Tamil Nadu Public Service Commission Syllabus Town Planning, Civil Engineering and Architecture (Degree Standard)

Code: 560

Unit I: Introduction to Planning - Theory and Techniques (20 Questions)

Planning System in India, Regional Plan, Master Plan, Structure Plan, Detailed Development Plans, City Corporate Plan and Smart City Plan - Concept of Region, Types of Region, Techniques of Regional Analysis. Multi-level Planning - Process of evolution of human settlement planning -Simulation models, Gravity analysis, Lowry model, Threshold analysis, Multivariate analysis – Optimization and economic analysis methods in project formulation and implementation.

Unit II: Urban Sociology, Economics, Geography and Environment - Theories and Applications (20 Questions)

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. Environmental Impact Assessment Practice in India - Types, Conceptual Approach and Phases of EIA – Environmental Concepts – Sustainable Planning – Eco Cities, Compact Cities, Smart growth, Sponge city.

Unit III: Remote Sensing, G.I.S. and Current Trends in Planning (20 Questions)

Basics of Remote Sensing and GIS. - Classification of spatial and non - spatial data application in planning - 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. Emerging Concepts of sustainable urban development, E – Governance, HRIDAY, Rurban Mission, AMRUT, Public private partnership, Local bodies and urban finance. Land Pooling concept, Transfer of Development Right, Accommodation Reservation, Formulation of Redevelopment 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, Planned Unit Development.

Unit IV: Physical Infrastructure and Legislation (20 Questions)

Implication of Urban Form and Size on Services Highway classification - Traffic and Transportation Survey - 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. Tamil Nadu Urban Local Bodies Act, 1996 and Tamil Nadu Urban Local Bodies Rules, 2023. 73rd and 74th Constitutional Amendment Act (CAA) and their implications on planning and development. Town and Country Planning Act of Tamil Nadu 1971, Tamil Nadu Combined Development and Building Rules 2019, Urban and Regional Development Plans Formulation and Implementation (URDPFI) and Rural Area Development Plans Formulation and Implementation (RADPFI).

Unit V: Design of Reinforced Concrete, Pre stressed Concrete And Steel Structures (20 Questions)

Design of concrete members - limit state and working stress design concepts - design of slabs - one way, two way and flat slabs - Design of singly and doubly reinforced sections and flanged sections -design of columns and footings – pre- stressing - systems and methods- post tensioning slabs - Design of pre-stressed members for flexure.

Design of tension and compression members - Design of bolted and welded connections design of members of truss - designs of columns and bases - design of beams, plate girders and gantry girder- design of liquid storage structures –elevated and underground- design of retaining wall.

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

Sources of water - Water Demand -- Characteristics and analysis of water – hydraulics for conveyance and transmission - water borne diseases – Functional design of water treatment plant – desalination plant- water distribution system – pipe network analysis- characteristics and composition of sewage - Planning and design of sewerage system - sewer appurtenances - Pumping of sewage - sewage treatment and disposal - Design of storm water drain- plumbing system in high rise building - industrial waste treatment - solid waste management – Air and Noise pollution control – E-Waste management.

Unit VII: Urban and Transportation Engineering (20 Questions)

Urbanization trend and impact - Slum clearance and slum improvement programmes - Different modes of transport and their characteristics. Geometric design of highways. – Pavement materials and testing – alternate pavement materials- modified binders - Design and Construction of bituminous and concrete roads – pavement distress and evaluation - Maintenance of roads – Railways - Components of permanent way - Signalling, Interlocking and train control - drainage in roads and railways. Airport planning - Components of Airport - Site selection – Runways – Planning of terminal buildings Harbours & Ports - Layout of a harbour - Docks - Breakwaters.

Unit VIII: Introduction to Architecture (20 Questions)

Definition of Architecture - Integration of aesthetics and function. Elements of Architecture – Form, Space, light, colour, etc. Principles of Architecture – Proportion, Scale, balance, rhythm, symmetry, hierarchy, pattern and axis. Understanding of organization of form and space, volumetric study, architectural characteristics & style of buildings with examples. Understanding user circulation and spatial requirement for all types of buildings. Universal design principles and Barrier free environment. Functional aspects of architecture – site, structure, skin, circulation etc. Principles of composition and relationship between human activities and anthropometrics. Modern Architecture - various philosophies, works of postmodern architects. Architecture of India under Colonial rule. Post-independence architecture in India - works of Indian Architects. Contemporary World Architecture & recent trends. Building Rules and Regulations, National Building Code.

Unit IX: Site Planning, Climatic Design and Energy Efficient Architecture (20 Questions)

Site Planning – Introduction to basic terminologies, Methods of surveying, Instruments & Application, Levelling, Site Drawings, Importance of Site Analysis – On-site & off-site factors, Study of micro climate, Site Diagramming, Site Context, Site planning & Site layout principles. Organization of spaces – circulation, built form and open spaces, site planning and micro climate, site planning for neighborhood 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. Climate & Human comfort, Visual and Acoustical comfort in built environment. Solar Control, Heat flow through materials & building envelope design, Air movement patterns through natural &

built forms, Design strategies for different climate types. Energy Efficiency – Importance & Significance, Passive Heating & Cooling techniques, case studies, day Lighting & Natural ventilation, Use of Renewable energy systems – Current & future trends. National and state level government organizations -initiatives, schemes and projects. Relevant National and state level legislations and guidelines.

Unit X: Human Settlements Planning and Urban Studies (20 Questions)

Origin of Human settlements In India & the rest of the world – River valley civilizations (Indus Valley, Mesopotamia, Egyptian & Chinese) – Traditional planning principles in India – approaches & concepts – Classical & Medieval planning in Europe and India - Evolution of modern planning theory, concepts and works of town planners; Contemporary Urban planning – Issues and Trends. Urban Design – need, aspects, scope & components of urban space – Indian Urbanism - Theorising & Reading urban space – Imageability & townscape elements, social aspects of urban space, gender & class. Urban Public spaces – Universal design, pedestrian friendly environment, streetscapes. Conservation in India – Understanding the need & purpose, definition, Adaptive reuse, International agencies & their role – Policies & legislations, case studies – Conservation practice and Planning.

Dated: 17.04.2025