Date: .....
Page: .....

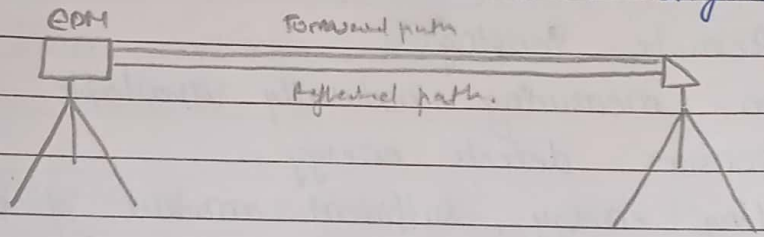
EDM:

Fullform: Electromagnetic Distance Measurement.

→ It utilizes EM energy for measuring distance between two points.

*) Principle of EDM:

Energy originates at an instrument at one end of a line and transmitted to reflector from where it is returned to originating instrument.



Uses EM radiation.

distance = velocity of light x time taken.

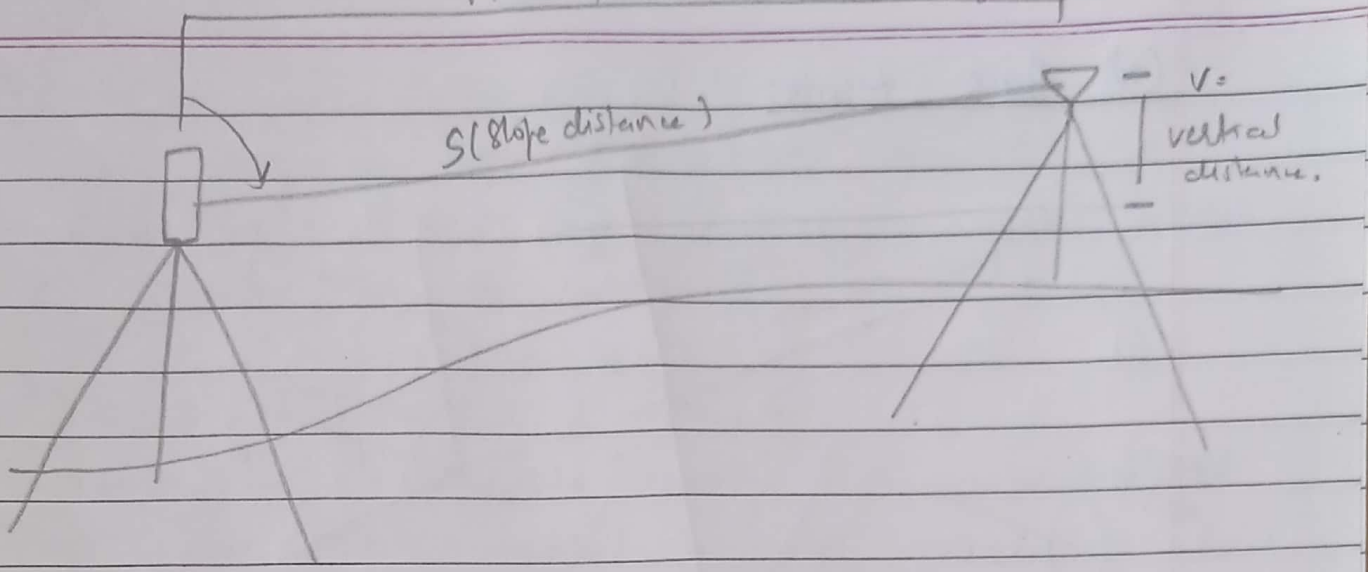
*) Total station:

→ It is a modern surveying instrument.

- It measures horizontal and vertical angles

→ During operation, the total station is set up over the required point and its height over the survey station is measured.

Date: .....
Page: .....



Here,
Horizontal distance (H) = S x sin(z)
Vertical distance (V) = S x cos(z)

Theodolite:

→ Theodolite is the surveying instrument and precision instrument for measuring angles in the horizontal and vertical planes.

- Theodolite is more precise than magnetic compass.

*) Types of Theodolite

(i) Transit theodolite:
The telescope can be transisted ie, revolved through a complete revolution about its horizontal axis in vertical plane.

(ii) Non-transit theodolite:
The telescope can't be transisted.

Date :
Page :

(*): Basic terms:

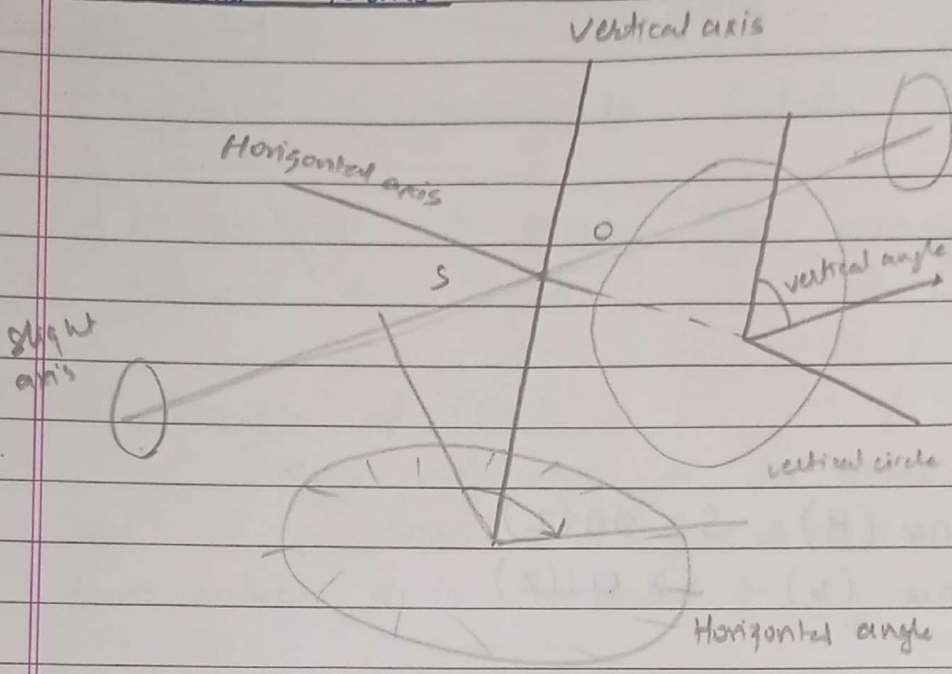


Fig: Axes of theodolite.

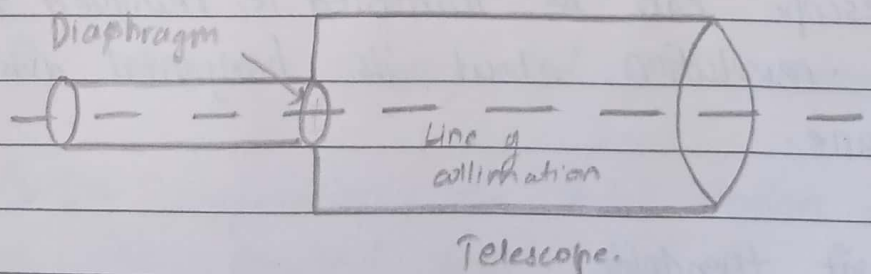
(i): Vertical axis:

→ Axis about which the telescope can be rotated in horizontal plane.

(ii): Horizontal axis:

→ Axis about which the telescope can be rotated in vertical plane

→ Also called trunion axis.



Date: .....
Page: .....

(ii) Line of sight / Collimation:
- The imaginary line joining the intersection of the cross-hairs of the diaphragm to the optical center of the objective and its continuation.

(iv): Centering:
→ Setting the theodolite exactly over an instrument station such that its vertical axis lies immediately above the station-mark.
→ It is done by suspending plumb bob from a small hook attached to vertical axis of theodolite.

(v): Transiting:
→ Also known as plunging or reversing
- The process of turning the telescope about horizontal axis through 180° in vertical plane.
- This creates a point in opposite direction.

(vi): Swinging:
- Turning the telescope about its vertical axis in the horizontal plane.
- It is either left or right.

(vii) Face left:
- If the vertical circle of instrument is on left side while taking a reading, the position is called face left.

(viii) Face left right:
- If the vertical circle is on the right side while taking reading, the position is called face right.

Date : .....
Page: .....

*) Uses of theodolite:

i) Mapping applications and in the construction industry.
ii) Measuring horizontal and vertical angles.
iii) Measuring magnetic bearing of lines.
iv) ~~locations~~ Locating points on line and prolonging survey lines
v) Determining difference in elevation.
vi) Setting out curves
vii) Aligning tunnels
viii) Mining works.