

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

22UPHCT4008 - Electricity and Magnetism

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. State and prove Gauss's theorem of electrostatics.
2. Obtain an expression for the growth of current in a circuit having inductance and resistance.
3. Explain Seebeck effect. Describe the laws of thermoelectric effects.
4. State and explain Biot-Savarts law.
5. Explain the theory of potentiometer with suitable diagram.
6. Describe the discharge of a capacitor in series resistor.
7. Write short note on thermoelectric refrigerator.
8. Explain magnetic induction and Lorentz force. Define magnetic flux.

Section C

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

9. Apply Gauss's law to find the electric field due to a uniformly a charged non-conducting sphere and uniformly charged non-conducting cylinder.
10. Draw and explain calibration of low and high range voltmeter.
11. Obtain an expression for the decay of charge in LCR circuit.
12. What is meant by Peltier effect? How to describe the thermoelectric effect in PN junction?
13. Obtain an expression for magnetic field at a point on the axis of current carrying circular coil.
