



I. Answer any 3 of the following questions:

[3 x 2 = 6]

1. Define Magnetic flux. Give its unit
2. State Coulomb's inverse square law of magnetism.
3. Define Magnetic Susceptibility
4. State Curie Weiss law.
5. What are the differences between electric and magnetic fields

II. Answer any 3 of the following questions:

[3 x 3 = 9]

6. Derive an expression for Torque experienced by a short bar magnet in a uniform magnetic field.
7. Compare the diamagnetic, paramagnetic and ferromagnetic substances with respect to susceptibility (any 4 points in each)
8. Define and explain Biot-Savart law.
9. Derive the expression for magnetic field due to the current carrying wire of infinite length using Ampère's law
10. Find out the expression for magnetic field inside the toroid.

III. Answer the following questions:

[2 x 5 = 10]

11. Derive the expression for magnetic field at a point along the axial line of the magnetic dipole (bar magnet).

[OR]

Derive an expression for magnetic field due to a circular coil carrying current by using Bio-Savart law with diagram.

12. Derive an expression for magnetic dipole moment of a revolving electron. Also, find expression for gyromagnetic ratio and Bohr Magneton.

[OR]

Derive an expression for magnetic field at a point due to a long current carrying solenoid

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

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: 1st September, 2nd September, 3rd September

Timings: 9 AM – 12.30 PM / 5 PM- 7 PM