B.Sc. DEGREE EXAMINATION,APRIL 2019
II Year IV Semester
Electricity and Magnetism

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. Does the electric flux due to a point charge enclosed by a spherical Gaussian surface get affected when its radius is increased?
2. Define electric field intensity.
3. State Ohm's law.
4. Write the applications of potentiometer.
5. Define current. Give it's S.I. unit
6. Define time constant for decay of current in L-R circuit.
7. Define Peltier effect.
8. Define thermocouple. Give examples.
9. Define magnetic induction.
10. Give example for diamagnetic materials.
11. Define Seebeck effect.
12. Write the relation between neutral temperature and inversion temperature.

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. State and prove Gauss's law.
14. Explain the principle of potentiometer.
15. With neat diagram explain the principle involved in the measurement of high resistance by leakage method.
16. State the laws of thermo emf.
17. Derive the relation between B, H and M.
18. Write short notes on electron theory of magnetism.
19. List out the properties of paramagnetic materials.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Using Gauss's law, obtain an expression for electric intensity at a point (i) outside (ii) inside (iii) on the surface of a uniformly charged sphere.
21. Explain the measurement of internal resistance using potentiometer with neat circuit diagram.
22. Obtain an expression for growth of charge in RC circuit.
23. Explain how you will determine the emf of a thermocouple using potentiometer.
24. (a) Write the differences between antiferromagnetism and ferromagnetism.
    (b) Give the properties of ferro magnetic materials.

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