

Surveying - Video course

BASIC SURVEYING or GEOINFORMATICS

1. INTRODUCTION:

Geoinformatics- definition, disciplines covered, importance.

Field Surveying- definition & objectives; concept of Geoid and reference spheroids, coordinate systems, plane and geodetic surveys.

Methods of location of a point- classification of surveys; principles of surveying

Errors in measurements- sources, types of errors and their treatment. Random error distribution, accuracy, precision and uncertainty. Surveying instruments- temporary and permanent adjustment concept, principle of reversal.

Maps- types, importance, scales/CI, conventional symbols, and generalization; topographic maps map projection systems, sheet numbering systems, map layout ———8

2. LINEAR MEASUREMENTS:

Direct and indirect methods; Chain and tape measurements- corrections to tape measurements; Optical

methods- tachometers, sub tense bar; Electronic methods- EDMs, total stations. ———4

3. MEASUREMENT OF ELEVATIONS:

Various terms; Methods of height determination; Spirit leveling- different types of levels and staves; booking and reduction of data, classification and permissible closing error; profile leveling and cross sectioning; curvature & refraction and collimation errors; reciprocal leveling. ——— 7

Contours- characteristics, uses and methods of contouring.

4. MEASUREMENT OF DIRECTIONS:

Bearings and angles; Compass surveying- magnetic bearings, declination, local attraction errors and adjustments; Theodolites- different types, uses, methods of observation and booking of data. ——— 4

5. TRAVERSING, TRIANGULATION AND TRILATERATION:

Purpose and classification of each; Compass and theodolite traverses- balancing of traverses, computation of coordinates, omitted measurements. Triangulation- network, strength of figures, field work- racy, selection of stations, inter-visibility, satellite stations, measurements and computations; trigonometrical leveling. ——— 7

6. PLANE TABLING:

Merits and demerits, accessories; orientation and resection; methods of plane tabling; three point problem and solutions; errors in plane tabling. ———3

7. ADJUSTMENT COMPUTATIONS:

Propagation of errors, variance and covariance; Least squares principle and adjustment of field survey data by parametric and condition equation methods. ———5

8. PROJECT SURVEYS:

Engineering project surveys- requirements and specifications, various stages of survey work Setting out of works- buildings, culverts and simple circular curves. ———2

REFERENCES:

*Surveying Vol. 1, 2 & 3 by KR Arora; BC Punmia; KK Rampal, (Indian authors)
Clarke & Cladenning; Moffit; Brinker and Wolf; W. Schofield; Norman Thomas; E Mikhail and Gracie; PR Wolf (Foreign authors)*



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