M.Sc. DEGREE END SEMESTER EXAMINATION - NOVEMBER 2025
SEMESTER 1 : ENVIRONMENTAL SCIENCE
COURSE : **24P1EVST04** : TECHNIQUES IN RESEARCH

(For Regular - 2025 Admission and Improvement /Supplementary 2024 Admission)

Time : Three Hours   Max. Weights: 30

PART A
Answer any 8 questions   Weight: 1

1. What is Liquid Chromatography?   (U)
2. Write a short note on ESR Spectroscopy.   (R)
3. List any two types of reference electrodes   (E)
4. List out factors that affect the rate of migration of particles in electrophoresis.   (R)
5. What is dehydration?   (U)
6. Comment on sandwich ELISA.   (R)
7. What is the principle of Autoradiography?   (U)
8. Define analytical and preparative centrifugation.   (U)
9. Write in brief the principle of phase contrast microscope.   (U)
10. Explain the phenomenon of ESR.   ( )

(1 x 8 = 8)

PART B
Answer any 6 questions   Weights: 2

11. Explain the principle and types of ELISA   (U)
12. Explain the principle and applications of ion exchange chromatography   (U)
13. Discuss density gradient centrifugation.   (U)
14. What is the importance of cryofixation in electron microscopy?   (U)
15. Explain the principle and applications of NMR spectroscopy   (U)
16. Discuss the principle of immunoelectrophoresis.   (R)
17. Explain how are the electrons formed in transmission electron microscope.   (R)
18. How carbohydrates are detected with Periodic Acid Schiff method?   (An)

(2 x 6 = 12)

PART C
Answer any 2 questions   Weights: 5

19. Discuss principle, procedure and types of PAGE   (An)
20. Highlight the principle and applications of electron microscope.   (R)
21. How do you prepare permanent slides for histological studies of tissues. ? Explain the steps and its significance.   (An, CO 6)
22. Discuss in detail the principle and operating procedure of ion exchange chromatography.   (U)

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 6	Maximize acquaintance with state of art laboratory methods in research	An	20	5

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;