DIPLOMA II Year (Civil Engineering) IV Semester
PCE- 401 SURVEYING – II

UNIT-I

Concept of contours, purpose of contouring, contour interval and horizontal equivalent, factors effecting contour interval, characteristics of contours, methods of contouring: Direct and indirect, use of stadia measurements in contour survey, interpolation of contours; use of contour map, Drawing cross section from a contour map; marking alignment of a road, railway and a canal on a contour map, computation of earth work and reservoir capacity from a contour map. **(8 LECTURES)**

UNIT-II

Working of a transit vernier theodolite, axes of a theodolite and their relation; temporary adjustments of a transit theodolite; concept of transiting, swinging, face left, face right and changing face; measurement of horizontal and vertical angles. Prolonging a line (forward and backward) measurement of bearing of a line; traversing by included angles and deflection angle method; traversing by stadia measurement, theodolite triangulation, plotting a traverse; concept of coordinate and solution of omitted measurements (one side affected), errors in theodolite survey and precautions taken to minimize them; limits of precision in theodolite traversing. Height of objects – accessible and non-accessible bases. **(8 LECTURES)**

UNIT-III

Tachometry, Instruments to be used in tachometry, methods of tachometry, stadia system of tachometry, general principles of stadia tachometry, examples of stadia tachometry and Numerical problems.

(8 LECTURES)

UNIT-IV

Simple Circular Curve Need and definition of a simple circular curve; Elements of simple circular curve - Degree of the curve, radius of the curve, tangent length, point of intersection (Apex point), tangent point, length of curve, long chord deflection angle, Apex distance and Mid-ordinate. Setting out of simple circular curve: By linear measurements only,Offsets from the tangent ,Successive bisection of arcs, Offsets from the chord produced, By tangential angles using a theodolite. Transition Curve Need (centrifugal force and super elevation) and definition of transition curve; requirements of transition curve; length of transition curve for roads; by cubic parabola; calculation of offsets for a transition curve; setting out of a transition curve by tangential offsets only.Vertical curve. **(8 LECTURES)**

UNIT-V

Introduction to the use of Modern Surveying equipment and techniques such as:EDM or Distomat,Planimeter (Digital) ,Total station,Introduction to remote sensing and GPS ,Auto level,Digital theodolite,Total station- installation, calibration concept of coordinate system,Analysis of dater, plotting, Remote sensing , GIS & GPS concept and application in various fields. **(8 LECTURES)**

REFERENCE BOOKS :

1. A Text Book of Surveying by Kocher, CL; Katson Publishing House Ludhiana,
2. Surveying and Leveling by Kanetkar,TP and Kulkarni, SV; AVG Parkashan, Pune
3. Surveying and Leveling-Vol.2 by Kanetkar, TP and Kulkarni, SV; AVG Prakashan, Pune
4. Surveying and Leveling by Punima, BC; Standard Publishers Distributors, Delhi
5. Surveying-II by Mahajan, Sanjay; SatyaPrakashan, Delhi
6. e-books/e-tools/relevant software to be used as recommended by AICTE/UBTE/NITTTR, Chandigarh.