

(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED

SUBCODE

24PCY414

DURING THE ACADEMIC YEAR 2024-2025 ONLY)

REG.NO. :

N.G.M. COLLEGE (AUTONOMOUS): POLLACHI

END-OF-SEMESTER EXAMINATIONS: MAY 2026

MSC CHEMISTRY

SEMESTER: VI

MAXIMUM MARKS: 75

TIME:3 HOURS

INSTRUMENTAL METHODS OF CHEMICAL ANALYSIS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.(K1)

1. Define the term 'precision'.
2. Mention any two columns used in HPLC.
3. What is Chemical Shift?
4. What is 'g' factor?
5. What is phosphorescence?

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES(K2)

6. How will calculate absolute error and relative error? Give an example for each.
7. Mention any two applications of solvent extraction.
8. Draw the TGA of Calcium oxalate monohydrate and explain the decomposition steps.
9. What is Kramer's degeneracy?
10. What is cotton effect?

SECTION – B (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K3)

11. a) Relative error is calculated in quantitative analysis instead of absolute error.
Explain the reason with suitable example.
(OR)
b) What is method of least square? Where it can be used? Explain with example.
12. a) Discuss the instrumentation of ion exchange chromatography.
(OR)
b) What is the Principle involved in HPLC? Outline the instrumentation involved in HPLC.
13. a) Discuss the principle and instrumentation involved in DSC.

(OR)

b) Discuss sources, analysis, detectors and recording devices used X-rays studies.

14. a) Explain the identification of methyl free radical using ESR.

(OR)

b) Explain Doppler effect and isomer shift in Mossbauer spectroscopy.

15. a) Discuss the basic principles of ORD and give its applications.

(OR)

b) Explain Axial halo ketone rule.

SECTION – C(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS(K4orK5)

16. a) Discuss the Classification of Errors and its minimization with suitable example.

(OR)

b) Write note on 't'-test and 'F'-test.

17. a) Give a detailed account on carriers, columns & detectors used in Gas chromatography instrumental set up.

(OR)

b) What is the principle behind thin layer chromatography? What is retention factor? Discuss the applications of thin layer chromatography.

18. a) Discuss the Principle, instrumentation involved in Atomic Absorption Spectroscopy. Mention its applications.

(OR)

b) Discuss the principles, applications and instrumentation involved in UV photo electron spectroscopy.

19. a) Discuss the theory and Principle of NQR spectroscopy. Mention its applications.

(OR)

b) Write a note on zero field splitting and hyper fine splitting in ESR. Explain the identification of C_6H_5 radical using ESR.

20. a) Discuss the differences between ORD and CD.

(OR)

b) What is the Principle involved in Fluorometry. Discuss its applications.
