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Geomagnetism

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

Hand Notes

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GEOMAGNETISM

Magnetic middle + Direction of magnetic field

* Earth Magnetic field

iii) → At poles

$B_H = 0$

$B_V = B_e = 0.5$ Gauss

→ NHS B_V (⊗)

→ SHS B_V (⊙)

iii) → At equator

$B_V = 0$

$B_H = 0.3$ Gauss

(parallel to Earth surface)

(South to North direction)

iiii) → At other place

$B_H \neq 0$ (South to North direction // to Earth surface)

$B_V \neq$ → NHS B_V (⊗)

→ SHS B_V (⊙)

Geographical Meridian (GM)

It is imaganary vertical plane passing through geographical axis of Earth.

Magnetic Meridian (MM)

Imagnary vertical plane is passing through magnetic axis of earth.

Declination or, variation (θ)

* Angle b/w Geographical axis & Magnetic axis or, Angle b/w GM & MM.
* $\theta = 11.5^\circ$

Dip angle (ϕ)

Angle of B_e With horizontal direction called dip angle.

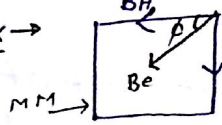
*

$\phi_{poles} = 90^\circ$

$\phi_{equator} = 0^\circ$

$\phi_{other\ place} = Acute\ Angle$

Ex →



$B_H = B_e \cos\phi$

$B_V = B_e \sin\phi$

*

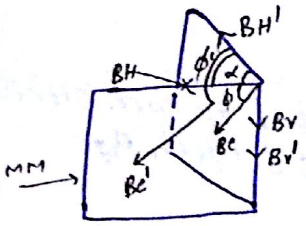
$\frac{B_V}{B_H} = \tan\phi$

$B_e = \sqrt{B_V^2 + B_H^2}$

Dip

→ Real (ϕ) [In MM dip angle is known as]

→ Apperent (ϕ') [In other than MM dip angle is known as]



In Other vertical plane

$$\frac{B_V'}{BH'} = \tan\phi' = \frac{B_V}{BH\cos\alpha}$$

ϕ = Real dip measured in MM

ϕ' = Apperent dip measured in other than MM.

α = angle of other vertical plane With MM.