

Reg. No. :

Name :

Second Semester M.Sc. Degree Examination, November 2021

Chemistry/Polymer Chemistry/Analytical Chemistry

CH/CL/PC 222 – ORGANIC CHEMISTRY – II

(2020 Admission)

Time : 3 Hours

Max. Marks : 75

SECTION – A

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

1. (a) What is meant by plate theory of chromatography? Explain.
(b) What are the common spray reagents used in the detection of alkaloids and glycosides?
(c) Define the term 'affinity chromatography'.
2. (a) Highlight the advantages (any four) of phase transfer catalysis.
(b) What is F-strain? Explain with an example.
(c) How do you convert acetone to 2-methylpropene? Specify the reagents and intermediate formed.
3. (a) Outline the different steps involved in Claisen rearrangement.
(b) Describe the mechanism of Wolf rearrangement.
(c) How is acetyl chloride converted to propionic acid?

P.T.O.



4. (a) What are metallocenes? Mention the applications of metallocenes.
(b) How is Huisgen reaction helpful in illustrating 1,3-dipolar reaction?
(c) Describe the synthetic importance of retro-Diels-Alder reaction.
5. (a) What is singlet oxygen? How is it generated?
(b) Predict the product/s in the photolysis of butadiene in presence of benzophenone as sensitizer. Outline the mechanism.
(c) Outline the mechanism of oxa di-pi-methane rearrangement.

(10 × 2 = 20 Marks)

SECTION – B

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

6. (a) Differentiate between adsorption and partition chromatography with suitable examples.
(b) Briefly describe the separation of two organic compounds using column chromatography.
7. (a) With suitable illustration distinguish between kinetic and thermodynamic control of reactions.
(b) What is meant by the principle of microscopic reversibility?.
8. (a) Discuss the mechanism of the following rearrangements with evidences.
(i) Hofmann
(ii) Dienone-phenol.
(b) (i) Outline the mechanism of Beckmann rearrangement.
(ii) Outline the mechanism of Curtius rearrangement.



9. (a) (i) Differentiate between anti-aromaticity and nonaromaticity.
(ii) Define the terms 'aromaticity' and 'homoaromaticity'.
- (b) Discuss the aromaticity of annulenes.
10. (a) Give any two reactions for remote intramolecular free radical C–H functionalization. Outline the mechanism of any one of them.
- (b) Outline the mechanisms of the following rearrangements.
- (i) Di-pi-methane
- (ii) Photo-Fries.

(5 × 5 = 25 Marks)

SECTION – C

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

11. Describe briefly the principle, instrumentation and applications of GC.
12. Discuss the different methods of determining reaction mechanism.
13. Delineate the mechanism of the following rearrangements with evidences
- (a) Wagner-Meerwein
- (b) Benzidine
- (c) Schmidt
- (d) Orton
14. Discuss the influence of aromaticity on physical and chemical properties of organic compounds.
15. Describe the applications of photochemistry

(3 × 10 = 30 Marks)

