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Magntism

Hand Notes For JEE Mains, Advance, NEET UG, Class 11 & 12 etc…

Hand Notes

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'MAGNTISM'

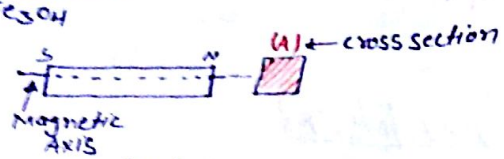
Various possible source of Magnetic Field

1.1→ Bar magnet
2.1→ Earth magnet
3.1→ current carrying system
4.1→ Moving charge.
5.1→ Varying electric field.

$K = \frac{1}{4\pi\epsilon_0} = \frac{\mu_0}{4\pi}$
↑ Electro. ↑ Mag.

1.1→ BAR MAGNET :→

→ Fe_3O_4



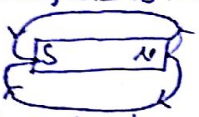
→ magnetic dipole.

* **Pole strength (M) →**
* It Represent the magnetic strength of Magnetic pole.
* M → -M (South pole)
  +M (North pole)

q → -q
  +q

जो काम 'q' करता था वही Same Work 'M' यहाँ !

* Scalar parameter
* unit = Amp x meter
* $M \propto A$ (cross section area of magnet)
* Imp * Magnetic = 0.91 (actual) (v)
* Magnetic field is in closed loop only & Electric field is in open loop.



* single pole doesn't exist. (SN) (SN) ---- (SN)

Formula for single pole



* $F = \frac{\mu_0}{4\pi} \cdot \frac{M_1 M_2}{r^2}$
* ● → r → * $B = \frac{\mu_0}{4\pi} \cdot \frac{M}{r^2}$
* ● → M → $F_M = MB$

→ Electro.

$F = \frac{Kq_1q_2}{r^2}$

$E = \frac{1}{4\pi\epsilon_0 Er} \cdot \frac{q}{r^2}$

$F_e = qE$

II→ Magnetic Moment of Magnetic dipole / Bar magnet (M) :→



* $M = Ml$
  $\vec{M} = M\vec{l}$
* $\vec{l}$ = Effective length b/w mag. dipole. (S→N)
* vector (S to N)
* unit → $A \times m^2$
* Imp * Bohr Magnet (μ_B) = $0.923 \times 10^{-23} A \times m^2$

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