TB213090V

Reg. No :.....

Name :.....

B. Sc. DEGREE (C.B.C.S) EXAMINATION, NOVEMBER 2022

(2021 Admissions Regular,2020 Admissions Supplementary/Improvement,2019 & 2018 Admissions Supplementary)

SEMESTER III - CORE COURSE(CHEMISTRY)

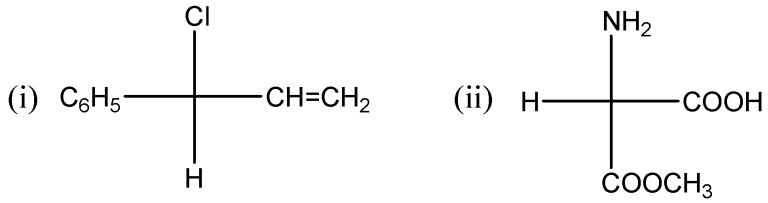
CH3B03B18 - ORGANIC CHEMISTRY – I

Time : 3 Hours **Maximum Marks : 60**

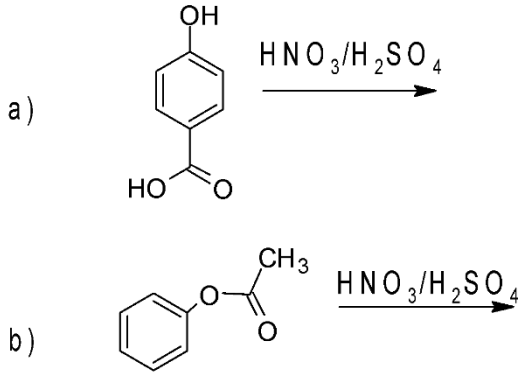
Part A

I. Answer any Ten questions. Each question carries 1 marks **(10x1=10)**

1. Outline an equation to find formal charge on intermediates and other ionic species.
2. Give the structural formula of the compound: 5-Ethyl-3-methyloctane
3. The rate of electrophilic substitution is higher for toluene as compared to benzene. Explain.
4. Explain the reason for the stability of triphenyl methyl cation.
5. Sketch the most stable conformation of cyclohexane. Explain its stability.
6. **Identify R and S isomers:**



7. Define resolution of racemic modifications.
8. Aryl halides are less reactive than alkyl halides to Nucleophilic Substitution Reaction. Summarize.
9. Complete the following reactions:



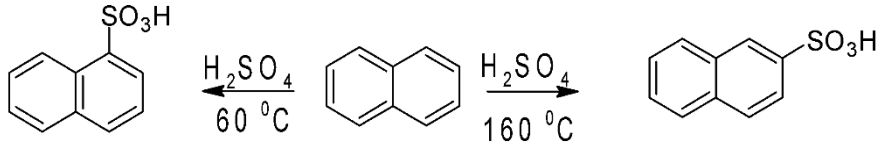
10. Predict the structure of the compound formed when phenol is distilled with Zn.
11. Identify the following substituents as ortho-, meta-, or para- directing:
    CF_3, NO_2, COOH, N=O
12. Describe Sandmeyer's reaction.

Part B

II. Answer any Six questions. Each question carries 5 marks **(6x5=30)**

13. Explain electrocyclic reaction with an example.

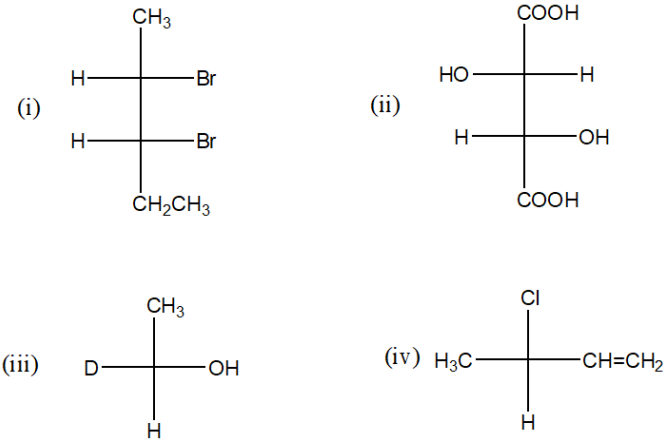
14. "Racemic tartaric acid can be resolved but not mesotartaric acid". Explain the reason. Give the chemical method of resolution.
15. Discuss resolution of a racemic mixture. Explain any two methods.
16. Discuss Asymmetric synthesis of an optically active compound by partial and absolute methods.
17. Convert: (a) 1-chloropropane to 2-chloropropane. (b) propene to 2-propyl alcohol (c) ethyne to propyne (d) propene to acetaldehyde (e) propane to ethane
18. Describe any three methods of preparation of alkynes.
19. Describe the preparation of benzene diazonium chloride and its conversion to chlorobenzene and bromobenzene.
20. Illustrate why halogens are deactivating yet ortho/para directing in electrophilic aromatic substitution.
21. Describe the mechanism of the following reaction and explain the position of substitution:



Part C

III. Answer any Two questions. Each question carries 10 marks **(2x10=20)**

22. Explain (i) Carbene (ii) Carbanions. How they are generated? Illustrate their stability with suitable examples.
23. **(a) Describe the isomerism exhibited by Maleic and Fumaric acid. Distinguish them by physical and chemical methods.**
    (b) Apply R add S notation for the following compounds



24. (a) Discuss on (i) Wurtz reaction (ii) Wurtz Fittig reaction (iii) Corey-House synthesis and choose among this the reaction which can be used for the preparation of unsymmetric alkanes containing odd number of carbon atoms.
    (b) Explain with example the hydrolysis of an alkyl halide due to unimolecular SN1 mechanism.
25. Explain the following observations in electrophilic aromatic substitution reactions: i) Methyl group when attached to an aromatic ring is ortho-, para- directing. ii) Nitro group when attached to an aromatic ring is meta-directing.