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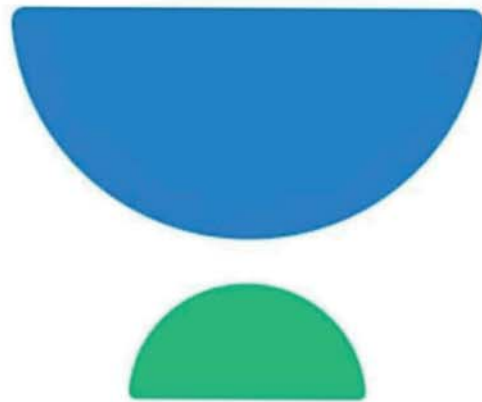
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*Jaspal's Sir
Surveying*

Handwritten Notes

*Written
by
Pushpendra*

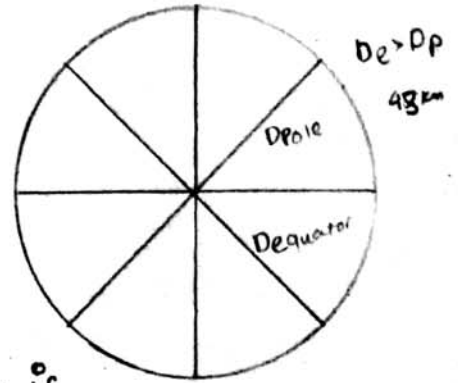
★ SURVEY ★

★ Fundamental Surveying is the process of determining the relative position of point on, above & below the surface of the earth, by means of direct or indirect measurement of "DISTANCE", "DIRECTION" & "ELEVATION".

→ It may also be termed as process of establishing the point by predetermined angular or linear measurement.

★ Due to the curvature of the earth the surveying is primarily classified into two.

Note: earth is OBLATE SPHEROID (here spheroid is obtained by rotating and ellipse about its one of the axis) since the polar dia of earth is approx 42.95 km smaller than equatorial dia it is termed as OBLATE SPHEROID



① PLANE SURVEY

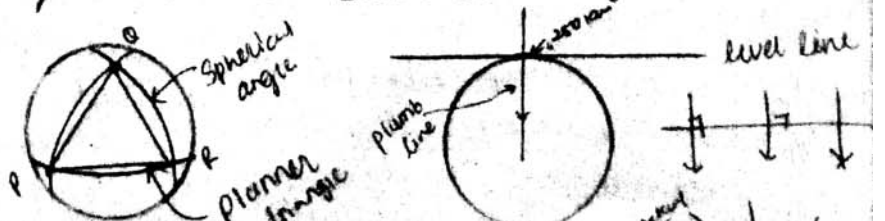
② GEODASIC SURVEY

① PLANE SURVEY It is type of surveying in which the curvature of the earth is not considered or mean surface of the earth is considered to be planar.

→ It's suitable to be used a small area of work
 → It's considered suitable for an area less than 250 km².

→ all the lines & triangle formed during survey in this case will be considered as plane line & plane triangle.

→ level line is considered to be straight line & plumb lines (line represented by freely suspended plumb bob) are considered to be parallel to each other at diff point



(2) GEODATIC SURVEY : that type of surveying in which the shape of the earth is taken into consideration
→ Here all line lying in the surface are lined & triangle are spherical triangle

→ It's suitable to be used when area of survey is large (Generally $> 250 \text{ km}^2$) and high degree of precision is required

→ This survey sum of all internal angle of s. triangle should be > 180

★ This survey is done by department of national survey of India to establish the control points. (which are taken as reference point for marking other point ~~precisely~~ in plane survey.

Note: for any triangle with area 195.5 km^2 , sum of interior angle would be just $1''$ (sec) extra in geodetic surveying
→ for any line of length of 12 km , it is just 1 cm extra in geodetic surveying.

Survey can also be classified as follows

(i) Based upon the of Survey
NATURE

(a) LAND SURVEY : Here surveying is done for the feature on land.
→ It is further classified into

(i) Topographical survey : This consist of horizontal & vertical location of certain point by linear & angular measurement to determine physical feature, like [river, lake, pond, forest, Hill (Natural)], [Artificial - Road, town, villages etc]

(ii) CADASTRAL SURVEY : This survey are made for fixing the property line & calculation of land area or the transfer of land property.

(iii) CITY SURVEY : This survey are made in connection with construction of streets, water pipeline, sewers, L.P.G. lines, optical fibre.

(b) MARIN / HYDROGRAPHIC SURVEY : It deal with water body for purpose of navigation, water supply, mean sea level, reservoir function, waste disposal

→ It consist of measurement of discharge of streams, stage of water body & fluctuation in oceans tides.

Note: 1) For any triangle with area 195.5 km^2 , some of interior angle would be just $1''$ (1 sec) extra in geodetic survey.

2) For any line of length 12 km , it is just 1 cm extra in geodetic survey.

Surveying can also be classified as

(A) BASED UPON THE ^{NATURE OF} SURVEY

(a) LAND SURVEY

- Here surveying is done for the features of land.
- It is further classified into

(i) TOPOGRAPHICAL SURVEY'S

- This consist of horizontal and vertical location of certain points by linear and angular measurement to determine physical features like: River, lake, Pond, forest, hill [Natural], Road, Railway track, Canal, town, villages [Artificial].

(ii) CADASTRAL SURVEY'S

These survey are made for fixing the property line & calculation of land area or the transfer of land property.

(iii) CITY SURVEY

- These survey's are made in connection with the construction of streets, water pipe line, sewers, LPG line, optical fibre.

(B) MARINE / HYDROGRAPHIC SURVEY.

- It deals with water bodies for purpose of navigation water supply, mean sea level, Reservoir functioning, work disposals.
- It consist of measurement of discharge of streams, stage of water body, & fluctuation in oceans tides.

(C) ASTRONOMICAL SURVEY

- It is carried out for determining the absolute location of any point on the surface of earth with the help of heavenly / Celestial / special body.
- E.g. SUN, any fixed star.

(II) BASED ON OBJECT OF SURVEY.

5

(a) ENGINEERING SURVEY

- This is done to find the sufficient data to be used for Engg. design works like roads, Reservoir, sewers, trench, foundation etc.

(B) MILITARY SURVEY

- It is used for determining the points of strategic importance

(C) GEOLOGICAL SURVEY

- It deals with determination of formation of earth strata.

(D) ARCHAEOLOGICAL SURVEY

- This is used to find the existence of past civilisation

(E) MINE SURVEY :

- It is being carried out for exploration of new mines.

Spiral