Civil Engineering

DEGREE STANDARD

UNIT I
CONSTRUCTION MATERIALS AND PRACTICE
Properties of engineering materials-brick, stones, cement (types and grades), concrete (mix design), steel and new materials. - Construction of stone masonry, brick masonry and R.C.C. - Building bye - laws and Development regulations practiced in Tamil Nadu - Provisions for fire safety, lighting and ventillation.

UNIT II
ENGINEERING SURVEY
survey - computation of areas and Chain Survey - Compass surveying - Plane table survey - levelling - fly levelling - L.S. and C.S. - Contour volumes - Theodolite survey - Traversing - Heights and Distances - Tacheometry - and Triangulation - Use of EDM and Remote sensing techniques.

UNIT III
STRENGTH OF MATERIALS
Stresses and strains - elastic constants - Beams and bending - Bending moment and shear force in beams - Theory of simple bending - deflection of beams - torsion - Combined stresses - Principal stresses and principal planes - Theories of Failure - Thermal stresses - Mechanical behaviour of Engineering materials.

UNIT IV
THEORY OF STRUCTURES (STRUCTURAL ANALYSIS)
Indeterminate beams - Stiffness and flexibility methods of structural analysis - Slope deflection - Moment Distribution method - Analysis of trusses - Theory of columns - moving loads and influence lines - Stability of retaining walls.

UNIT V
GEOTECHNICAL ENGINEERING
Formation of soils - types of soils - classification of soils for engineering practice - Field identification of soils - Physical properties of soils - Three phase diagram - permeability characteristics of soils - stress distribution in soils - Theory of consolidation, shear strength parameters of soils - Compaction of soils. Soil exploration - Soil sampling techniques - Borelog profile - shallow foundations - Terzhagi's bearing capacity theory - Pile foundation - Group action of piles - settlement of foundations.

UNIT VI
ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL
Sources of water - Ground water Hydraulics - Impurities of water - Water analysis - water treatment - water borne diseases. Disposal of sanitary sewage - sewerage system - Design of sewerage systems - sewer appurtiuences - Pumping of sewage - sewage treatment and disposal - Industrial waste treatment - solid waste management - Air, water and Noise pollution control.

UNIT VII
DESIGN OF REINFORCED CONCRETE AND STEEL STRUCTURES
R.C. AND PRESTRESSED CONCRETE
Design of concrete members - limit state and working stress design concepts - design of slabs - single way, two way and flat slabs - Design of singly and doubly reinforced sections and flanged sections - design of columns and footings - prestressing - systems and methods - Design of prestressed members for flexure.
STEEL
Design of tension and compression members - Design of rivetted and welded connections design of members of Truss and purlins - designs of columns and bases - design of beams including plate girders.

UNIT VIII

WATER RESOURCES AND IRRIGATION ENGINEERING

Water resources in Tamil Nadu - Water resource planning - Master plan for water management flood control - Channel improvement - land management. Soil plant water relationship - Water requirement of crops - Rainfall and runoff - Irrigation methods - Waterlogging and land reclamation - Headworks and Distribution works - Cross drainage works.

UNIT IX

URBAN AND TRANSPORTATION ENGINEERING

Urbanisation trend and impact - Slum cleareance and slum improvement programmes - Traffic regulation and control measures - parking policy and management - Urban and regional road classification - Road geometric and road construction techniques - Different modes of transport and their characteristics.

UNIT X

PROJECT MANAGEMENT AND ESTIMATING

Construction management - Construction planning - Scheduling and monitoring - Cost control, Quality control and inspection - Network analysis - CPM and PERT methods of project management - Resources planning and resource management. Types of estimates - Preparation of technical - Specifications and tender documents - Building valuation - law relating to contracts and arbitration.