UNIVERSITY OF WINDSOR
DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY

Chemistry 59-331/3
Final Examination

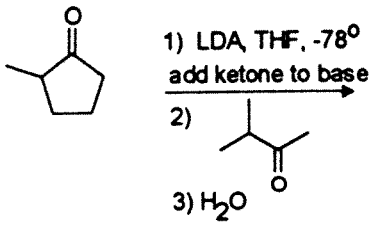
April 25, 1995
Time: 3 hours

Answer all questions in the exam booklet

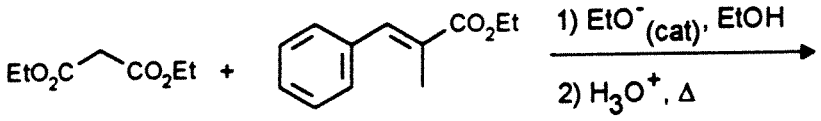
1. **Do any ten (10)**

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

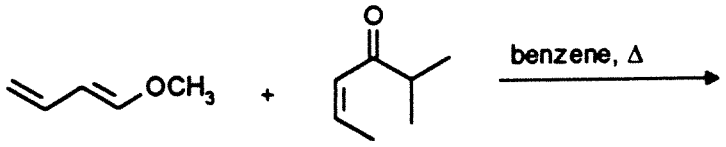
a)



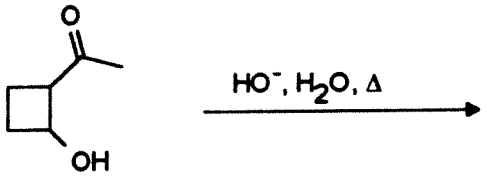
b)



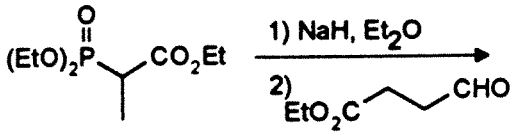
c)



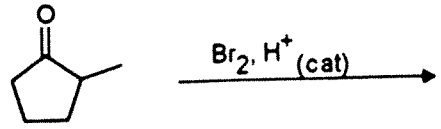
d)



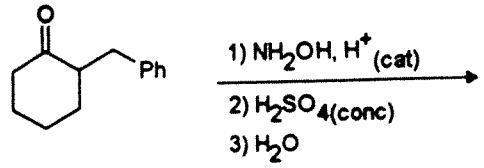
e)



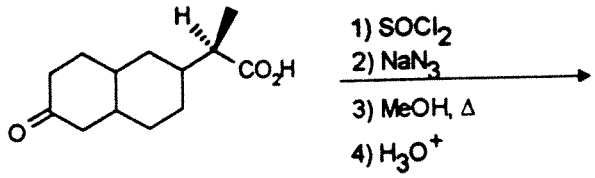
f)



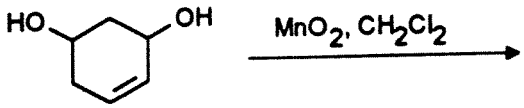
g)



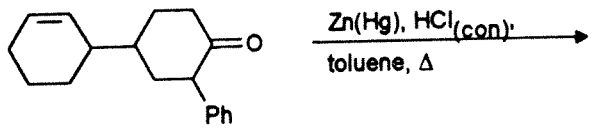
h)



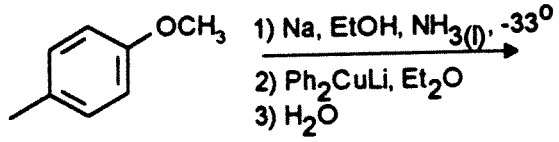
i)



j)

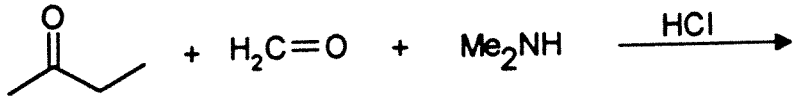


k)



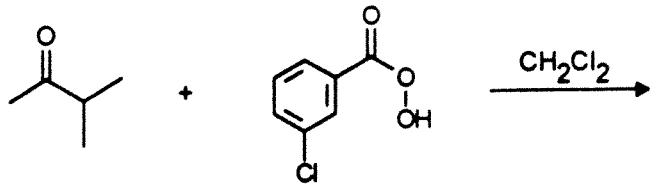
2. (Total 20 marks)

a) Draw the complete mechanism for the Mannnich reaction between 2-butanone, formaldehyde, and dimethylamine. The answer should indicate why the drawn regioisomer is the major one.

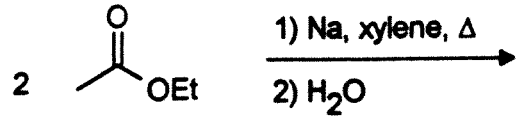


b) Do i) or ii), but not both

i) Give the complete mechanism for the Baeyer-Villiger oxidation of the following ketone:



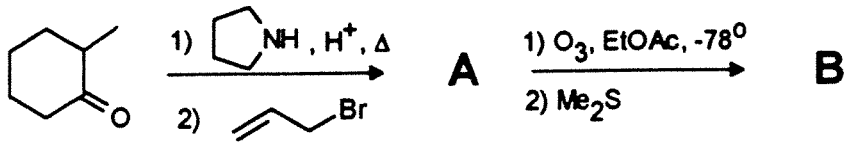
ii) Give the complete mechanism for the acyloin condensation between two molecules of ethyl acetate.



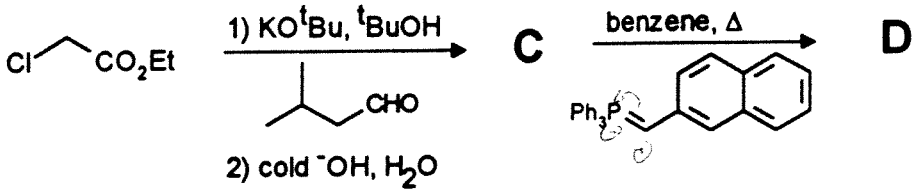
3. Do any four (4) of the questions (a-e)

Give the expected compounds corresponding to the letters below. Include any stereochemistry where it applies. **(Total 40 marks)**

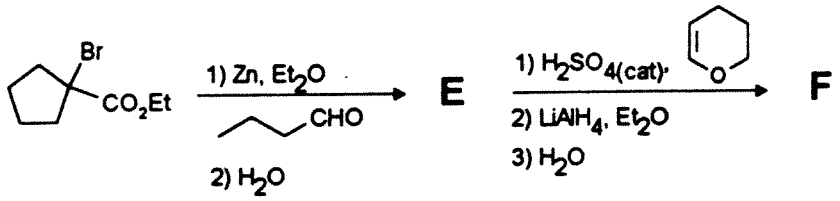
a)



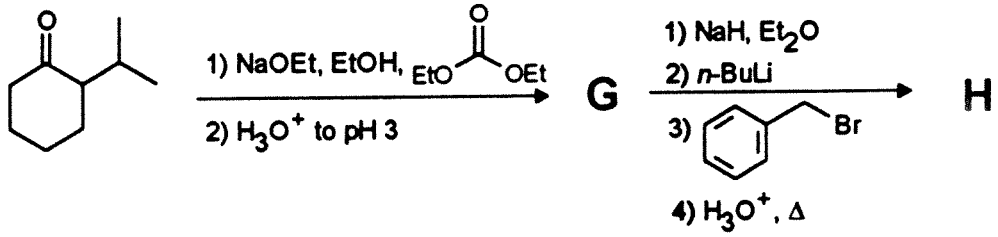
b)



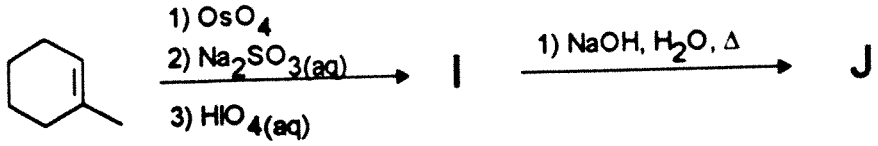
c)



d)

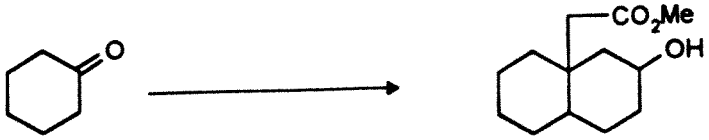


e)

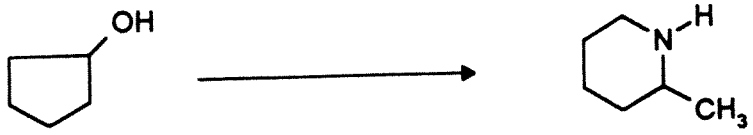


4. Show by equation how you would prepare the products illustrated below from the given starting material. you may use any other reagents you deem fit. Show all reagents, conditions, and isolable intermediates. Mechanisms are not necessary, but may be a help. **Do any seven (7). (Total 70 marks)**

a)



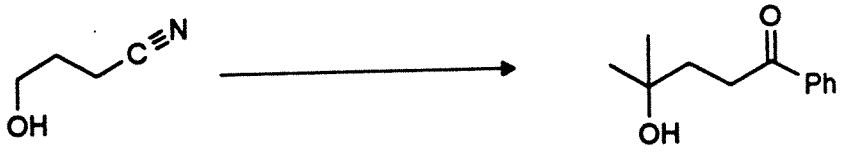
b)



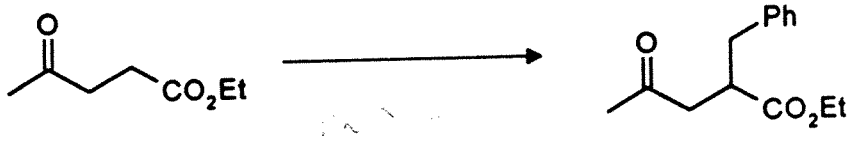
c)

d)

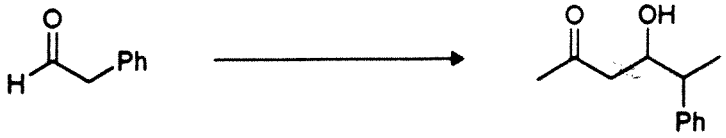
e)



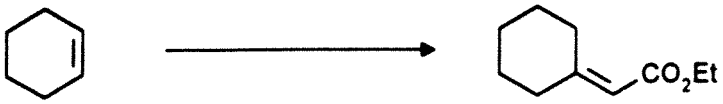
f)



g)



h)



i)