

**TAMILNADU PUBLIC SERVICE COMMISSION**

**ARCHITECTURE**

**(DEGREE STANDARD)**

**CODE: 401**

**UNIT – I: INTRODUCTION TO ARCHITECTURE**

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. Computer application in Architecture- Architectural graphics -Drawing & visualization tools – image editing, 2D & 3D modelling, 3D visualization.

**UNIT – II: HISTORY OF ARCHITECTURE & CULTURE**

Historical development of Egyptian, West Asian, Greek & Roman Architecture with examples. Historical development of Buddhist Architecture with examples. Evolution of Hindu Temple Architecture – Dravidian and Indo-Aryan Periods- Outstanding examples of these periods. Historical development of Indo- Islamic Architecture – Delhi Sultanate, Provincial & Mughal styles with examples. Modern Architecture - development of theories, various philosophies & schools of thoughts, works of modern architects. Post 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

**UNIT – III : MATERIALS AND CONSTRUCTION TECHNIQUES**

Properties, characteristics, strengths, manufacturing, components & applications of materials, construction methods and techniques, detailing for the following : Stone – Brick & Clay Products – Lime – Cement – Mortar – Timber – Concrete – Ferrous and Non-Ferrous Metals – Glass – Plastics – Asphalt, Sealants & Adhesives – Protective and Decorative Coatings – Surface finishing & flooring materials - Water Proofing and Damps Proofing Materials – Rural Building Materials(Bamboo, Soil, etc.). Building structural systems, prefabrication of building elements; principles of modular coordination-construction planning and equipment. Principles and design of disaster resistant structures. Temporary

structures for rehabilitation. Specification – necessity, importance, types & classification – Specification writing - Estimation (Approximate & detailed) – Current trends. Advanced construction technologies - Construction systems & Practice – Construction methods & equipments, Construction Technology for High-rise buildings, Construction management.

#### **UNIT – IV: BUILDING SYSTEMS AND SERVICES – CURRENT DEVELOPMENT & NEW TRENDS**

Water Supply and sanitation systems: Sources, Quality, treatment methods and distribution systems of water- water requirements for firefighting systems and different building typologies – Primary and Secondary waste water treatments, Modern types of sewage treatment plants. Choice of pipe materials, fittings & fixtures - Systems of water supply and sewage disposal in all types of buildings. Water harvesting systems – Principles, planning and design of storm water drainage systems. Solid Waste – Methods of solid waste management- collection, transportation and disposal– Recycling and Reuse of Solid waste – MSW rules. Electrical installations in buildings- Single/three phase supply - Planning electrical wiring for building - Building safety and security systems- Building Management systems, Building automation. Lighting – Design, Installation & Application in buildings. Mechanical ventilation techniques: Air conditioning – Systems & Applications configuration, sizing & space requirements. Vertical transportation systems – Design criteria & installation of Elevators, Escalators & moving walkways. Fire safety and firefighting systems – requirements and norms , NBC guidelines. Architectural Acoustics – Fundamentals, Importance of shape volume, treatment of interior surfaces. Relevant National and state level legislations and guidelines.

#### **UNIT – V: HUMAN SETTLEMENTS PLANNING**

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 - Planning models. Elements of Human settlements – functions & linkages, Structure & form. Types of plan like Regional plan, Perspective plan, Master plan, Zonal plan etc. URDPFI and RADPFI Guidelines, DCR, CRZ for coastal areas; JNNURM, AMRUT, Zoning regulations, SEZ, PUD, TOD; Contemporary Urban planning – Issues and Trends. National and state level government organizations -initiatives, schemes and projects.

## **UNIT – VI: URBAN STUDIES – Urban Design, Urban Housing & Conservation**

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 – URDPFI guidelines. Urban Renewal, Redevelopment, Rehabilitation & Conservation, TDR . Urban Public spaces – Universal design, pedestrian friendly environment, streetscapes. Housing in the Indian Context, Socio-Economic aspects, Housing standards, Site Planning & Housing Design. Vernacular architecture of India and Heritage tourism; Smart city and Sustainable urban development. Conservation in India – Understanding the need & purpose, definition, Adaptive re- use, International agencies & their role – Policies & legislations, case studies – Conservation practice and Planning; National and state level government organizations – Initiatives, schemes and projects; Relevant National and state level legislations and guidelines

## **UNIT – VII: ENVIRONMENTAL STUDIES, SITE PLANNING & LANDSCAPE ECOLOGY**

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, 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. Topographical study and Contour Analysis. Introduction to Landscape Architecture – Elements of Landscape Design – plant material, water & landforms, Garden Design – Japanese, Italian Renaissance & Mughal, Site Planning – 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.

## **UNIT – VIII: CLIMATIC DESIGN & ENERGY EFFICIENT ARCHITECTURE**

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 – IX: PROJECT MANAGEMENT AND CURRENT TRENDS**

Project Management – Introduction, Project programming & Critical path method, Cost model analysis, Programming evaluation review technique – PERT network - Project feasibility study- Facility Programming and Planning. Computerized Project Management, Current trends- various international and national agencies- Funding and implementation procedure.

## **UNIT – X: PROFESSIONAL PRACTICE AND ETHICS**

Understanding the basic concepts and terminology in architectural practice -Architectural profession – Code of conduct & ethics and profession.Role of Architects in conceptualizing, design proposal until the execution procedure.Role of COA & IIA – Architect’s Services, Scale of fees, Architectural Competitions - Tender & Contracts – Legal aspects – Important Legislations & current trends.

**Note:** Medium of Instruction is English only.