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Reg. No. : .....

Name : .....

Second Semester M.Sc. Degree Examination, August 2025

Chemistry/Analytical Chemistry/Polymer Chemistry/Chemistry With Specialisation in Drug Design and Development

CH 222/CL 222/PC 222/ CHDD 522 : ORGANIC CHEMISTRY – II

(2020 Admission Onwards)

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **two** among (a), (b) and (c) from each question. Each sub question carries **2** marks.

1. (a) What is chromatography?

   (b) What is meant by the term R_f value?

   (c) What are the moving and stationary phases in paper chromatography?

2. (a) What is F-strain? Explain.

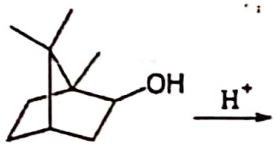
   (b) Distinguish between transition state and intermediates.

   (c) State and explain the principle of microscopic reversibility.

P.T.O.

3. (a) Describe Rupe rearrangement.

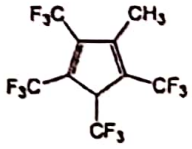
(b) Write the mechanism of Lossen rearrangement.



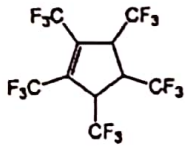
(c) Complete the following reaction:

4. (a) Explain the diamagnetic anisotropy in paracyclophane.

(b) Among the following which is more acidic? Justify.



(i)



(ii)

(c) Define 1 ,3-dipolar cycloaddition.

5. (a) What is photosensitization?

(b) Explain di-π methane rearrangement.

(c) What is chemiluminescence?

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) from each question. Each sub question carries **5** marks.

6. (a) What are the common techniques used for detecting colourless spots in TLC? Explain.

(b) Which type of GC detector is most commonly used? Explain its working principle and what are its limitations?

7. (a) Write a brief note on Curtin -Hammett principle

   (b) Explain the Taft equation and its significance in the study of organic reactivity.

8. (a) Discuss the mechanism with evidence of Favorskii rearrangement.

   (b) Write the mechanism of pinacol rearrangement. Justify.

9. (a) Explain the regioselectivity of Diels-Alder reaction.

   (b) Discuss the aromaticity of non-benzenoid aromatic systems.

10. (a) Explain the methods of generation and reactions of singlet oxygen.

    (b) Explain the photochemistry of conjugated dienes.

(5 × 5 = 25 Marks)

SECTION – C

Answer any **three** questions. Each question carries **10** marks.

11. (a) Explain the concept of theoretical plates and plate height in chromatography.

    (b) Write a short note on principle. instrumentation and applications of GC- MS.

12. Discuss about the various methods of determining reaction mechanisms.

13. Describe with evidences the mechanism of

    (a) Orton rearrangement

    (b) Dienone-phenol rearrangement

    (c) Curtius rearrangement

    (d) Stevens rearrangement

14. Derive the selection rules for thermal and photochemical 4n and 4n+2 eletrocyclisation reactions using correlation diagram method

15. (a) Discuss the photochemistry of vision.

(b) Describe Jablonski diagram.

(3 × 10 = 30 Marks)