

Elements Of Civil Engineering

I Scope of Civil Engineering

Introduction: Impact of Infrastructural Development on the Economy of a Country, Role of Civil Engineers, Importance of Planning, Scheduling and Construction Management.

II Surveying

Introduction: Surveying and levelling, Object and uses, Primary divisions, Fundamental principles, Classification of surveying, Plans and maps, Scales, Units of measure.

Linear measurements: Methods, Instruments used in chaining; Chain surveying, Ranging; Obstacles; Errors in chaining, Tape corrections, Conventional symbols

Compass surveying: Types and uses of compass, Bearings, Whole Circle Bearings, and Reduced Bearings, Computation of angles; Meridians; declinations and dip of needle; Local attraction; Chain and compass surveying field work.

Elevation measurements: Levelling, object and uses, terms used in levelling, levelling instruments, methods of levelling, recording and methods of reducing, errors in levelling, contours; characteristics and applications.

Areas and volumes; use of a Planimeter.

Modern Tools of Surveying and Mapping: Introduction to Theodolite, Electronic Distance Measurement Instruments, Total Station, Global Positioning System, Remote Sensing and Geographic Information System.

III Construction Materials

Requirement, types, uses, properties and importance of Civil Engineering materials like Stone, Bricks, Lime, Cement, Ferrous and Non Ferrous Metals, Ceramic Materials, Timber, Sand, Aggregate, Mortar and Concrete, Paints and Varnishes, Glass, Plastic, Conducting, Magnetic, and Miscellaneous Materials.

IV Elements of Building Construction

Planning: Elementary principles and basic requirements of a building planning, layout of residential & industrial buildings.

Construction: Classification of buildings based upon occupancy and structure, Design Loads, Common building components, their functions, and nominal dimensions. Elements of building drawing. Introduction to building byelaws.

V Water Resources Development

Elementary Hydrology, Sources of water, Watershed Development, water requirements and its conservation, Hydraulic Structures of Storage, Water Conveyance System: Canals; Water Conduits.

VI Transportation Engineering

Role of Transportation in National development, Transportation Ways, Surface Transportation and Aviation, Elements of Highway materials properties and highway construction, BOT Projects for Highways, Elements of Traffic Engineering and Traffic Control.

Reference Books:

- 1) Title :Surveying Vol .I & II
Author: Dr. B. C. Punamia
Publisher : Laxmi Publication Delhi

- 2) Title :Surveying Vol. I and II
Author : S. K. Duggal
Publisher : Tata Macgraw hill Publication New Delhi
- 3) Title: Civil Engg. Drawing
Author : S. C. Rangwala
Publisher: Charotar Pub. House Anand
- 4) Title : Building Construction
Author : Dr. B. C. Punamia
Publisher: Laxmi Pub. Delhi
- 5) Title : Engineering Material
Author : Dr. S.C. Rangwala
Publisher: Charotar Pub. House
- 6) Title : Building Materials
Author: Dr. S. .K. Duggal
Publisher : New Age International Pub.House Delhi
- 7) Title : Civil Engineering Material
Author : Jakson and Dhir
Publisher : ELBS Publishing London
- 8) Title : Civil Engineering Material
Author : Jakson and Dhir
Publisher : ELBS Publishing London
- 9) Title : Highway Engineering
Author: Khanna S. K. and Justo C. E.G.
Publisher : Nemchand and Brothers
- 10) Title : Irrigation Engineering and Hydraulic Structures
Author : Santoshkumar Garg
Publisher : Khanna Publishers Delhi