

Reg. No .....

Name .....

19P2015

**MSc DEGREE END SEMESTER EXAMINATION - MARCH/APRIL 2019**

**SEMESTER 2 : ENVIRONMENTAL SCIENCE**

**COURSE : 16P2EVST05 : TECHNIQUES IN RESEARCH**

*(For Regular - 2018 Admission and Supplementary - 2017/2016 Admissions)*

Time : Three Hours

Max. Marks: 75

**Section A**

**Answer any 10 (2 marks each)**

1. Comment on Abbe's equation
2. Why is the substage condenser lens important in microscopes?
3. Write notes on anion exchange chromatography.
4. Briefly describe affinity chromatography.
5. Comment on the principle of chromatography
6. Differentiate preparative and analytical chromatography.
7. Define electrophoretic mobility.
8. Define vibrational spectroscopy.
9. What is isopycnic separation?
10. Comment on infiltration.
11. What are mordants?
12. Comment on sputter coating

**(2 x 10 = 20)**

**Section B**

**Answer any 5 (5 marks each)**

13. Write a note on the stationary phase and mobile phase used in gel permeation chromatography.
14. Explain high voltage electrophoresis.
15. Write a note on isoelectric focussing.
16. Briefly explain the principle and applications of colorimetry.
17. Explain the principle and applications of ESR spectroscopy
18. Differentiate between analytical and preparative centrifugation.
19. Highlight the working of GM counters.
20. What are the applications of microphotography?

**(5 x 5 = 25)**

**Section C**

**Answer any 2 (15 marks each)**

21. Differentiate between SEM and TEM.
22. Give an account on the principle, types and applications of various electrophoretic techniques.
23. Describe the principle and instrumentation of spectroscopy.
24. Explain the process of fixation and staining in histochemistry. Discuss the significance of fixation and staining.

**(15 x 2 = 30)**