



B.Sc. III Semester Degree Examination, March/April - 2023

CHEMISTRY

Paper No. 3 : Analytical and Organic Chemistry

(NEP)

Time : 2 Hours

Maximum Marks : 60

Note : Answer *all* sections.

SECTION - A

1. Answer the following sub-questions. Each sub-question carries **one** mark. **10x1=10**
- | | |
|--|---|
| (a) Define wave number and give its unit. | 1 |
| (b) Write the principle of paper chromatography. | 1 |
| (c) What is spectrophotometer ? | 1 |
| (d) What is Rf value ? | 1 |
| (e) State the Nernst distribution law. | 1 |
| (f) What are carbocations ? | 1 |
| (g) What is Van Deemters equation ? | 1 |
| (h) Define enantiomers and give an example. | 1 |
| (i) What is carbon ion ? | 1 |
| (j) What is geometrical isomerism ? | 1 |

SECTION - B

Answer **any four** of the following questions, each question carries **five** marks.

- | | |
|--|--------------------|
| 2. Explain calibration graph. | 4x5=20
5 |
| 3. Discuss the Instrumentation of nephelometry. | 5 |
| 4. Briefly discuss the applications of Ion-exchange chromatography. | 5 |
| 5. How does the delocalization of carbonium ion leads to Dienone phenol rearrangement ? Explain with a suitable example. | 5 |
| 6. Define mesocompound and give any two examples. | 5 |
| 7. Write a note on thin layer chromatography. | 5 |



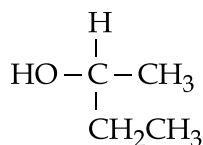
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SECTION - C

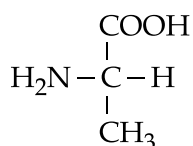
Answer **any three** of the following questions, each question carries **ten** marks.

3x10=30

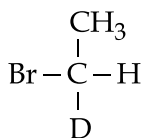
8. (a) Derive Beer's-law. **6**
 (b) Give any four limitations of Beer's law. **4**
9. (a) Write any five differences between nephelometry and turbidimetry. **6**
 (b) What are factors affecting on column efficiency ? Explain. **4**
10. (a) Define chromatography. Give any four principles of Thin layer chromatography. **6**
 (b) Discuss the solvent extraction procedure with a suitable example. **4**
11. (a) How does free radicals stabilized by (i) Inductive effect (ii) Resonance effect. **6**
 (b) Discuss the effect of catalyst on reaction mechanism ? **4**
12. (a) What are resolution ? Explain the diastereomeric method of separation of enantiomers from its racemic mixture. **6**
 (b) Check the order of priority and assign the R/S configuration of the following. **4**
 (i) 2-Hydroxybutane



- (ii) 2-Amino Propanoic acid



- (iii) 2-Bromo-2-Deuteriumethane



- (iv) 1-Bromo-1-Chloroethane

