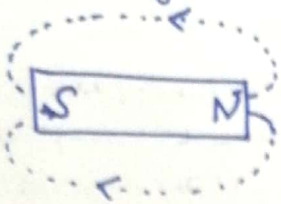
BRAIN OPENER POINT :

(1) Magnetic flux.



Amount of line of force originates from north towards South.

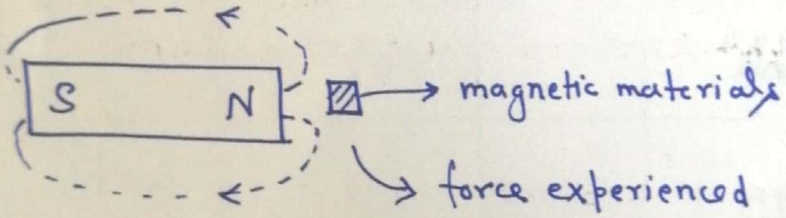
Denoted by (ϕ) → flux

10^8 line of force = 1 weber flux.

(2) Magnetic flux density. (B)

$$B = \frac{\phi}{A} \quad wb/m^2 \text{ or Tesla}$$

(3) Magnetic field intensity. $H = (AT/m)$



$$H = \frac{NI}{l}$$

where N = number of turns
I = supply current
l = length of Conductor in metres.

(4) Permeability (μ)

$$\boxed{\mu = \mu_0 \mu_r}$$

μ_0 = absolute permeability = $4\pi \times 10^{-7}$

μ_r = Relative permeability of the medium

$\mu_r = 1$ for air or vacuumm.

(5) Reluctance (S)

$$S = \frac{l}{\mu A} \quad (AT/wb)$$

(6) Permeance ⇒ reciprocal of 'S'

$$P = \frac{\mu A}{l} \quad (wb/AT)$$

(7) Magneto motive force (mmf)

In magnetic circuit flux we have transfer

Electro motive force. (emf)

↙ electron ↓ flow

$q, \quad \frac{dq}{dt} = i$

emf = V

V = IR

$mmf = \phi S$ AT (Unit)

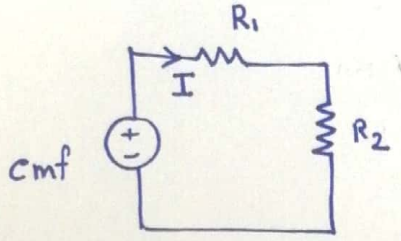
$mmf = NI$ AT Unit

$mmf = BH.l$ AT (Unit)

Intro To Magnetics Ckt

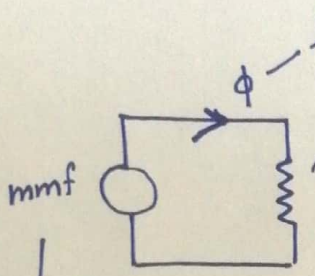
Flux, MMF, Reluctance

(1)



$EMF = I \cdot R$ $\qquad R = \frac{\rho l}{A}$

(2)



$mmf = \phi R$ -(2) $\qquad R = \frac{l}{\mu A}$ -(3)

$mmf = NI$ -(1)

Unit → Ampere-turn

N → No. of turn

From (1) and (2)

$NI = \phi R$

$$\phi = \frac{NI}{R} \quad -(4)$$

μ → permeability.

↓

very important parameter in magnetic materials

from (4) and (3)

$$\phi = \frac{NI\mu A}{l} \Rightarrow \boxed{\phi(\text{flux}) \propto \mu}$$

Example.

Magnetic circuits.

ϕ – flux [Unit – Weber]