Visvesvaraya Technological University, Karnataka B.E./B.Tech CIVIL Sem 4 syllabus

Surveying 2

UNIT 1: THEODOLITE SURVEY 1.1 Thedolite and types, 1.2 Fundamental axes and parts of a transit theodolite, 1.3 Uses of theodolite, 1.4 Temperary adjustments of a transit thedolite, 1.5 Measurement of horizontal angles – Method of repetitions and reiterations, 1.6 Measurements of vertical angles, 1.7 Prolonging a straight line by a theodolite in adjustment and theodolite not in adjustment 6 Hours

UNIT 2: PERMANENT ADJUSTMENT OF DUMPY LEVEL AND TRANSIT THEODOLITE 2.1 Interrelationship between fundamental axes for instrument to be in adjustment and step by step procedure of obtaining permanent adjustments 7 Hours

UNIT 3: TRIGONOMETRIC LEVELING 3.1 Determination of elevation of objects when the base is accessible and inaccessible by single plane and double plane method, 3.2 Distance and difference in elevation between two inaccessible objects by double plane method. Salient features of Total Station, Advantages of Total Station over conventional instruments, Application of Total Station. 8 Hours

UNIT 4: TACHEOMETRY
4.1 Basic principle, 4.2 Types of tacheometric survey, 4.3 Tacheometric equation for horizontal line of sight and inclined line of sight in fixed hair method, 4.4 Anallactic lens in external focusing telescopes, 4.5 Reducing the
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constants in internal focusing telescope, 4.6 Moving hair method and tangential method, 4.7 Substance bar, 4.8 Beaman stadia arc.

UNIT 5: CURVE SETTING (Simple curves) 5.1 Curves – Necessity – Types, 5.2 Simple curves, 5.3 Elements, 5.4 Designation of curves, 5.5 Setting out simple curves by linear methods, 5.6 Setting out

curves by Rankine‟s deflection angle method. CURVE SETTING (Compound and Reverse curves) 5.2 Compound curves 5.2 Elements 5.3 Design of compound curves 5.4 Setting out of compound curves 5.5 Reverse curve between two parallel straights (Equal radius and unequal radius).

UNIT 6: 6.1 Triangulation Survey: Figures and systems, system of framework, baseline measurement, base measurement by rigid bar and flexible apparatus, tape correction, Measurement of angles, satellite station and reduction to centre and field checks in triangulation and principle of least squares, triangulation adjustment-angle and station

UNIT 7: CURVE SETTING (Transition and Vertical curves) 7.1 Transition curves 7.2 Characteristics 7.3 Length of Transition curve 7.4 Setting out cubic Parabola and Bernoulli‟s Lemniscates, 7.5 Vertical curves – Types – Simple numerical problems. 6 Hours

UNIT 8: AREAS AND VOLUMES 8.1 Calculation of area from cross staff surveying, 8.2 Calculation of area of a closed traverse by coordinates method. 8.3 Planimeter – principle of working and use of planimeter to measure areas, digital planimter, 8.4 Computations of volumes by trapezoidal and prismoidal rule, 8.5 Capacity contours