

24P410

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Name:

Reg.No:

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, APRIL 2026

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PCHE4C12 - INSTRUMENTAL METHODS OF ANALYSIS

(Chemistry)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

Section A

Answer any *eight* questions. Each question carries 1 weightage.

1. Give an account of photodiodes used in UV-Visible spectrophotometry.
2. Compare the merits and demerits of flame atomization and electrothermal atomization in atomic absorption spectroscopy.
3. Give an account of stationary and mobile phases in TLC.
4. If the detector is ECD, N₂ should be used as the carrier gas. Why?
5. Give two applications of DSC and DTA.
6. Explain one application of neutron activation analysis.
7. Round off the following numbers to three significant figure: (a) 65.8437, (b) 69.873, (c) 68.752, (d) 67.250, (e) 63.35
8. What is buffer solutions? Give two examples.
9. What is meant by concentration polarization?
10. What is meant by primary coulometric titrations?
11. What is Q-test?
12. Explain self indicators with suitable examples?

(8 × 1 = 8 Weightage)

Section B

Answer any *four* questions. Each question carries 3 weightage.

13. Give an account of various thermal detectors used in IR spectrophotometry.
14. Explain the theory of ion exchange chromatography.
15. Give an account of liquid membrane electrodes.

16. Give an account of dropping mercury electrode.
17. (a) What is confidence interval ? (b) The mean of four determination of the copper content of a sample of an alloy was 8.27% with a standard deviation 0.17%. Calculate the 95% confidence limit for the true value. The value of 't' for the 95% confidence level with (n-1), i.e., 3 degrees of freedom is 3.18.
18. What is co-precipitation? What are the different types of co-precipitation?
19. With help of a diagram, explain the principle of origin of Auger electron.

(4 × 3 = 12 Weightage)

Section C

Answer any *two* questions. Each question carries 5 weightage.

20. Explain the structure and working of Inductively coupled argon plasma.
21. Give an account of column packing and detectors used in HPLC.
22. Write an account on the complexometric titrations using EDTA, bringing out theory, methodology and applications.
23. Describe the principle and instrumentation of amperometric titrations with reference to (a) titrand is reducible for titrant and product not (b) Titrant is reducible but titrand and product not (c) Titrand and titrant both are reducible but product not.

(2 × 5 = 10 Weightage)
