TB243327M

Reg. No :.....

Name :.....

BACHELOR'S DEGREE (C.B.C.S) EXAMINATION, NOVEMBER 2024

2018, 2019, 2020, 2021, 2022 ADMISSIONS SUPPLEMENTARY

SEMESTER III - CORE COURSE (CHEMISTRY)

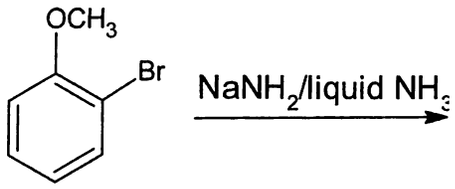
CH3B03B18 - Organic Chemistry – I

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

Part A

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

1. The rate of electrophilic substitution is higher for toluene as compared to benzene. Explain.
2. Differentiate homolytic and heterolytic cleavage with suitable examples.
3. Outline any one of the characteristics of a pericyclic reaction.
4. Predict the structural formula of 2-Ethyl-4-methyl hexanal.
5. Memorize whether trichloroethene show geometrical isomerism. Explain.
6. Sketch the most stable conformation of cyclohexane. Explain its stability.
7. List the characteristics of enantiomers.
8. Racemization is not 100% in case of SN1reactions. Explain.
9. Predict the structure of the compound formed when phenol is distilled with Zn.
10. Describe the role of Con. H_2SO_4 in aromatic nitration reactions.
11. Identify the products obtained in the following reaction:



12. Describe Gatterman reaction.

Part B

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

13. Explain sigmatropic rearrangement with an example.
14. Sketch Newmann projection formula of the important conformations of n-butane with reference to central carbon-carbon bond. Arrange them in the order of increasing stability using energy level diagram. Give reason.
15. Differentiate enantiomers and diastereomers. A compound with formula $C_3H_8O_2$ has two –OH groups and is optically active. Identify its structure.
16. Illustrate Sachse- Mohr theory of strainless rings.
17. Comment on the possible reason why a peroxide effect is given by HBr, not by HCl or HI
18. Describe the relative rates of halogenation of alkanes in terms of bond dissociation energy.
19. Discuss the molecular orbital structure of a) Benzene b) Naphthalene
20. Summarize the evidence in support of the benzyne intermediate mechanism.
21. Describe the aromatic character of pyrrole and furan.

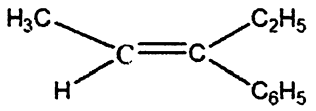
Part C

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

22. Explain the following with examples: (a) Steric effect (b) Mesomeric effect and (c) redox reactions

23. **(a) Explain the conformation of cyclohexane with the help of energy level diagrams.**
(b) Employ C.I.P rules to find E and Z isomers:

(i)



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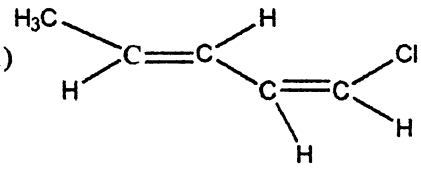

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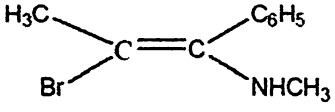

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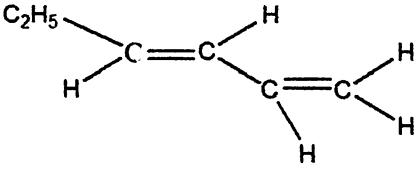

24. (a) Explain briefly on Saytzeff and Hofmann elimination reaction.
(b) When an optically active alkyl halide is treated with a base, a racemic mixture of an alcohol is obtained. Explain the mechanism. Write equation.

25. Discuss the bimolecular displacement mechanism and the Benzyne mechanism observed in nucleophilic aromatic substitution reactions.