intermediates which could be isolated. Mechanisms are not necessary, but may be a help. (**30 marks**)

a)

b)



c)



Bonus: If you recall from the course notes, an example of the use of the Diels-Alder reaction in the synthesis of anthracyclinone antibiotics employed a reactive isobenzofuran, which has to be made *in situ* by heating of the indicated reagent. How does this occur mechanistically, and what small molecules come out so that this isobenzofuran can be 'extruded' without side reactions?