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 - NOV'2024
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. Define electric field intensity and derive the expression for electric field intensity due to a point charge.
2. State and Prove Gauss law in electrostatics.
3. Explain the principle of a potentiometer.
4. Obtain the expression for growth of charge in CR circuit.
5. Describe the measurement of high resistance by leakage with circuit.
6. Explain the laws of thermo emf.
7. a) State and Explain Biot- Savart's law
   b) Define magnetic flux
8. An electron is moving with a velocity 30 m/s with an angle of inclination of 30° in a uniform magnetic field of 5 Tesla. Calculate the Force acting on the electron

Section C

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

9. Obtain the expression for electric field due to a uniformly charged non-conducting sphere using Gauss law and discuss the special cases.
10. Describe the calibration of low and high range voltmeter using potentiometer with circuit and theory.
11. Derive the expression for decay of charge in a circuit containing inductance capacitance and resistor in series and explain its special cases.
12. Discuss Pyro electricity and Thermoelectric effects in PN junction.
13. Derive the expression for magnetic induction at any point on a straight conductor carrying current.

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