

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)

Chromepet, Chennai - 600 044.

B.Sc.Physics - END SEMESTER EXAMINATIONS - APRIL 2025

SEMESTER - IV

20UPHCT4008 - Electricity and Magnetism

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Discuss about Coulomb's theorem and the mechanical stress on unit area of a charged conductor.
2. Discuss about the working circuit to compare the emf of two cells using potentiometer.
3. Obtain an expression for the growth of charge in an RC circuit.
4. Discuss about the thermoelectric effects in PN junction.
5. Discuss about different types and properties of magnetic materials
6. State Gauss law and give its proof.
7. Discuss the experimental setup to determine the internal resistance of the cell using potentiometer.
8. Explain the experimental method for the measurement of high resistance by leakage.

Section C

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

9. Derive an expression for electric field due to a uniformly charged sphere conducting and non-conducting.
10. Discuss about the determination of resistance of the given wire with necessary theory using Carey Foster's bridge.
11. Discuss in detail decay of current in LCR circuit.
12. Explain the method to measure the thermos emf using a potentiometer.
13. Explain in detail about an experiment to draw M-H curve in horizontal model and explain its energy loss due to hysteresis.
