

**Tamil Nadu Public Service Commission
Syllabus
Town and Country Planning**

Code: 508

**Single Paper consisting of the Civil Engineering (Diploma Standard),
Architecture (Diploma Standard) and
Town & Country Planning (Post Diploma Standard)**

Unit I: Engineering Mechanics (20 Questions)

Loads - Simple Stresses and Strain – Modulus of Elasticity / Elastic constants – Application of stress and strain in engineering field – Behaviour of ductile and brittle material – Shear Force and Bending Moment – Geometrical properties of sections – Centroid – Moment of Inertia – Stresses in Beams and Shafts – Stresses in Beams due to bending – Stresses in shafts due to torsion – Pin Jointed Frames.

Unit II: Construction Materials and Construction Practice (20 Questions)

Bricks, Lime, Tiles, Cement, Fine Aggregate, Coarse Aggregate, Timber, Ply wood, Steel, Glass, Plastics, PVC, UPVC, Paints, Mortars, Concrete, M-sand, P-sand – Latest construction Materials and Chemicals – Green Building Concepts and Materials - Usage of PPC, Flyash Bricks, Hollow clay Bricks, Solar Panels.

Different types of Foundations - Masonry, Floors, Roofs, Interior Works - False ceiling – Wall paneling – Wooden flooring

Precast Concrete Construction - Doors and Windows - Weathering Course - Damp proof course – Plastering - Painting. Conservation of Heritage Structures.

Unit III: Environmental Engineering and Pollution Control (20 Questions)

Sources of Water – Collections and Conveyance of Water – Quality of Water – Treatment of Water – Distribution System – Appurtenances and Maintenance of Water Lines – Collections and Conveyance of Sewage – Treatments and Disposal – Environmental Pollution and Control – Waste Water Treatment and Solid Waste Management – Land, Water and Air Pollution - Drainage arrangements and Sanitary fittings in Buildings – Environmental Impact Assessment (EIA) - Methodology – Conservation of Marsh Lands – Reclamation of Water Bodies.

Unit IV: surveying (10 Questions)

Types of Surveys – Chain surveying – Compass surveying – Levelling – Contour surveying – Theodolite surveying – Trigonometrical levelling – Tacheometry – Field work – Simple problems.

Unit V: Estimation, Costing and Valuation (20 Questions)

Estimates and its types – System of taking out quantities – Trade and Group systems - Stages of Detailed Estimate – Measurements and Material Requirement – Specification and Report Writing – Approximate Estimates – Areas and Volumes - Detailed Estimate – Data – Abstract Estimate - Valuation of Land and Buildings.

Unit VI: Structural Engineering (20 Questions)

Slope and Deflection of Beams – Propped Cantilevers – Fixed Beams – Arches – Continuous Beams – Theorem of Three Moments – Moment Distribution Method – Columns and Struts – Combined Bending and Direct Stresses – Earth Pressure and Retaining Walls.

Reinforced cement concrete structure – Working Stress Method - Analysis and design of singly and doubly reinforced rectangular and T-beam sections – Cantilever, simply supported,

continuous beams – One way and two way slabs – Lintels and Sunshades – Staircases – Rectangular and Circular short Columns – Isolated column footings (All designs by Limit State Method only). Steel structures – Design of simple beams by Limit state method – Types of welded connections.

Unit VII: Construction Management, Computer Applications and Remote Sensing (25 Questions)

Planning of a project – Factors to be considered – Project reports – Organization structure of construction departments – Construction planning – CPM and PERT networks – Contracts – Tenders and Tender documents – Bill - Supervision and Quality control – Arbitration.

Safety measures in construction sites – Labour legislations - Banking practice – Cash flow diagrams - Financial Management -Ethics.

Disaster Management – Types of Natural calamities – Causes – Preparedness – Response and Recovery.

Use of Computers – Application of CAD softwares – Project management softwares – Use of MS word, Excel, Power Point – Application of Analysis and Design softwares.

Applications of GPS, GIS and Total Station – Geometry of Aerial Photographs – Image characteristics and their significance – Mapping by Manual and Mechanical Methods – Use of Satellites, Aerial Photographs, Drones in Physical Planning.

Unit VIII: Building Services (15 Questions)

Water Supply and Sewage Disposal, Mechanical Systems – Pumps and Motors, Electrical Systems – Generation and Distribution - Ventilation and Lighting - Air Conditioning – Principles, systems and applications - Vertical Transportation systems - Fire Hazards, Safety and Design Regulations - Acoustics – Building Management Systems – Renewable Energy – Rain water Harvesting – Storm Water Management.

Unit IX: Town Planning, Transportation and Planning Practice (30 Questions)

Town Planning Principles – Master Plan - Road and Street Planning – Parks and Open Spaces – Landscape Architecture – Historic and contemporary Landscape – Soft and Hard Landscaping – Indoor and Outdoor Plants - Housing – Economy, Society, Environment and Transport Policy and Planning – Tamil Nadu Combined Development Building Rules, 2019 (TNCDBR, 2019) – Barrier free Design.

Roads – Different types – Methods of formation of water bound macadam Road, bituminous and concrete roads – Hill roads – Camber, gradient, super elevation, carriageway, pavements, drainage system, sight distance - Traffic Engineering - Bridges – Classifications – Site selection and alignment – Foundation, substructure and superstructure.

Railways – Formation of Tracks – Rails – Ballasts – Sleepers – Characteristics of materials – Rail Joints.

Regional Plan concepts and studies – Master plan concept and surveys – Master plan needs and plan formulation – Urban Renewal, Redevelopment, Rehabilitation, Conservation – New Town - Detailed Development Plan - Development Regulations.

Unit X: (20 Questions)

Unit X(A): History and Theory of Architecture

History of Architecture

Prehistoric - Egyptian Architecture – Greek Architecture – Roman Architecture – Early Christian and Byzantine Architecture – Romanesque and Gothic Architecture – Renaissance Architecture.

Indian Architecture – Indus Valley Civilization, Buddhist Architecture, Hindu Architecture – Islamic Architecture in India.

Modern Architecture, Postmodernism, Contemporary World Architecture - Philosophy and works of Post Modern Indian Architects.

Theory of Architecture

Definition of Architecture – Architecture as satisfying functional, aesthetic and psychological human needs - Anthropometrics.

Elements of Architecture – Form, Space, Light, colour, etc.

Principles of Architecture – Proportion, Balance, Scale, Symmetry, etc.

Unit X(B): Hydraulics Engineering and Soil Mechanics

Soil mass as a three phase system – Grain size classification - Atterberg limits – Properties - IS Classification of soils–Compaction – Shear strength – Safe Bearing Capacity.

Measurement of pressure in liquids – Pressure distribution and total pressure on immersed surfaces – Types of flow (Laminar, turbulent, steady, unsteady, uniform, non- uniform) – Flow through pipes – Losses, Frictional losses – Hydraulic gradient and total energy lines - Bernoulli's theorem – Use of Orifice, Mouthpiece, Hydraulic Coefficient Cd, Cc, Cv Orifice meter and Venturimeters – Flow through channels – Chezy's formula – Bazin's and Manning's formula – Economical sections for open channels - Conditions for Maximum discharge - Pumps – Reciprocating pumps – Centrifugal pumps – Characteristics – Selection and choice for pump - Discharge – Power and efficiency - Ground water – Types of well – Test for yield of wells.

Unit X(C): Socio - Economic Aspects of Planning

Basic concept and Scope of Study – Urbanization and Ecological theories – Social Issues in urban area – Housing Redevelopment – Citizen participation.

Economic Operation – Project Appraisal – Urbanization and National Housing policy – Economics of Urban Growth.

Evolution of Planning Legislation - Planning System in U.K., The Tamil Nadu Town and Country Planning Act 1971, Coastal Regulation Zone and Tamil Nadu Municipalities Building Rules – Hill Area Conservation – Planning related Acts.