CivilEngineering

Unit–I:ENGINEERINGMECHANICS

Forces and moments- Vectors and scalars, types of supports. Location ofcentroid of T, L, I, channel, Z sections. Built-up sections.

Unit-II:REINFORCEDCONCRETESTRUCTURES

Grades of concrete, characteristic strength, Modulus of Elasticity-I.S.456-2000- Philosophy ofLimit state design. Limit state of Strength and Serviceability, partial safety factor-design strengthofmaterials and design loads- assumptions.

Analysis and Limit state design of rectangular Beams-Singly, Doubly reinforced and T-beams.Shear in RCC beams - Development length. Slabs-analysis and limit state design of one-way andtwo-wayslabsasperIS.456-2000,Torsionreinforcement.Designofcontinuousslabsandbeams - Deflection check forslabs and beams.Detailing ofreinforcement insingly reinforced anddoubly reinforced simply supported beams of rectangular sections and lintels, one way and twowayslabs.

Columns: Codal provisions of I.S 456-2000 - short and long columns-different shapes-design ofshort columns by limit state method-long columns- concept, effective length for different endconditions.Footings-Isolated column footings-onewayshearand two wayshear.Stairs– types.

Unit-III: SURVEYING

Methods of calculation of area. Leveling -definitions - component parts of Dumpy level - errors - Methods of levelling - contouring -characteristics and methods. Civil Engineering, Curves-simple curves, elementsofsimplecurve, settingoutofsimplecurvesby chain & tape, single & double the odolitemethod.

Unit-IV: HYDRAULICS

Reciprocating and Centrifugal pumps (without problems).

Unit-V:IRRIGATION ENGINEERING

Cross drainage works – types and functions. Soil erosion, Types and causes-measures to control erosion.

Unit-VI: TRANSPORTATION ENGINEERING

Water bound macadam roads, Cement concrete roads.

Unit-VII: WATERSUPPLYANDSANITARYENGINEERING

Qualityofwater, Needforprotectedwatersupply, Totalquantityofwaterforatown, percapit demand and factors affecting demand, forecasting population by arithmetical, geometrical and incremental increase methods, Sources and conveyance of water: surface sources, underground sources, Types of Intakes. Quality and Method of purification of water.

Distribution System: Methods of supply, Storage-Distribution systems, Types of layout- deadend, grid, radial and ring system their merits and demerits and their suitability. General layout of water supply arrangements in buildings.

System of sewage disposal-types of sewerage systems, Different shapes of cross-section forsewers, Strengthofsewage, samplingofsewage, characteristicsofsewage-principlesoftreatment, Preliminary treatment, secondary treatment. Sewers –sewer appurtences-shapes, meritsanddemerits.

Unit-VIII:**BUILDINGMATERIALSANDCONSTRUCTIONPRACTICE**

Stones-classificationofrocks.Bricks–manufacturing,testsonbricks.Tiles- typesoftiles.Cement-classification manufacturing-tests. Mortars – classification - proportioning. Concrete-proportioning – water-cement ratio – workability – admixtures-curing methods-R.M.C. Timberandsurface protective materials. Characteristics-types and uses.

Classification of buildings, foundations-N.B.C. classification-bearing capacity of soil- types offoundations.Masonry-Bonds inbrickmasonry.Plastering-purpose. Pointingpurpose andtypes.