31043 SURVEYING II

DETAILED SYLLABUS

Unit I THEODOLITE SURVEYING

Introduction - Types of Theodolites : Transit and non-transit Theodolite, Vernier and Micrometre Theodolites – Electronic Theodolite (Principles and description only) – Component parts of a transit Theodolite – Functions – Technical terms used in Theodolite surveying – Temporary adjustments – Fundamental lines and relationship between them – Measurement of horizontal angle by method of repetition and reiteration – Measurement of vertical angle and deflection angle – Reading bearing of a line – Theodolite traversing – Methods – Field checks in closed traverse - Latitude and departure – Consecutive coordinates - Independent coordinates – Problems on computation of area of closed traverse – Balancing the traverse - Omitted measurements – Problems

Unit II TACHEOMETRIC SURVEYING

Introduction – Instruments used in tachometry – Systems of tachometry : Stadia and Tangential tachometry – Principles – Fixed hair method of tachometry – Distance and Elevation formulae – Analectic lens (No proof) : Advantages and uses – Simple problems – Dustcoats (Description only) – Direct reading tachometers - Determination of constants of a tachometer : Problems – Tachometric traverse – Errors in tachometric surveying.

Unit III TRIGONOMETRICAL LEVELLING

Introduction – Finding elevation of objects – Base accessible - Base inaccessible: Single Plane and Double Plane methods – Problems on determination of elevation of objects.

3.1 REMOTE SENSING, PHOTOGRAMMETRIC SURVEYING AND HYDROGRAPHICA SURVEYING Remote sensing – Definition – Basic Process – Methods of remote sensing – Applications -Photogrammetric Surveying –Definition – Terrestrial and Aerial photographs – Applications - Hydro graphic surveying –

Definition- Uses – Sounding: Definition, Purpose, Instruments needed – Steps in hydro graphic surveying.

Unit IV CURVES

Introduction – Types of curves – Designation of curves – Elements of simple circular curve – Setting out simple circular curve by: Offsets from long chords, Offsets from tangents, Offsets from chords produced and Rankine's method of deflection angles – Simple problems – Transition curves : Objectives – Vertical curves : Definition and types.

Unit V TOTAL STATION AND GEOGRAPHICAL INFORMATION SYSTEM

5.1 TOTAL STATION Introduction – Application of total station – Component parts of a Total Station – Accessories used – Summary of total station characteristics - Features of total station – Electronic display and data reading – Instrument preparation, Setting and Measurement (Distance, Angle, Bearing etc.) – Field procedure for co-ordinate measurement – Field procedure to run a traverse survey - Linking data files for various Applications.

5.2 GEOGRAPHICAL INFORMATION SYSTEM (GIS) Introduction – Geographical information – Development of GIS – Components of GIS – Steps in GIS mapping - Ordinary mapping to GIS – Comparison of GIS with CAD and other system – Fields of Applications : Natural resources, Agriculture, Soil, Water resources, Wasteland management and Social resources – Cadastral survey and Cadastral records – Land Information System(LIS).

Reference Book: 1. Kanetkar.T.P. & S.V.Kulkarni, "Surveying and levelling part 1 & 2 ", Puna vidyarthi griha, Prakashan,23 rd edition, Reprint 2008. 2. Punmia.B.C, Ashok K.Jain & Arun K. Jain,"Surveying Volume I", Laxmi, Publications Private Limited., 16 the edition, 2011. 3. Punmia.B.C, Ashok Jain & Arun K. Jain,"Surveying Volume II & III", Laxmi, Publications Private Limited., 15 th edition, 2011. 4. Mimi Das Saikia, Bhargab Mohan Das & Madan Mohan Das, "Surveying", PHI Learning Private Limited, Edition 2010. 5. S. K. Roy, "Fundamentals of Surveying", PHI Learning Private Limited, Edition 2010.