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DCCH301

Reg. No.

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III Semester B.Sc. Degree Examination, March/April - 2024

## CHEMISTRY

Analytical and Organic chemistry - II  
(CBCS NEP - Scheme 2022-23 Onwards)

Paper : III



Time : 2½ Hours

Maximum Marks :60

*Instructions to Candidates:*

- 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 2 marks.

(5×2=10)

1. Give the principle of thin layer chromatography.
2. Define frequency and mention its SI unit.
3. State Beer-Lambert's law.
4. Explain aldol condensation with an example.
5. What is specific rotation.
6. Define plane of symmetry.
7. What are Nitrenes?

## PART - B

Answer any Four of the following questions. Each question carries 5 marks

(4×5=20)

8. a) Explain the effect of particle size on scattering of light.  
b) Give any two applications of turbidimetry. (3+2)
9. a) Explain solvent extraction of iron.  
b) What is retention factor? (4+1)

[P.T.O.]



10. a) How isotopic studies help in identifying reaction mechanism?  
b) Explain sandmeyer reaction with an example. (3+2)
11. a) How configuration of geometrical isomers one determined based on dipole moment and boiling point?  
b) What is optical activity? (4+1)
12. a) Discuss stereoisomerism in tartaric acid.  
b) Write fischer projection formula of R-2-Chlorobutane. (4+1)
13. a) Give a brief account on double beam spectrophotometer.  
b) Define Sensitivity. (3+2)

### PART - C

Answer any Three of the following questions. Each question carries 10 marks.

(3×10=30)

14. a) Give the principle and instrumentation of nephelometry.  
b) Describe the procedure involved in the estimation of phosphate ( $\text{PO}_4^{3-}$ ) colorimetrically.  
c) What is Internal standard method. (4+4+2)
15. a) What is column efficiency? Mention the factors affecting it in column chromatography.  
b) Give the principle and any two applications of paper chromatography.  
c) Write van Deemter equation and indicate the terms. (5+3+2)
16. a) Explain claisen - schmidt reaction with an example.  
b) Give any two methods of generating free radicals.  
c) Write the mechanism of generation of benzyne. (4+3+3)
17. a) With a suitable example explain the interconversion of sawhorse to Newman projection.  
b) Explain the terms  
i) Racemisation  
ii) Resolution.  
c) What are diastereomers? (4+4+2)
18. a) Discuss about stereochemical evidences in identification of reaction mechanism.  
b) Explain the stability of carbanions.  
c) Briefly explain the mechanism of ion -exchange process. (4+3+3)
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