RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

B.Sc. Honours in Chemistry
Third Year - Semester II Examination – January / February 2023

CHE 3215 – HETEROCYCLIC AND SYNTHETIC ORGANIC CHEMISTRY

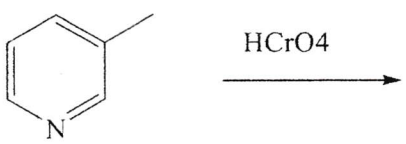
Time: Two (02) hours

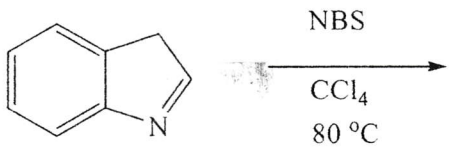
Answer **all** questions.

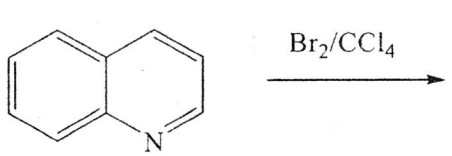
1.

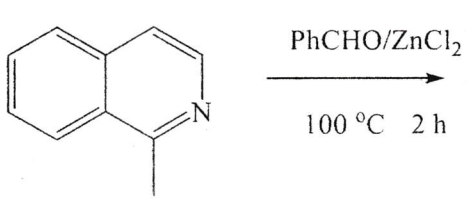
a) Compare the basicity of pyrrole and pyridine (20 marks)

b) Write down the major product in each of the reactions given.

i. 

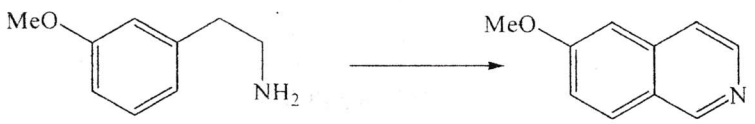
ii. 

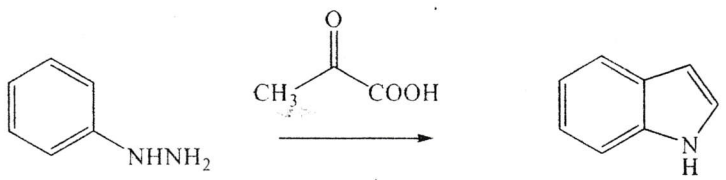
iii. 

iv. 

(40 marks)

c) Giving necessary reagents, conditions, and appropriate mechanisms, show how you would carry out the following synthesis.

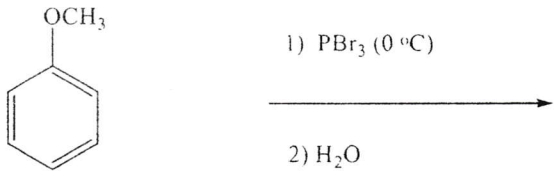
i. 

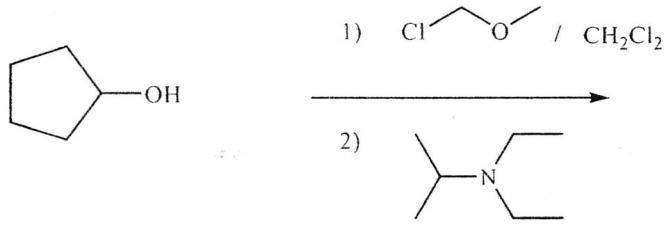
ii. 

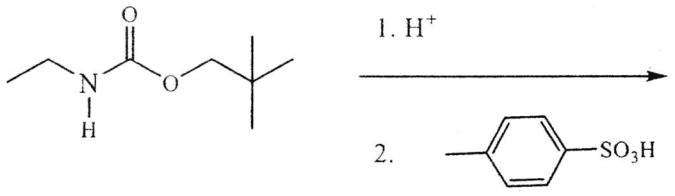
(40 marks)

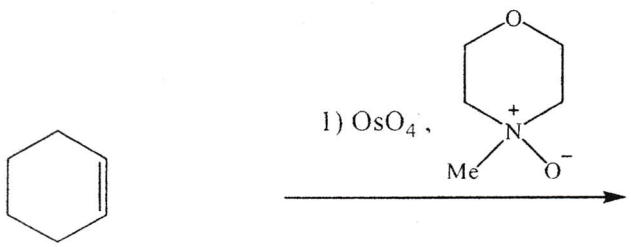
2.

a) Write down the major product in each of the reactions given. Specify the stereochemistry and / or regiochemistry, where relevant.

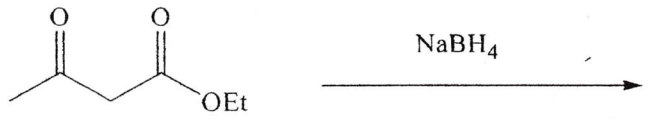
i. 

ii. 

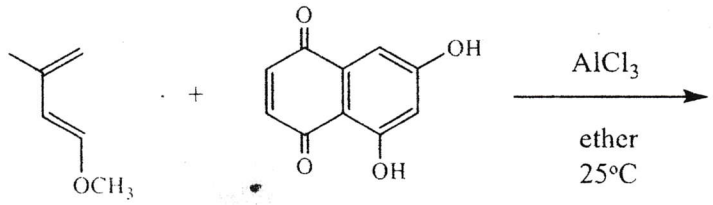
iii. 

iv. 

v.

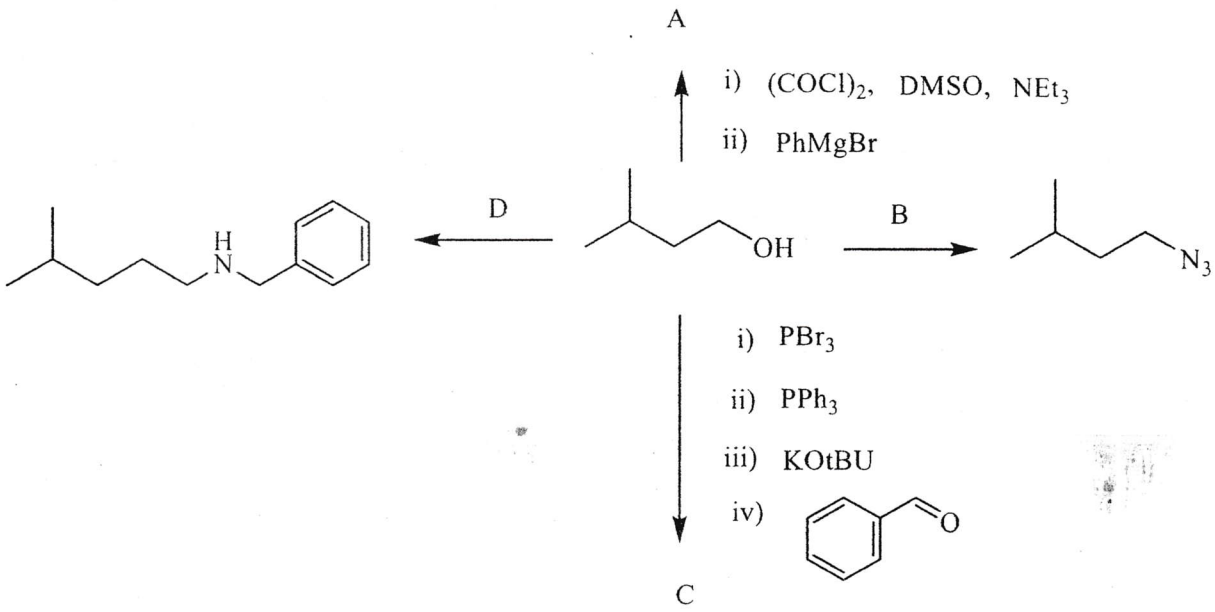


vi.



(10 x 6 marks)

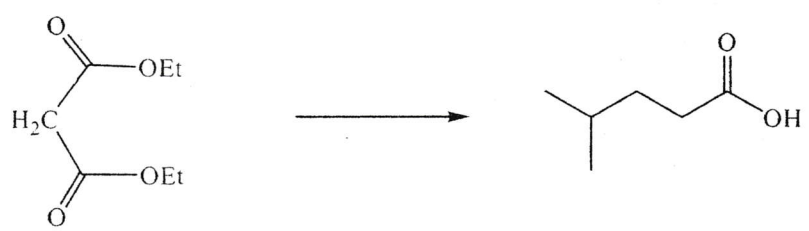
b) For the above four syntheses, each starting from alcohol, draw the structures of the intermediates, A and C, and reagents, B and D.

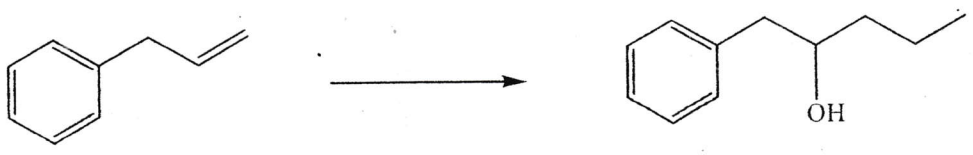


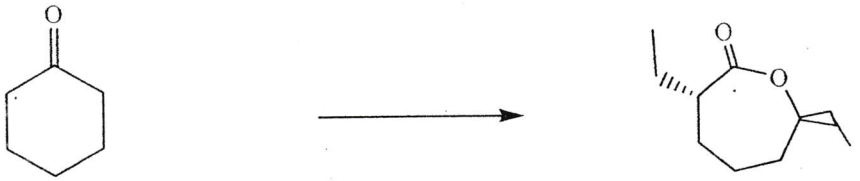
(40 marks)

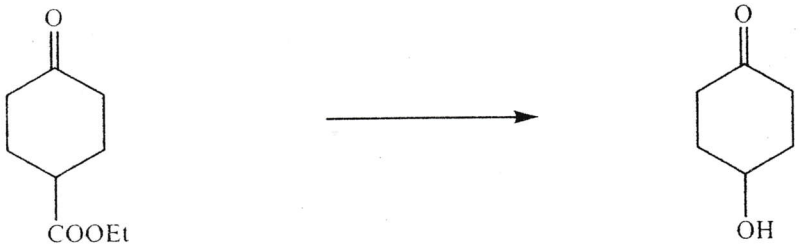
3. Giving necessary reagents, conditions, and appropriate mechanisms, show how you would carry out the following syntheses.

i.



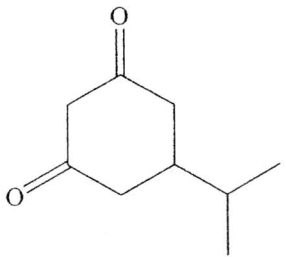
ii. 

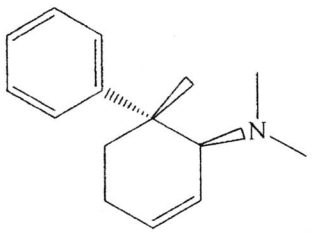
iii. 

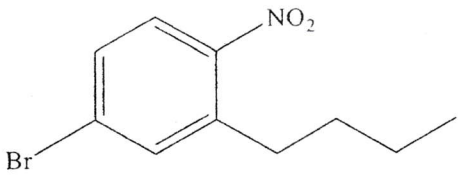
iv. 

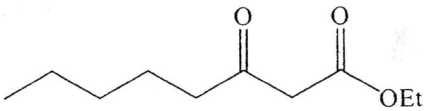
(25 x 4 marks)

4. Illustrate how to synthesize following compounds, from commercially available materials. Include both retrosynthetic analysis and the actual synthetic procedure separately in your answer.

a) 

b) 

c) 

d) 

(25 x 4 marks)

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