23P309 (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2024

(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. What are different actions taking place in Oil sealed rotary pump?
2. Explain the principle behind Sorption traps.
3. Differentiate between thermionic sources and plasma electron sources.
4. What are Multi layer optical filters?
5. What is a cascade accelerator ?
6. Explain electron impact ionization ?
7. What are different applications of XRD?
8. How will you calculate grain size of the material from XRD pattern?

(8 × 1 = 8 Weightage)

Section B

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

9. Explain the working of a Diffusion pump with a schematic drawing. Why a rotary pump is necessary with a diffusion pump?
10. What are the factors on which the quality of thermally evaporated thin films depends? Describe the laser evaporation technique.
11. Explain the process of ion implantation technique ?
12. Explain Neutron activation analysis technique for elemental analysis ?

(2 × 5 = 10 Weightage)

Section C

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

13. What are pumps? Explain the working of sputter ion pumps.
14. Explain the principle of operation of a Pirani gauge.

15. Obtain the expression for film thickness used in Quartz crystal thickness monitor.

16. Explain the working of cyclotron ?

17. Explain basic principle of material analysis ?

18. Explain Rutherford backscattering technique for elemental analysis ?

19. What is X-Ray diffractometer? Describe the working of different components of X-Ray diffractometer.

(4 × 3 = 12 Weightage)

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