

Physics Class Notes

Direction of Magnetic Field

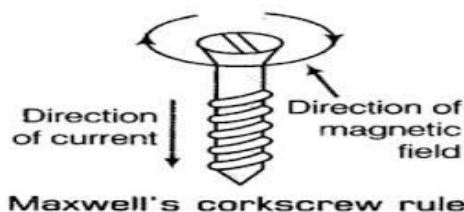
1. Right Hand Thumb Rule-James Clark Maxwell

Imagine you are holding a current carrying conductor with the right hand in such a way, that the thumb points in the direction of the current. The direction in which the other fingers encircle the conductor gives the direction of the magnetic field.



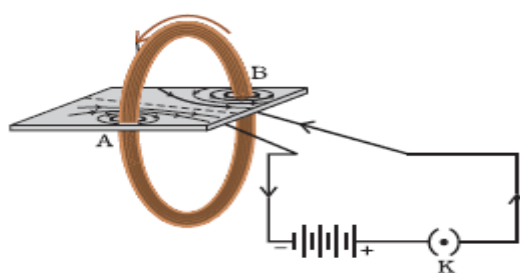
2. Right Hand Screw Rule

If a right screw is rotated in such a way that its tip advances along the direction of the current in the conductor, then the direction of rotation of the screw gives the direction of the magnetic field around the conductor.



Magnetic field due to a current carrying circular loop.

When current is passes through a circular coil, magnetic field will be produced as shown in the figure.



When the coil is viewed in such a way that the current is in anticlockwise direction, the field lines are appeared to be emerged from that face. If the current is in clockwise direction, the field lines are entered into the loop.

The intensity of magnetic field produced by current carrying loop depends on

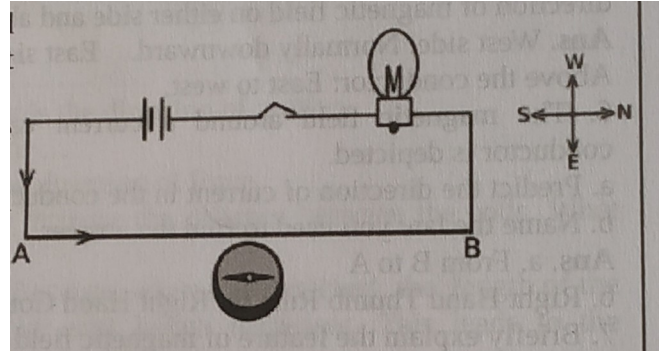
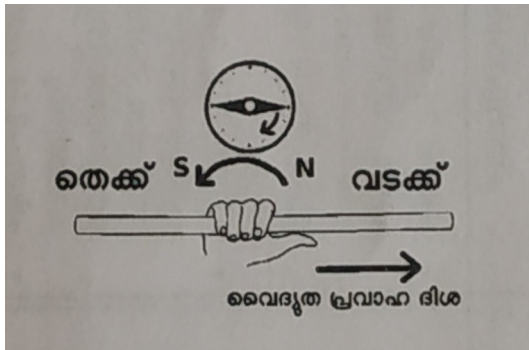
- **number of turns of the coil.**
- **Intensity of current.**

1. Current is passed from South to North through a conductor placed below a freely pivoted magnetic needle.

(a) To which direction will the North Pole of the magnetic needle turn?

- (b) Which is the rule used to arrive at this inference?
 (c) If the current flows in the conductor in the East West direction, what do you guess about the deflection of the magnetic needle? Explain

Ans:



- (a) The magnetic needle will turn towards East.
 (b) Right Hand Thumb Rule.
 (c) Does not deflect. Because the direction of the magnetic field of the magnetic needle and the magnetic field of the current carrying conductor is same.