

FOURTH SEMESTER M.Sc. DEGREE (REGULAR/SUPPLEMENTARY)
EXAMINATION, APRIL 2024

(CBCSS)

Chemistry

CHE 4C 12—INSTRUMENTAL METHODS OF ANALYSIS

(2019 Admission onwards)

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer any eight questions.

Each question carries a weightage of 1.

1. What is significant figure? How many significant figures are there in the following?
- (a) 0.0032. (b) 2.00005.
2. Differentiate between accuracy and precision.
3. What do you mean by confidence intervals?
4. What are the different factors favouring organic reagents for gravimetry?
5. Stripping methods are more sensitive than other voltammetric procedures. Why?
6. What is meant by amperometry? How is it different from biamperometry?
7. What is paper chromatography?
8. Distinguish between XPS and Auger Electron Spectroscopy.
9. What is the principle of ATR Spectroscopy?
10. What is NAA? Give any one use of this technique.

(8 × 1 = 8 weightage)

Section B

Answer any six questions.

Each question carries a weightage of 2.

11. Briefly explain the flame and electrothermal atomization processes in AAS.
12. What is Van-Deemeter equation? Discuss its utility in chromatography.
13. Write short notes on the followings:
(a) Indicator electrodes. (b) Anodic stripping voltametry.

Turn over

14. Distinguish between Nephelometry and Turbidimetry.
15. a) Explain the theory and applications of TLC.
b) Describe the instrumentation and working of a gas chromatograph.
16. Write short note on inorganic precipitating agents
17. What is Photo Electron Spectroscopy? How is it useful in the study of core binding energy?
18. Draw the block diagram of SEM and discuss the important applications of SEM.

(6 × 2 = 12 marks)

Section C

Answer any two questions.
Each question carries a weightage of 5.

19. a) What are chelometric titrations? Write down their applications in quantitative analysis.
b) What is co-precipitation? What are the different types of co-precipitation and how it can be minimized?
20. a) What is F test? What is its significance in analytical chemistry? What are the major criteria in rejecting an analytical result?
b) Differentiate between masking and demasking techniques. Illustrate their selectivity in improving the selectivity of EDTA titrations.
21. a) With a neat diagram, explain the instrumentation of fluorimetry.
b) Explain the instrumentation and applications of UV-visible and IR spectroscopy.
22. Explain the principle and applications of the following a) NAA b) Polarography.