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**Reg. No. : .....**

**Name : .....**

**Second Semester M.Sc. Degree Examination, November 2023**

**Chemistry/Analytical Chemistry/Polymer Chemistry**

**CH/CL/PC 222 : ORGANIC CHEMISTRY — II**

**(2020 Admission Onwards)**

Time : 3 Hours Max. Marks : 75

SECTION – A

Answer **any two** sub-questions among (a), (b) or (c) from each question. **Each** sub-question carries **2** marks.

1. (a) How adsorption chromatography is different from partition chromatography?

   (b) Discuss the characteristics of the spray reagents used in chromatography.

   (c) What is capillary electrophoresis? Discuss its applications.

2. (a) What is F-strain? What is its consequence?

   (b) Discuss the difference between transition state and intermediates.

   (c) Discuss the significances of '$\sigma$' and '$\rho$' values in Hammett equation.

3. (a) What is Bucherer reaction?

   (b) Discuss the stereochemistry of Beckman rearrangement.

   (c) Discuss the mechanism of conversion of salicylaldehyde into catechol.

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4. (a) What is the importance of aromaticity on physical properties?

   (b) Discuss the Huckel theory of electrocyclic reactions.

   (c) Discuss the stereochemistry of Cope rearrangement.

5. (a) What is the use of Jablonski diagram?

   (b) What is the chemistry of photosynthesis?

   (c) What is retro Diels-Alder reaction?

**(10 × 2 = 20 Marks)**

SECTION – B

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

6. (a) Briefly explain the various solvent extraction techniques.

   (b) What is centrifugal TLC? What are its advantages?

7. (a) What are phase transfer catalysts? What are its applications?

   (b) Discuss the mechanism of the following reaction :


8. (a) Discuss the mechanism of Demjanov rearrangement.

   (b) Discuss the mechanism of conversion of acetic acid to methylamine.

9. (a) What are the industrial applications of Diels- Alder reaction?

   (b) Briefly explain 1, 3-dipolar cycloadditon reactions.

10. (a) Distinguish between Norrish Type I and Type II reactions.

    (b) How singlet oxygen is generated? What are its reactions?

**(5 × 5 = 25 Marks)**

## SECTION – C

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

11. Explain the principle, instrumentation and applications of LC-MS.

12. Explain the various methods used for the determination of reaction mechanism of organic reactions.

13. What is Fries rearrangement? Explain the mechanisms of thermal and photo Fries rearrangements. Discuss its scope and limits.

14. What is aromaticity? What are the various types of aromaticity? Discuss the aromaticity of annulenes and metallocenes.

15. Explain Hofman-Loffler-Freytag and Barton reactions.

**(3 × 10 = 30 Marks)**

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