24P309 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS - PG)

(Regular/Supplementary/Improvement)

CC19PPHY3E05 - EXPERIMENTAL TECHNIQUES

(Physics)

(2019 Admission onwards)

Time : 3 Hours Maximum : 30 Weightage

Section A

Answer ***all*** questions. Each question carries 1 weightage.

1. What are different actions taking place in Oil sealed rotary pump?
2. How do getter ion pump works?
3. Distinguish between resistive heating and electron beam evaporation.
4. What are interference filters? Give their uses.
5. Explain electron impact ionization.
6. Briefly explain basic principle of material analysis.
7. What is the principle of Rutherford backscattering technique?
8. How do we analyse data from XRD pattern?

(8 × 1 = 8 Weightage)

Section B

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

9. With the help of a diagram, explain the various parts and working of a Turbo molecular pump. What are its advantages?
10. What are the factors on which the quality of thermally evaporated thin films depend? Describe the electron beam evaporation technique.
11. Explain ion beam sputtering technique.
12. Explain PIXE technique for elemental analysis.

(2 × 5 = 10 Weightage)

Section C

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

13. Briefly explain the working of sorption traps.

14. With a suitable diagram, describe Wheatstone's bridge Method for thin film thickness measurement.
15. Explain the working of Tandem Van de Graaff Accelerator.
16. Explain the working of linear RF accelerators.
17. Explain experimental set up for Neutron activation analysis technique.
18. A beam of X-rays of wavelength 0.071 nm is diffracted by (110) plane of rock salt with lattice constant of 0.28 nm. Find the glancing angle for the second-order diffraction.
19. What is X-ray diffraction? How it is useful in material characterization?

(4 × 3 = 12 Weightage)

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