**B.Sc. DEGREE EXAMINATION, NOVEMBER 2015.**

**II YEAR — IV SEMESTER**

**Major Paper VIII — ELECTRICITY AND**

**MAGNETISM**

**Time : 3 hours Max. Marks : 60**

**SECTION A — (10 × 1 = 10 marks)**

**Answer any *TEN* questions**

1. Define electric flux. Give its unit.
2. What is meant by spherically symmetric charge distribution?
3. Why is copper wire not suitable for a potentiometer?
4. A *10 Ω* resistance is connected in series with a cell of emf *10V*. A voltmeter is connected in parallel to a cell and it reads *9.9V*. Find internal resistance of the cell.
5. Define time constant of an *L-R* circuit.
6. What is resistance?
7. What is seebeck effect?
8. Define peltier effect.
9. Define magnetic susceptibility.
10. Define magnetization.
11. What do you mean by pyro-electricity?
12. Mention the classification of magnetic materials.

**SECTION B — (5 × 4 = 20 marks)**

**Answer any *FIVE* questions**

1. State and explain Gauss’s law.
2. Explain the principle of potentiometer.
3. Describe with full theory the method of measuring a high resistance by the leakage method.
4. Describe the laws of thermo emf.
5. Write the properties of ferromagnetic materials.
6. Write short notes on Antiferromagnetism and Ferrimagnetisms.
7. Describe the application of Gauss law to an insulated conductor.

**SECTION C — (3 × 10 = 30 marks)**

**Answer any *THREE* questions**

1. Apply Gauss’s law to calculate the electric field due to a uniformly charged sphere at points:
   1. Outside the sphere
   2. At the surface of the sphere
   3. Inside the sphere
2. What is potentiometer? How will you use it to calibrate an ammeter and a voltmeter?
3. Describe the growth and decay of charge in a *C – R* circuit.
4. Describe how you would determine the peltier co-efficient of a junction experimentally.
5. Derive the relation between three magnetic vectors *B, H* and *M.*

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