

Roll No.

Total Pages : 4

239202

May 2019

M.Sc. (Chemistry) IInd Semester

ORGANIC CHEMISTRY

(CH-202A)

Time : 3 Hours]

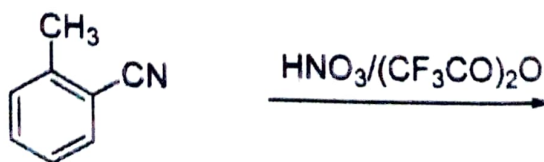
[Max. Marks : 75

Instructions :

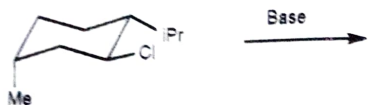
- (i) *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
- (ii) *Answer any four questions from Part-B in detail.*
- (iii) *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) Give two evidences in the favour of cyclic bromonium ion formation as reaction intermediate in addition reactions of halogens to alkenes. (1.5)
- (b) Draw the major product in the following reaction: (1.5)



- (c) Why *p*-nitroaniline cannot be obtained directly from aniline. (1.5)
- (d) Giving hybridization state of carbon free radicals, discuss their structure. (1.5)
- (e) Discuss briefly the factors affecting E1 reactions. (1.5)
- (f) Write down the product: (1.5)



- (g) Discuss the stereochemistry of E₂ elimination reactions. (1.5)
- (h) Explain why NaH cannot be used for reduction of carbonyl compounds while it is stronger hydride ion donor than NaBH₄ or LiAlH₄. (1.5)
- (i) Draw potential energy level diagram and explain sigma-complex formation in aromatic electrophilic substitution reaction. (1.5)
- (j) Briefly explain why *m*-Xylene undergoes nitration 100 times faster than *p*-Xylene? (1.5)

PART-B

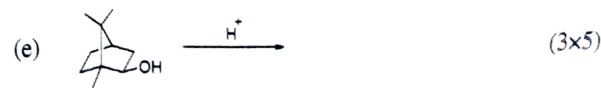
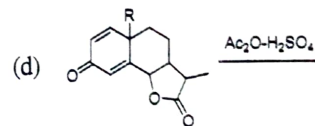
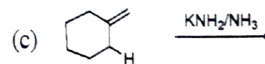
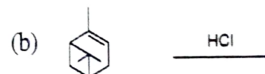
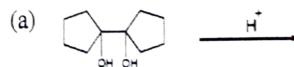
2. (a) Explain E1CB and [E1CB]_{ip} mechanism of elimination reactions. (10)
- (b) Explain Saytzeff and Hoffmann elimination products giving suitable examples. (5)

3. (a) Discuss the factors governing the reactivity profile of aliphatic electrophilic substitutions. (8)
- (b) Explain SE₂ and SE_i mechanisms of aliphatic electrophilic substitution reaction. (7)

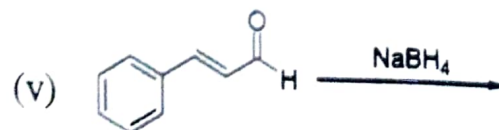
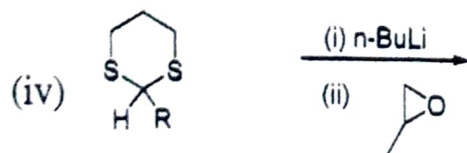
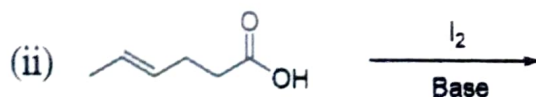
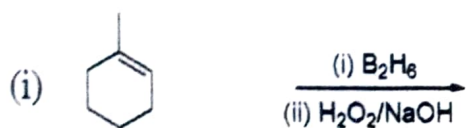
4. Giving suitable mechanism, explain the following name reactions :

- (a) Bischler Napierlaski Reaction. (5)
- (c) Fries Rearrangement. (5)
- (d) Vielsmeier Haawk Reaction. (5)

5. Complete the following reactions with plausible mechanism :



6. (a) Discuss the acid catalyzed acetal/hemiacetal formation. (5)
- (b) Giving suitable mechanism, explain Reformatsky reaction. (5)
- (c) Discuss the reactivity of hydrohalogen acids toward addition to C—C double bonds. (5)
7. (a) Write down the product of following reaction with mechanism;



(3×5)