



**I. Answer any 10 of the following questions:**

[10 x 2 = 20]

1. State Coulomb's Inverse square law of Magnetism.
2. State Tangent law.
3. State Curie-Weiss law.
4. What is Hysteresis?
5. State Ampere's Circuital law
6. Define One ampere.
7. Define Magnetic Flux
8. State Faraday's law of Electromagnetic Induction.
9. What is an alternating voltage (or) current?
10. What are the methods of inducing emf?
11. Define inductive Reactance
12. What is a series resonance circuit?

**II. Answer any 5 of the following questions:**

[5 x 3 = 15]

1. Define. (i) Magnetic Declination (D) (ii) Dip or magnetic Inclination (I)
2. Distinguish between Biot – Savart law and Coulomb's law
3. Obtain expression for magnetic Lorentz force.
4. Explain how lenz's law is in accordance with law of conservation of energy
5. Explain the energy losses in a Transformer.
6. What is 'Wattless current' and 'Wattfull current'?

**III. Answer any 7 of the following questions:**

**[7 x 5 = 35]**

1. Derive an expression for magnetic field at a point along the axial line of the magnetic dipole
2. Derive an expression for magnetic field produced along the axis of the current carrying coil.
3. What is a Toroid? Obtain Magnetic field due to a current carrying toroid at a point
  - (i) open space interior to toroid
  - (ii) open space exterior to toroid
  - (iii) inside the toroid
4. Discuss the construction and working of Cyclotron. What are the limitations of Cyclotron?
5. Discuss the construction and working of Moving coil Galvanometer.
6. What is Eddy Current? How Eddy Current can be minimized? Write down the applications of Eddy Current.
7. Derive an expression for energy associated with an inductor.
8. Discuss the construction and working of a Transformer.
9. Prove that the LC oscillations are same as simple harmonic oscillations

-----ALL THE BEST-----

70 marks will be converted to 100 marks

Test should be written under the supervision of your parents and get the answer paper signed from them.

No corrections should be made after the test timings. We expect your honesty.

Test Papers have to be submitted after the completion of all the 4 tests.

Submission Date of Test Papers: 1<sup>st</sup> October, 2<sup>nd</sup> October, 3<sup>rd</sup> October

Timings: 9 AM – 12.30 PM / 5 PM- 7 PM