

UUCMS No.

| | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

B.M.S COLLEGE FOR WOMEN, AUTONOMOUS
BENGALURU – 560004
SEMESTER END EXAMINATION – MARCH/APRIL- 2023

B.Sc. in Chemistry – III Semester

ANALYTICAL AND ORGANIC CHEMISTRY
(NEP Scheme 2021-22 onwards)

Course Code: CHE3DSC03

Duration: 2 ½ Hours

QP Code:3014

Max. Marks: 60

Instructions: 1. Question paper has three Parts. Answer all the parts.
2. Write chemical equations and diagrams wherever necessary.

PART– A

Answer any FIVE of the following questions. Each question carries TWO marks. (5X2=10)

1. Define (i) Wave length (ii) Frequency.
2. Mention any two advantages of double beam spectrophotometer.
3. Give an example for (i) solid-liquid chromatography (ii) liquid-liquid chromatography
4. Write the principle of thin layer chromatography.
5. What are free radicals? How are they generated?
6. What is the role played by kinetic evidence in proposing the reaction mechanism for a reaction?
7. What are enantiomers? Give an example.

PART– B

Answer any FOUR of the following questions. Each question carries FIVE marks. (4X5=20)

- 8.(a) Mention any three limitations of Beer-Lambert law.
(b) Mention any two factors affecting Nephelometry and Turbidimetry (3+2)
- 9.(a) Discuss the instrumentation of Nephelometry.
(b) What is Calibration graph? (3+2)
- 10.(a) What are spray reagents? Mention any two examples.
(b) Define super critical fluid extraction. (3+2)
11. (a) Define column efficiency. Mention any two factors affecting column efficiency.
(b) Write the principle of ion exchange chromatography. (3+2)

- 12.(a) What are carbenes? Mention any two differences between singlet and triplet carbene.
(b) Mention any four methods used in determining reaction mechanisms. (3+2)
13. (a) Write the Fischer projection formula of
(i) L-Glyceraldehyde
(ii) R- and S- Lactic acid
(b) Mention the conditions for a molecule to exhibit geometrical isomerism. (3+2)

PART- C

Answer any THREE of the following questions. Each question carries TEN marks. (3X10=30)

14. (a) Explain the estimation of copper by colorimetric method.
(b) Explain the determination of amount of sulphate in a given sample by turbidimetric method.
(c) Define i) Sensitivity (ii) Detection limit (4+4+2)
- 15.(a) Describe the separation of lanthanides by ion exchange chromatography
(b) Write a note on batch and continuous extraction
(c) Mention any two applications of paper chromatography. (4+4+2)
- 16.(a) Write the mechanism of pinacol-pinacolone rearrangement. Identify the type of reactive intermediate involved.
(b) With a suitable example explain how the isolation of an intermediate helps in determining the mechanism of a reaction.
(c) What is the importance of product analysis in proposing a reaction mechanism? (4+4+2)
- 17.(a) Write the sawhorse and Newmann projection formulae of ethane.
(b) Explain the optical isomerism in tartaric acid.
(c) What are diastereomers? Give an example. (4+4+2)
18. (a) Write the mechanism for the conversion of acetaldehyde to 3-Hydroxybutanal by aldol condensation.
(b) What is resolution? Explain the chemical method of resolution of a racemic mixture.
(c) Define the following: (i) Chirality (ii) Stereogenic center (4+4+2)
