62115

Reg. No. ☐☐☐☐☐☐☐☐

II Semester M.Sc. Degree Examination, November/December - 2022

PHYSICS

Experimental Techniques (Soft Core)

(CBCS Scheme 2019-20)

Paper : PHY-207

Time : 3 Hours

Maximum Marks : 70

PART - A

Answer any Six of the following Questions. (6×5=30)

1. A thermocouple gauge is inaccurate above 500 m Torr and it is also not useful below 0.5 m Torr. Explain.

2. With a neat diagram, explain the working principle of magnetic thermometer.

3. Which principle governs thermocouple operation? Explain.

4. Define the term "Vacuum Leak" Which tests must be conducted when diagnosing a vacuum Leak?

5. Calculate the Pumping speed at the chamber if the pump has a speed of 200 liters/s, the pressure at the vacuum Pump is 5×10^{-6} torr, and the conductance element is a tube 75 cm long by 5 cm in diameter.

6. Explain the working principle of rotary vacuum pump.

7. Discuss the classification of magnetic field sensors.

8. Discuss in brief the working of anisotropic magneto resistive sensors.

9. Explain briefly the measurement of strong Magnetic field using NMR Magnetometers.

PART - B

Answer any Four of the following. (4×10=40)

10. a) Which type of ammeter is used to measure high frequency current and Why?

    b) Explain in brief the measurement principle of thermal resistance. (6+4)

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11. Describe the working principle of an infrared radiation pyrometer and the wavelengths utilised to measure it.

12. a) Write any two advantages and disadvantages of Turbomolecular Pump.

    b) Explain Why pirani gauges are used for measuring low pressure?   **(4+6)**

13. With a neat diagram, explain the construction and working of ionization type vacuum gauge. Also, Mention any two of its disadvantages.

14. a) Explain briefly the basic operation of Fluxgate Magnetometers..

    b) What are the major advantages with SQUID sensor that makes it popular in scientific work?   **(6+4)**

15. How is the performance of Hall sensor evaluated? What are its primary and secondary sensitivities?