



III Semester M.Sc. Degree Examination, December 2013/January 2014
(2010-11 Scheme) (NS)

CHEMISTRY

C-302 – OC : Organic Synthesis – I

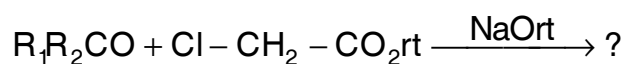
Time : 3 Hours

Max. Marks : 80

Instruction : Answer question 1 and any five of the remaining.

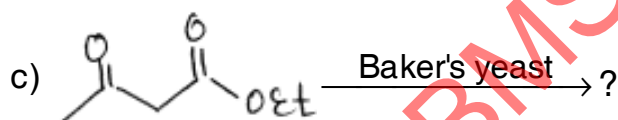
1. Answer **any ten** of the following. (10×2=20)

a) Give the product formed in the following reaction :

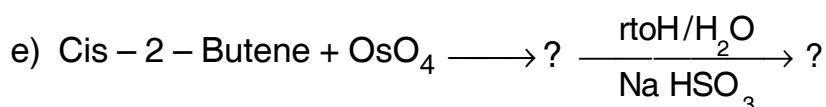


b) Account for the products formed when pyridine is treated with :

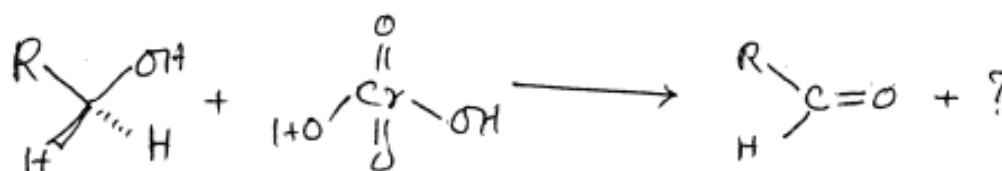
- i) Equimolar $NaNH_2$ ii) Excess $NaNH_2$



d) What are the products obtained when glycerol is oxidised with Fenton's reagent ?



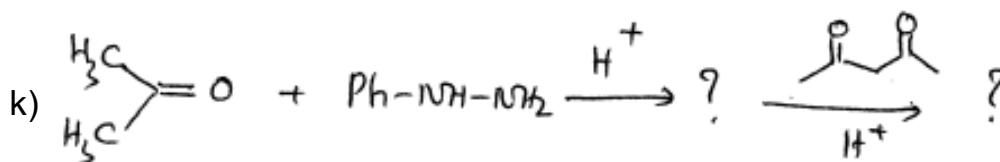
f) Give the mechanism of the following oxidation



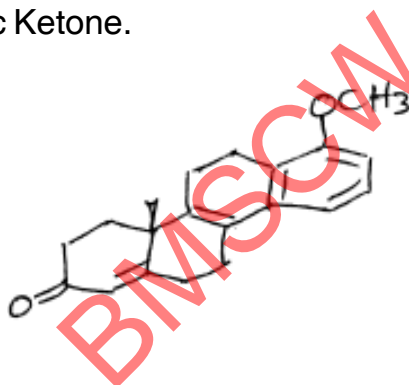
g) Illustrate the Clemmensen reduction with an example.



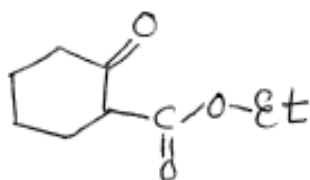
- h) What is the role of hydrazine in Wolf-Kishner reduction ?
 i) Illustrate the Ugi-four component reaction with an example.
 j) Outline the steps involved in the conversion of Aniline to 2-methyl quinoline.



- l) How is m-CPBA employed in the synthesis of epoxides ? Illustrate with one example.
2. a) Using Robinson annulation formulate a strategy for the synthesis of the following tetracyclic Ketone.

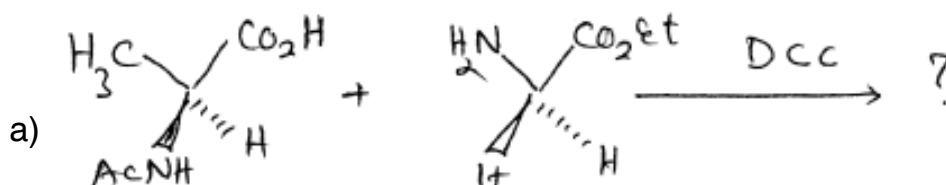


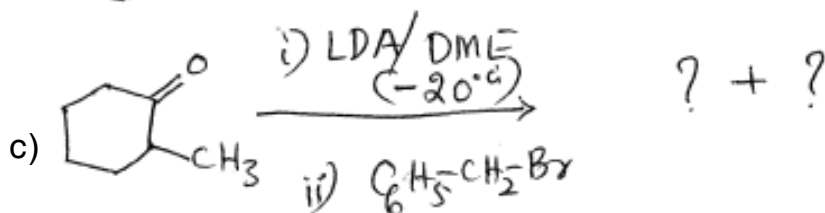
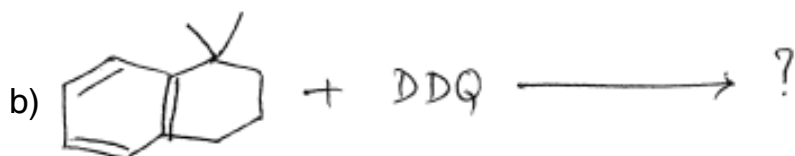
- b) Describe the use of acetylides in alkylation and coupling reactions.
- c) Suggest suitable reactants and reagents for the synthesis of following compound by Dieckmann cyclisation



(4+4+4=12)

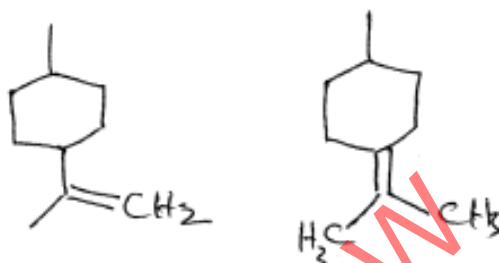
3. Give the products formed with mechanism :



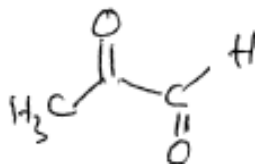


(4+4+4=12)

4. a) Explain how ozonolysis is useful in distinguishing the following two structures :



b) How is the following α -keto aldehyde obtained ? Illustrate using a suitable reactant and SeO_2 .



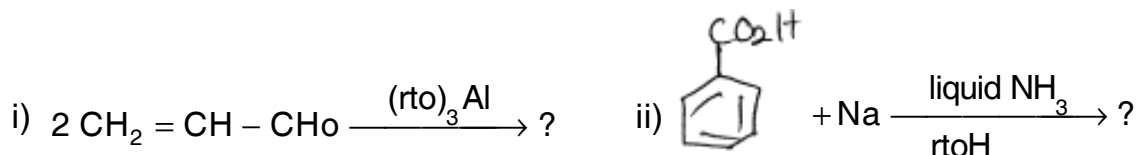
c) Describe the Dess-Martin oxidation with an example. (4+4+4=12)

5. a) Account for the major/minor products formed when 4-t-butyl cyclohexanone is reduced with :

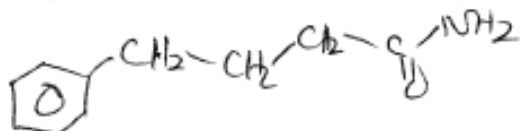


(Use conformational structures).

b) Give the products formed with mechanism :



c) Explain how the following compound can be prepared by Willgerodt reaction



(4+4+4=12)



6. a) Explain how Bischler-Napieraski reaction is used in the synthesis of 1-Benzyl isoquinoline.

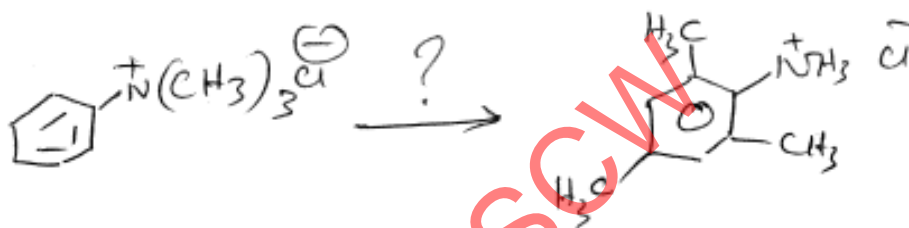
b) How is the following conversion brought about by using Ritter reaction ?



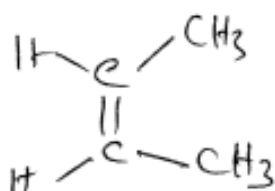
c) Explain the application of Biginelli reaction in the synthesis of Pyrimidones.

(4+4+4=12)

7. a) Suggest a mechanistic pathway for the following transformation :



b) Account for the product stereochemistry when the following alkene is subjected to Woodward-Prevost hydroxylation



c) Write a note on Suzuki coupling reaction.

(4+4+4=12)
