TB243143R

Reg. No :.....

Name :.....

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

2023 ADMISSIONS REGULAR

SEMESTER III - CORE COURSE CHEMISTRY

CH3C03B23 - Organic Chemistry – I

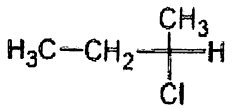
Time : 3 Hours **Maximum Marks : 60**

Part A

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

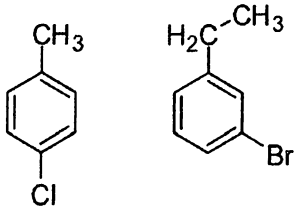
1. Identify whether the thermal electrocyclic reactions of 4n electrons system will undergo the conrotatory or disrotatory mode of rotation.
2. Give the structural formula of the compound : 2-methyl pentanal
3. Define no-bond resonance.
4. Define Baker-Nathan effect.
5. Predict the compound with higher boiling point: Maleic acid or fumaric acid. Explain your answer.
6. **Identify the type of isomerism exhibited by the following compounds**

a) CH_3-CH=CH-CH_2-CH_3

b) 

7. Define optical activity. Give example for an optically active isomer.
8. Arrange the following compounds in the order of their increasing reactivity towards nucleophilic substitution reactions: CH_3F, CH_3Br, CH_3I, CH_3Cl
9. Identify the anti-aromatic compound from the following:

10. Describe Sandmeyer's reaction.
11. Predict the structure of the compound formed when phenol is distilled with Zn.
12. List the products that would be obtained from the reaction of the following compounds with sodium amide and liquid ammonia.



a) b)

Part B

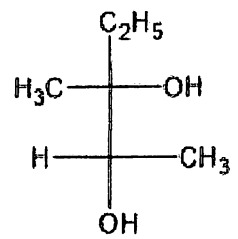
II. Answer any Six questions. Each question carries 5 marks **(6x5=30)**

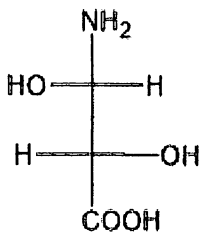
13. Explain different types of substitution reactions with suitable examples.
14. Define optical activity. Write the stereoisomers of tartaric acid. Account for the lack of optical isomerism in meso form and racemic form of tartaric acid.
15. Discuss Asymmetric synthesis of an optically active compound by partial and absolute methods.
16. Illustrate Sachse- Mohr theory of strainless rings.
17. Discuss the reactions of Ethyl chloride with (write necessary equations): (a) potassium cyanide (b) ammonia (c) sodium methoxide (d) potassium acetate (e) Potassium nitrate
18. Describe the relative rates of halogenation of alkanes in terms of bond dissociation energy.
19. Describe the preparation of benzene diazonium chloride and its conversion to chlorobenzene and bromobenzene.
20. Discuss aromaticity giving suitable examples.
21. Illustrate, with examples, how in aromatic compounds further substitution is governed by the nature of substituent already present in the ring.

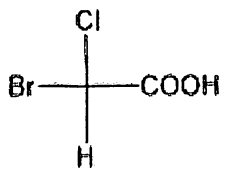
Part C

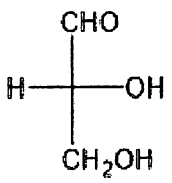
III. Answer any Two questions. Each question carries 10 marks **(2x10=20)**

22. Explain the following with examples: (a) Steric effect (b) Mesomeric effect and (c) redox reactions
23. **(a) Discuss Racemization. Explain how can it be achieved by Tautomerism and Substitution reactions with suitable examples.**
    (b) Employ Cahn-Ingold-Prelog rules to identify R add S isomers:

i) 

ii) 

iii) 

iv) 

24. (a) Explain the mechanisms involved in E1 and E2 elimination reactions in alkenes.
    (b) Explain the factors that influence S_N1 and S_N2 reactions.
25. Discuss nucleophilic aromatic substitution reactions with examples and mechanisms.