

21P309

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Name: .....

Reg.No: .....

**THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2022**

(CBCSS - PG)

(Regular/Supplementary/Improvement)

**CC19P PHY3 E05 - EXPERIMENTAL TECHNIQUES**

(Physics)

(2019 Admission onwards)

Time : 3 Hours

Maximum : 30 Weightage

**Section A**

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

1. Explain the principle behind Sorption traps.
2. Name five methods for thermal evaporation of materials.
3. What are Multi layer optical filters?
4. Differentiate between linear accelerators and cyclic accelerators.
5. What is thermionic emission?
6. What is the principle of Rutherford backscattering technique?
7. What is X-ray Diffraction? Obtain Bragg's law.
8. Briefly explain the working of X-Ray diffractometer.

**(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 Turbo molecular pump. Compare it with an oil diffusion pump.
10. Describe the different thermal evaporation methods of thin film deposition.
11. Explain the working of Van de Graaff Accelerator and Tandem Van de Graaff Accelerator.
12. Explain General experimental arrangement for Elemental Analytical Method.

**(2 × 5 = 10 Weightage)**

**Section C**

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

13. What are pumps? Explain the working of diffusion pumps.
14. Explain the working of sputter ion pumps.
15. What is sputtering? Explain the basic concepts of sputtering and define sputtering yield.
16. Explain ion beam sputtering technique.
17. Explain Neutron activation analysis technique for elemental analysis.

18. Explain experimental set up for PIXE analysis technique.
19. Explain briefly Powder (Debye Scherrer) method of diffraction.

**(4 × 3 = 12 Weightage)**

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