D 140645 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2026

(CBCSS)

Chemistry

CHE2C07—REACTION MECHANISM IN ORGANIC CHEMISTRY

(2019 Admission onwards)

Time : Three Hours Maximum : 30 Weightage

Section A

Answer any **eight** *questions.*

Each question carries a weightage of 1.

1. Discuss the stereochemistry of S_N1 and S_N2 reactions.
2. What is Saytzeff rule ? Discuss the elimination reaction of 2-bromopentane based on the rule.
3. What is Oppeenauer oxidation ? What are its applications ?
4. Write down the mechanism of Prins reaction.
5. Discuss the Woodward-Hoffmann approach of pericyclic reactions.
6. Discuss the Woodward-Hoffmann selection rules for sigmatropic reactions.
7. Discuss the mechanism of Hoffmann - Loeffler - Freytag reaction.
8. What is photo di- π- methane reaction ? Give its mechanism.
9. With suitable example, describe the photo isomerization of alkenes.
10. Discuss the classification of terpinoids.

(8 × 1 = 8 weightage)

Turn over

Section B

Answer any **six** *questions.*

Each question carries a weightage of 2.

11. Briefly explain the addition- elimination (S_NAr) and elimination-addition (benzyne) mechanisms,
12. Briefly explain the generation, geometry, stability, and reactions of carbon free radicals.
13. With suitable examples, distinguish between E2 and E1cB mechanisms.
14. Discuss the reactions of organolithium reagents with carbonyl compounds.
15. What is 'ene' reactions ? Discuss its mechanism and stereochemistry.
16. What are the products obtained in the photo isomerization of benzene ? Discuss their mechanisms
17. Explain the total synthesis of Cephalosporin.
18. Discuss the classification of alkaloids based on ring structure.

(6 × 2 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 5.

19. Explain the effect of substrate structure and leaving group on S_E1 and S_E2 reactions.
20. Explain the reaction mechanism and applications of : (i) Darzen's reaction ; and (ii) Knoevenagel condensation.
21. What are the applications of pericyclic reactions ? What are their characteristics ? With suitable examples, explain chelotropic and electrocyclic reactions.
22. Explain the differences between Norrish Type I and Type II cleavages. Give examples of both.

(2 × 5 = 10 weightage)