

45131

M.Sc. DEGREE EXAMINATION, MARCH/APRIL 2019.

FOURTH SEMESTER

Material Science and Nanotechnology

Paper I — ADVANCED CHARACTERIZATION TECHNIQUES

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. What are applications of SEM?
2. What are the differences between STM and AFM?
3. What are the uses of DSC?
4. Mention some of the applications of TGA.
5. What are the detectors used in Gas Chromatography?
6. How is Column Chromatography used in real life?
7. What are the basic concepts in chemical and particle size analysis techniques?
8. What are the applications of EDAX?

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. What is TEM ? How do you characterize the material with TEM?

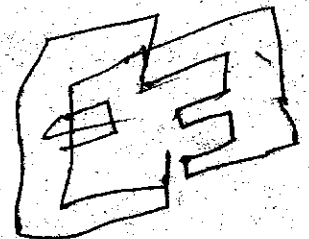
Or

10. What is AFM? Explain its principle of operation.

11. Discuss the principle of Differential thermal analysis.

Or

12. What is TMA? Explain the principle of thermomechanical analysis.



13. What is High Performance Liquid Chromatography (HPLC)? Discuss its working.

Or

14. What is Chromatography and what are its parameters? How does it work?

15. Explain the principle and working of X-ray Photoelectron Spectroscopy.

Or

16. How the Dynamic Light Scattering (DLS) used for characterization of a sample?

