SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc. Chemistry - END SEMESTER EXAMINATIONS APRIL - 2024
SEMESTER - II

22PCHCT2004 - Organic Reaction Intermediates and its Mechanisms

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Describe the typical reactions of carbocations, including rearrangements and additions.
2. Explain the concept of neighboring group participation in non-classical carbonium ion rearrangements.
3. Differentiate between SN1 and SN2 mechanisms in aliphatic nucleophilic substitution. How does the nature of the substrate influence the mechanism?
4. Analyze the effects of reactant structure, solvent type, nucleophiles and leaving groups on the rate of nucleophilic substitution reactions.
5. Explain Von-Braun reaction, and how is it used to convert alkyl halides into aldehydes or ketones?
6. Illustrate chichibabin reaction and its use in the synthesis of heterocyclic compounds.
7. Compare and contrast the formylation reactions involving Gatterman and Reimer-Tieman reactions.
8. Examine Meerwein-Ponndorf-Verley(MPV) reduction and its significance in organic chemistry.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Explain the generation and reactivity of carbenes and nitrenes, highlighting their importance in synthetic chemistry.
10. (i) What makes ambident nucleophiles such as CN, NO_2, phenoxide, and dianions (e.g., enolate anions) unique in substitution reactions?
    (ii) Describe the challenges and peculiarities of nucleophilic substitution in the norbornyl system and at bridgehead carbon atoms.
11. Explain the arenium ion mechanism and its role in electrophilic aromatic substitution reactions.

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12. Describe the Mechanism of oxidation reactions using SeO_2 ,DCC and Swern Oxidation with NCS.

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. Differentiate between E1, E2, and E1cB mechanisms in elimination reactions. Discuss the orientation of the double bond in these mechanisms.

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