

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

Single Paper consisting of the subjects Town Planning (PG Standard), Civil Engineering (UG Standard) & Architecture (UG Standard)

Town Planning (PG Standard)

Code: 382

Unit I: Introduction to Planning – Scope And Content (10 Questions)

Planning System in India, Regional Plan, Master Plan, Structure Plan, Detailed Development Plans, City Corporate Plan and Smart City Plan. New Town concepts, case studies in India & U.K. – Concept of Region, Types of Region, Techniques of Regional Analysis, Growth Model, Regional disparities, Resources in Regional development. Multi-level Planning – Regional Planning in India, Regional Plan case Studies, USA, U.K., Japan.

Unit II: Planning Theory and Techniques (10 Questions)

Process of evolution of human settlement planning - Principles in Planning – Rationality in Planning, Blueprint and Process mode, Disjointed Incremental mode of Planning, Normative versus Functional mode of Planning – Type of planning surveys, data identification for various plan preparation. Delphi, Trade off-game, Simulation models, Gravity analysis, Lowry model, Threshold analysis, Multivariate analysis – Optimization and economic analysis methods in project formulation and implementation, PBBS – URDPFI Guidelines.

Unit III: Urban Sociology, Economics, Geography: Theories and Applications (10 Questions)

Socio-economic groups, structures and Institutions as related to urban and rural communities - Ecological processes and structures in Indian Cities - Social Change & Economic Development - Agglomeration economics- Economics of scale, Multiplier effect concept, scope, limitation - Basic and non-basic activities of economics base, methods of base identification - Land-use determinants, Locational Dynamics of urban Land-use - Spatial organization of Urban settlements - City-region, Urban Sprawl and Fringe - Urbanization in India and Tamil Nadu with reference to settlements and population distribution.

Unit IV: Environmental Issues Related To Planning (10 Questions)

Components of Environment – Classification of Environmental Resources - Purpose and Objectives in Environmental Protection - Institutional and Legal Support in management of the Environment – Environmental Policies, and issues -Environmental Impact Assessment Practice in India - Types, Conceptual Approach and Phases of EIA – Impact Identification - Public Participation in the Process of Environmental Decision Making Process - Environmental Concepts – Sustainable Planning – Eco Cities, Compact Cities, Smart growth, Sponge city, IGBC Rating Systems applicable for Towns.

Unit V: Urban Infrastructure Net Work Planning Issues (10 Questions)

Obligatory and Discretionary Services, Implication of Urban Form and Size on Services, Norms and Standards, National Building Code, 2016. National and Local guidelines – Demand Strategy, Issues and Tasks, Operation and Management Aspects of each Service - Water Supply, Sewerage / Drainage, Solid Waste Management, Roads and Street Lighting - Priority, Placement Network Options, Effective System Analysis – Private and Public partnership and innovative concepts and practices in Infrastructure Development.

UNIT VI: Project Formulation and Implementation (15 Questions)

Types of Project, Project Cycle, Identification, Selection, Preparation - Capital Investment Programme, Internal Rate of Return, Net present Value - Cost- Benefit & Analysis, Social Cost Benefit analysis, Budgeting, Tamil Nadu Transparency in Tender Rules - Appraisal techniques – Project Proposal and objectives, Current base line conditions, Financial and Economical Appraisal, Socio cultural assessment - Process Monitoring – Key issues, Monitoring Schedule, Data collection, Design, strategy, Impact Evaluation – Approaches, Key issues, Alternative to large scale qualitative Evaluation designs.

Unit VII: Planning Legislation And Legal Framework (10 Questions)

The concept of law, Indian Constitution. Rights of Ownership and development of property. Statutory control as a positive tool in plan preparation and implementation - Evolution, scope and Significance of Planning Legislation. History and survey of development of planning legislation in India - Panchayat Act, Municipality Act, Corporation Act, TNULB Act, Land Acquisition, Rehabilitation and Resettlement Act, 2013. Provisions in the above acts related to functions, powers, role and responsibilities of local bodies including elected representatives and officers - 73rd and 74th CAA and their implications on planning and development. Local Body finance, revenue, expenditure and resource mobilization - T & C Planning Act of Tamil Nadu 1971, The Ancient Monuments and Archaeological Sites and Remains Act, Tamilnadu Combined Development and Building rules 2019, The Tamil Nadu street vendors scheme, The Tamil Nadu Real Estate (Regulation and Development) Act, 2016.

Unit VIII: Issues In Traffic And Transportation Planning (10 Questions)

Highway classification - Traffic characteristics – Horizontal and Vertical alignment, Land use & Transportation relationships - Sight distance – Cross- sectional elements – at grade and Grade separated intersections - Volume Count – Origin and Destination – Parking and Public Transport - Surveys – Inventory of Transport facilities – Methods of Survey – Different modes – Capacities – Limitations – Planning Aspects - Coordination – Para Transit modes – Private transport – Urban Transportation Planning Process – Trip Generation – Trip Distribution – Modal Split – Trip Assignment, Congestion pricing, Non Motorized Transport, Transit Oriented Development, Bus Rapid Transit System, Unified Transport Authority.

Unit IX: Remote Sensing And G.I.S., In Planning (15 Questions)

Basics of Remote Sensing and GIS. - Classification of spatial and non- spatial data application of spatial data in urban and regional planning - Identification of required spatial data layers - Coding schemes – digitization of spatial data – editing spatial data usable for the given planning problem – Land use Suitability Analysis, Land use Modeling, Existing Land use Preparation using Mobiles, Satellite Imageries, Aerial Photographs, Drones in Physical Planning.

Unit X: Current Trends And Issues In Planning (10 Questions)

Concepts of sustainable urban development, sustainable Transportation, E – Governance, HRIDAY, Rurban Mission, Swachh Bharat Mission, AMRUT, National Health Mission, Public private partnership, local bodies and urban finance. Land Pooling concept, Transfer of Development Right, Accommodation Reservation, Formulation of Re-development and Urban Expansion Plans - Local Area Plans, Town Planning Schemes - Special Economic Zone, Value Capture Finance Policy Framework – Swiss Challenge Model, Industrial Corridor, Coastal Zone Management Plan.

Civil Engineering (UG Standard)

Unit I: Building Materials, Construction Practices and Concrete Technology (10 Questions)

Properties and Classification of cement, lime, bricks, stone and timber - Uses and Tests – materials for acoustics and insulation - construction details and supervision for masonry - Design of Brick Pier and Wall – Damp Proofing courses – Shoring, scaffolding and Underpinning – Ventilation and Fire resistant construction – Green Building Concept - Types of concrete – testing of fresh and hardened concrete – mix design – quality control – special concreting techniques - concreting equipment – centering and shuttering – slip and moving forms – construction joints.

Unit II: Engineering survey, Town Planning, Urban Engineering and Construction Management (10 Questions)

Survey – Basic principles - Classification - computation of areas and Volume – Levelling – Fly levelling – L.S and C.S – Contouring – Traversing – Heights and Distances - Tacheometry – Use of EDM and Total Station – Global Positioning System – Concepts and applications of Remote sensing.

Urbanisation- Trends in India- Planning process– stages, type of survey, collection of data- Development of new towns – urban modern and satellite towns - Smart cities - levels of planning.

Construction management – Construction planning and scheduling – preparation of different types of schedules – methods of scheduling – CPM – PERT – resource planning - Construction Contracts.

Types of estimates - Detailed estimates for different types of buildings - methods of valuation – depreciation – fixation of rent- rate analysis- Quantity estimation

Unit III : Strength of Materials, Analysis of Structures, Design of RC Elements, Prestressed Concrete and Steel Elements (10 Questions)

Simple stress and strain - elastic constants- relationship - stress and strain in two dimensions, compound stresses- principal stresses- thin and thick cylinders - Bending moments and shear forces in statically determinate beams- simple bending theory - flexural shear stress - deflection of flexural members – torsion of circular section - Short and long columns. Analysis of statically determinate trusses and arches Working stress method (only for liquid retaining structures) - limit state design concepts - design of members subjected to flexure, shear, compression and torsion - Prestressed concrete: analysis and design of pre-tensioning and post tensioning beam.

Design of tension and compression members, beams and beam-columns, column bases - Design of bolted and welded connections.

Unit IV: Geotechnical Engineering and Pavement Design (10 Questions)

Properties of soils - soil classification – Compaction - permeability and seepage – soil stresses- Compressibility and Consolidation - Shear strength – Laboratory and in - situ tests. Sub-surface investigation - scope, drilling bore holes, sampling, penetrometer tests, plate load test – stability of slopes - foundation types - foundation design requirements – shallow foundations – Types and Design of isolated and combined footings - bearing capacity - effect of shape, water table and other factors- stress distribution - settlement analysis in sands and clays – deep foundations - pile types, dynamic and static formulae - load capacity of piles in sands and clays.

Design and construction of bituminous and concrete roads - Drainage of roads - Maintenance of roads.

**Unit V : Hydraulics, Water Resources, Water Supply and Environmental Engineering
(10 Questions)**

Hydrostatics - applications of Bernoulli equation, Laminar and turbulent flow in pipes, pipe networks - concept of boundary layer and its growth - flow in channels, rapidly varied flow - tanks and pipes - Hydrologic cycle - Rainfall - draw down – recuperation test – well yield - Water resources of Tamil Nadu – Water policy – flood control – drought management.

Water quality standards – Intakes - Estimation of demand - Unit processes and operations for water treatment - Maintenance of treatment units - Conveyance and distribution systems of treated water - Rural water supply- Advanced water treatment.

Collection of waste water- Design of sewers - Sewage pumping - Characteristics of sewage - Primary, secondary and tertiary treatment of sewage- Sludge disposal - effluent standards - industrial wastewater management – Rural sanitation – solid waste management.

Architecture
(UG Standard)

Unit I: Human Settlements Planning (15 Questions)

- Origin of Human settlements In India & the rest of the world – River valley civilizations (Indus Valley, Mesopotamia, Egypt & China) – Traditional planning principles in India – Vernacular architecture of India – approaches & concepts – Classical & Medieval planning in Europe - Evolution of modern planning concepts – Garden city concept, Neighbourhood concept, Geddesian triad, etc.
- Elements of Human settlements – functions & linkages, Structure & form
- Urban Planning & Renewal.
- DCR
- Issues in contemporary Urban planning.

Unit II: Urban Studies – Urban Design, Urban Housing & Conservation (15 Questions)

- Urban Design – need, aspects, scope & components of urban space
 - Historic urban form of Greek, Roman, Medieval, Renaissance, Modern & post-modern periods - Indian Urbanism – temple towns, Mughal city form, medieval cities, colonial urbanism, planned capital cities - Theorizing & Reading urban space – Imageability & townscape elements, genius loci, collective memory, historic reading of the city & its artefacts by Rossi, social aspects of urban space, gender & class, contribution of Jane Jacobs, William Whyte - Issues of Urban space.
 - Housing issues in the Indian Context, Socio-Economic aspects, Housing Standards, Site Planning & Housing Design, Housing Process.
 - Conservation – Definition, understanding the need & purpose, Adaptive re- use, International agencies & their role in conservation Conservation In India – Role of ASI & INTACH – policies & legislations, case studies – craft issues – Conservation practice – listing, documenting, assessing architectural character, structure report & developing guidelines – Urban Conservation – Conservation Planning – Heritage tourism.

UNIT III: ENVIRONMENTAL STUDIES, SITE PLANNING & LANDSCAPE ECOLOGY (10 Questions)

- Environment, Ecosystems & bio-diversity – Environmental Pollution, Human population & social issues with relation to the environment – Environmental laws in India.
- Site Planning – Introduction to basic terminologies, Methods of surveying, Instruments & Application, Leveling, Site Drawings, Importance of Site Analysis – On-site & off-site factors, Study of micro climate, Site Diagramming, Site Context, Site planning & Site layout principles.
- Introduction to Landscape Architecture – Elements of Landscape Design – plant material, water & landforms, Garden Design – Japanese, Italian Renaissance & Mughal, Site Planning – Organisation of spaces – circulation, built form and open spaces, site planning and micro climate, site planning for neighbourhood parks, children's play area and campus development – Landscaping of Functional areas – Urban open spaces and principle of urban landscape – Street landscaping, landscape design for waterfront areas and functional areas in urban centers – green roofs and walls – Street lighting.