

SECOND SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2026

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PCHE2C07 - 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. How can ethyl bromide be converted to ethyl cyanides?
2. Explain mechanistically why an SN1 reaction follows first order kinetics.
3. Illustrate with equations the utility of Grignard reagent in the synthesis of (i) Alkene (ii) But-1-yne
4. Illustrate with equations the utility of organo zinc compounds in the synthesis of (i) Ethane (ii) Neopentane
5. Explain why in [4 + 2] cycloaddition, diene is activated by electron-donor substituents and dienophile by electron-withdrawing substituents.
6. What do you mean by a photosensitizer?
7. What are the likely products from the vapour phase irradiation of trans 2,6-dimethylcyclohexanone?
8. Write a short note on the isolation of terpenoids.
9. What is Emde degradation?
10. Draw the structure of Reserpine. What is its significance?
11. Explain the term Walden inversion.
12. State and explain the Saytzeff's rule.

(8 × 1 = 8 Weightage)

Section B

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

13. The addition of halogen to alkene is stereospecific reaction. Justify this statement with suitable example.
14. Using suitable examples, briefly explain Hofmann and Saytzev elimination.
15. What are nitrenes? How they are formed? Explain their structure.
16. Discuss the synthetic uses of organozinc compounds.
17. Discuss the mechanisms of Stobbe condensation.

18. Discuss the mechanism of rearrangement of 2,6 dimethyl phenyl allyl ether under thermal condition.
19. Discuss the stereochemistry of the product formed after heating 3(S), 4(S) dimethyl 1,5 hexadiene.
- (4 × 3 = 12 Weightage)**

Section C

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

20. What is meant by SN1 reaction? Discuss the factors affecting the reactivity of alkyl halides in SN1 reaction.
21. Explain the addition elimination and benzyne mechanism of nucleophilic aromatic substitution reactions.
22. Discuss the competition between substitution and elimination reactions.
23. (a) Discuss the mechanism of the photoreduction of benzophenone to benzpinacol.
(b) Discuss Hoffmann-Loeffler-Freytag reaction with example.

(2 × 5 = 10 Weightage)
