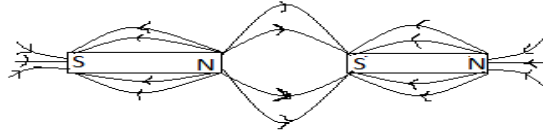


Magnetism

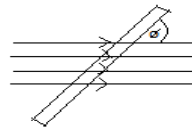
1. Magnetic field: A region of space where a magnetic body/moving charge/current carrying conductor experiences a magnetic field.



2. Magnetic flux density/B(many fields together): It is measured using a Hall probe placed 90° to the fields for maximum reading is measured in tesla/T.

Magnetic force due to a current carrying conductor/ $(F = BIL \sin \theta)$

Where B= magnetic flux (T), I= current (A), L= length of wire (m), θ = angle wire makes with field.

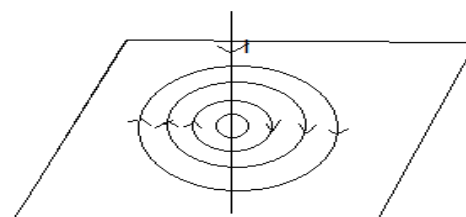
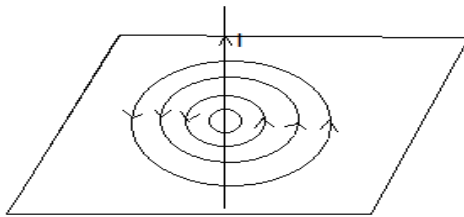


Definition of the tesla: One tesla is the unit of magnetic field/flux of a wire carrying a current of 1 ampere, 90° to the field and creating a force of 1 N per metre.

Definition of the magnetic flux density is the force per unit current per unit length at right angles.

$$B = F / I L$$

3. The right hand grip rule: To find direction of magnetic field in a current carrying wire.



Your thumb of your right hand gives the direction of magnetic field

4. Fleming's left hand rule: To find direction of force. Place your thumb, forefinger and second finger mutually at right angle. Your forefinger points in direction of magnetic field, second finger at current, your left thumb gives the direction of force.

Use: In d.c motor.

5. Fleming's right hand rule: To find direction of induced e.m.f. Place your thumb, forefinger and second finger mutually at right angle. Your forefinger points in direction of magnetic field, right thumb in the direction of force, your second finger gives the direction of induced current.

Use: In a.c generator.