D 122470 **(Pages : 2)** **Name.....**

Reg. No.....

SECOND SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY) EXAMINATION, APRIL 2025

(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 mechanism of S_N1 reaction.
2. What is pyrolytic syn elimination ? Discuss the elimination reaction of ethyl acetate based on pyrolytic syn elimination.
3. What is MPV reduction ? What is its importance ?
4. Write down the mechanism of Cannizaro reaction.
5. Discuss the FMO method of pericyclic reactions.
6. Discuss the Woodward- Hoffmann selection rules for cycloaddition reactions.
7. Discuss the mechanism of oxa di- π - methane rearrangement
8. What is Photo -Fries reaction ? Give its mechanism
9. Discuss the structures of flavonoids and anthocyanins.
10. With suitable example, describe the photo dimerization of alkenes

(8 × 1 = 8 weightage)

Turn over

Section B

Answer any **six** *questions.*

Each question carries a weightage of 2.

11. Briefly explain the effect of substrate structure and leaving group on aromatic nucleophilic substitution.

12. Briefly explain the generation, geometry, stability, and reactions of carbonium ions.

13. With suitable examples, distinguish between E1 and E1cB mechanisms.

14. Discuss the reactions of organocopper reagents with carbonyl compounds.

15. What is Claison rearrangement ? Discuss its mechanism and stereochemistry.

16. What are the products obtained in the photodimerization of α, β-unsaturated ketones ? Discuss their mechanisms.

17. Explain the total synthesis of Reserpine.

18. Discuss the steps involved in conversion of cholesterol to testosterone.

(6 × 2 = 12 weightage)

Section C

Answer any **two** *questions.*

Each question carries a weightage of 5.

19. Explain the effect of substrate structure, leaving group and reaction medium on S_E2 reactions.

20. Explain the reaction mechanism and applications of : (i) Perkin condensation ; (ii) Claison condensation.

21. How pericyclic reactions differ from normal reactions ? Discuss their characteristics. With suitable examples, explain sigmatropic and chelotropic reactions.

22. With suitable example, explain photochemistry of Norrish Type I cleavages.

(2 × 5 = 10 weightage)