

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 - V

22UPHCT5009 - Electromagnetism

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. Describe on wattless current.
2. The peak value of an alternating current is 5A and its frequency is 60 Hz.
(a) Find its rms value
(b) How long will the current take to reach the peak value starting from zero?
3. Mention the uses of Eddy currents.
4. What are self inductance and mutual inductance?
5. Brief on the principle of an AC induction motor.
6. Distinguish between the various types of DC dynamo.
7. What is Poynting vector? Mention its significance.
8. Derive Gauss's law of electrostatics.

Section C

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

9. With necessary circuit diagrams, explain in detail the working of a LCR series circuit and derive equations for the resonant frequency, bandwidth and quality factor.
10. Explain how the self inductance of a coil is determined using Rayleigh's method.
11. Obtain an expression for the motional emf when a conducting rod is moved through a uniform magnetic field.
12. Explain in detail the principle, construction and working of a DC motor.
13. Arrive at the Maxwell's equations in both integral and differential forms.
