

23P212

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Name:

Reg.No:

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2024

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19P CHE2 C07 - REACTION MECHANISM IN ORGANIC CHEMISTRY

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

Answer any *eight* questions. Each question carries 1 weightage.

1. Explain the term Walden inversion.
2. Explain mechanistically why an SN2 reaction follows second order kinetics.
3. What are syn eliminations? Illustrate with a suitable example.
4. Distinguish between singlet and triplet carbenes.
5. Illustrate with equations the utility of Grignard reagent in the synthesis of (i) Secondary alcohols
(ii) Tertiary alcohols
6. Illustrate with equations the utility of organo zinc compounds in the synthesis of (i) Secondary alcohol
(ii) Primary alcohols
7. Formulate the reaction between cyclopentadiene and Maleic anhydride and predict the stereochemistry of the product.
8. What is Barton reaction?
9. What are flavones and isoflavones?
10. Explain the isolation of alkaloids.
11. What is EI reaction?
12. What is Emde degradation?

(8 × 1 = 8 Weightage)

Section B

Answer any *four* questions. Each question carries 3 weightage.

13. Discuss the factors that determine the reactivity of an allyl halide in nucleophilic substitution reactions.
14. What are nitrenes? How they are formed? Explain their structure.
15. What are benzyne? How they are formed? Explain their structure.

16. Discuss the synthetic uses of Grignard reagent.
17. The product formed after heating Allyl vinyl ether does not show reversibility. Justify.
18. The photoreduction of benzophenone to benzpinacol is one of the oldest and most thoroughly studied photochemical reaction. Justify this statement with mechanism.
19. Explain the general classification of alkaloids on the basis of ring structure.

(4 × 3 = 12 Weightage)

Section C

Answer any *two* questions. Each question carries 5 weightage.

20. Discuss the aspects regarding the mechanism. Kinetics, potential energy profile and stereochemistry of SN2 reactions.
21. Write the mechanism for: (a) Dieckmann condensation (b) Thorpe condensation (c) Oppenauer oxidation (d) Prince reaction (e) Ritter Reaction.
22. Derive the Woodward- Hoffmann selection rules for electrocyclic, cycloaddition and sigmatropic reactions.
23. Explain (a) Total synthesis of Quinine (b) Classification of terpenoids.

(2 × 5 = 10 Weightage)
