

UNIT- II STATIC MAGNETIC FIELD

1. Find an expression for magnetic field intensity at the centre of a circular wire of radius 'a' m and carrying a current I in anticlockwise direction. The wire is in XY plane.
2. Derive an expression for the force between two current carrying wires. Assume that the currents are in the same direction.
3. Obtain the expression for magnetic field intensity at the centre of a circular wire.
4. Obtain the expression for magnetic field intensity at the centre of square current loop.
5. Find the magnetic flux density at the center of square loop with side 'W' carrying a direct current I.
6. Derive an expression for a torque on a closed rectangular loop placed on uniform magnetic field.
7. Derive an expression for the force between the two parallel wires carrying currents in the same direction.
8. Define a magnetic circuit with a sketch and hence obtain the expression for its reluctance.
9. Explain the terms (1) Magnetic field intensity (2) Magnetic moment (3) magneto motive force and (4) magnetic permeability.
10. Find the magnetic flux density at a point on the axis of a circular loop of radius 'b' that carries a direct current 'I'.
11. Find the magnetic flux density around infinitely long straight conductor by magnetic vector potential.
12. State Gauss law for the electric and magnetic fields. Derive its integral and differential forms. Make at least two conclusions.
13. State Ampere's force law. How it is different from coulomb's law?
14. What is a ferromagnetic material? Name atleast five ferromagnetic materials. Draw the hysteresis loop of a ferromagnetic material.