

ANNEXURE-II
SYLLABUS
PAPER-I (Objective Type)

TOWN AND COUNTRY PLANNING (POST DIPLOMA STANDARD)

SUBJECT CODE: 325

UNIT – I: HISTORY OF HUMAN SETTLEMENTS

Early human settlements, Town building during Indus valley civilization – Town building practices during ancient Greek and Roman period – Town building practices during Medieval and Renaissance periods – Effect of Industrial Revolution on planning of cities – Planning concepts of E.Howard, Patric Geddes, C.A.Perry.

UNIT – II: PLANNING PRINCIPLES

Principles of Town Planning – Green belt, Housing, Public Buildings, Recreational Spaces, Transportation, Zoning. Scope and Content of Master Plan, Land use Plan – Geographical study of Regional Landuses and distribution of Settlements – Elements of Regional planning, Regional Delineation, Rural Development.

UNIT – III: STATISTICS & COMPUTER ORIENTATION

Central Tendency computation – Sampling and Diagram – Computer Aided Drawing – Computer Application in Data Analysis – Population forecasting - Use of Computers in Planning.

UNIT – IV: SOCIO-ECONOMIC ASPECTS OF PLANNING

Basic concept & Scope of Study – Urbanization & Ecological theories – Social Issues in urban area – Housing Redevelopment – Citizen participation.
Economic Operation – Project Appraisal – Urbanization & National Housing policy – Economics of Urban Growth.

UNIT – V: PLANNING PRACTICE

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 – VI: PLANNING LEGISLATION AND ADMINISTRATION

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

UNIT – VII: ARCHITECTURE AND LANDSCAPE ARCHITECTURE

Introduction to Architecture. Principle of Aesthetics – Proportion, Scale, Balance, Rhythm, Hierarchy, Axis etc., – Study of Architectural spaces – Townscape Elements – Landscape Elements – Role of Landscape Architect and the importance of Environmental Protection – Landscaping the Public Areas, Commonly used Plants and Trees in Landscape.

UNIT – VIII: TRAFFIC AND TRANSPORTATION

Transportation systems – Urban Roads Classification – Traffic Regulations - Traffic Signs and Traffic Markings – Traffic Intersections at Grade-Traffic Intersections Grade Separated Parking & Street Light Facilities, Parking Standards – Railways Airways and Waterways Terminal Facilities Location Aspects – Layouts – Urban Transportation Planning Process-Surveys and Studies – Urban Transportation Planning Process – Forecasting and Plan Formulation.

UNIT – IX: PARKS, PLAY GROUNDS AND OPEN SPACES

General, Types of Recreation, Location of Urban Green Spaces, Classification of Parks, Park Design, Financing Parks, Play area and its types.

UNIT – X: REMOTE SENSING

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

PAPER-I (Objective Type)**ARCHITECTURAL ASSISTANTSHIP/ ARCHITECTURE (DIPLOMA STANDARD)****SUBJECT CODE: 323****UNIT – I: ENGINEERING MECHANICS**

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

UNIT – II: BUILDING MATERIALS & CONSTRUCTION

Properties, characteristics, strengths, manufacturing, components & applications of materials & methods of construction & detailing for the following:

Stone – Brick & Clay Products – Lime – Cement – Timber – Concrete – Ferrous and Non-Ferrous Metals – Glass – Plastics – Asphalt, Sealants & Adhesives – Protective and Decorative Coatings – Water Proofing and Damps Proofing Materials – Rural Building Materials(Bamboo, Soil, etc.).

UNIT – III: HISTORY & THEORY OF ARCHITECTURE**History of Architecture**

Egyptian Architecture – Greek Architecture – Roman Architecture – Early Christian & Byzantine Architecture – Gothic Architecture – Renaissance Architecture. Indian Architecture – Indus Valley Civilization, Buddhist Architecture, Hindu Architecture – Islamic Architecture in India. Modern Architecture, Post Modernism, Deconstructivism Contemporary World Architecture.

Theory of Architecture

Definition of Architecture – Architecture as satisfying functional, aesthetic & psychological human needs. Elements of Architecture – Form, Space, Light, colour, etc. Principles of Architecture – Proportion, Balance, Scale, Symmetry, etc.

UNIT – IV: STRUCTURAL ENGINEERING

Slope and Deflection of Beams – Propped Cantilevers – Fixed Beams – Arches – Continuous Beams – Theorem of Three Moments – Continuous Beams – Moment Distribution Method – Columns and Struts – Combined Bending and Direct Stresses – Earth Pressure and Retaining Walls – Working Stress Method Design of Beams for Flexure by L.S.M – Design of T-Beams and Continuous Beams by L.S.M – Design of Beams for Shear by L.S.M – Design of Oneway Slabs by L.S.M - Design of Twoway Slabs by L.S.M - Design of Staircases by L.S.M - Design of Columns by L.S.M - Design of Column Footings – Design of Simple Beams – Design of Tension Members – Design of Compression Members – Design of Welded Connections.

UNIT – V: ENVIRONMENTAL ENGINEERING

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 – Industrial Waste Water Treatment and Solid Waste Disposal – Land, Water & Air Pollution.

UNIT – VI: BUILDING SERVICES

Water Supply & Sewage Disposal, Mechanical Systems – Pumps & Motors, Electrical Systems – Generation & Distribution, Ventilation & Lighting, Air Conditioning – Principles, systems & applications, Vertical Transportation systems, Fire Hazards, Safety & Design Regulations, Acoustics.

UNIT – VII: SITE SURVEY & PLANNING

Chain Surveying – Compass Surveying – Plane Table Surveying – Levelling – Theodolite – Contouring – Minor Instruments. Site Drawings – Site marking, Importance & procedures for making site drawings & dimensioning.

UNIT – VIII: SPECIFICATION & ESTIMATION

Stages of Detailed Estimate – Measurements & Material Requirement – Specification & Report Writing – Approximate Estimates – Areas and Volumes – Data – Valuation – Detailed Estimate.

UNIT – IX: TOWN PLANNING

Town Planning Principles – Road and Street Planning – Housing – Economy, Society, Environment and Transport Policy and Planning – Town Planning Rules, Building Bye-Laws & Development Control Rules.

UNIT – X: COMPUTER AIDED DRAFTING & VISUALIZATION

2D & 3D Drafting & Visualization - Using AutoCAD, etc– Setting limits and creating entities like LINE, ARC, CIRCLE etc – Editing the drawing with edit commands like TRIM, FILLET, COPY, MOVE etc., Creating 2D building working drawings. Visualization using SKETCH UP, 3DMAX, etc.

PAPER-I (Objective Type)
CIVIL ENGINEERING (DIPLOMA STANDARD)

SUBJECT CODE: 299

UNIT - I: ENGINEERING MECHANICS

Direct Stresses and strains (Tensile and compressive) due to Axial forces – Deformation of elastic bar due to uni-axial force - Shear force and bending moment diagrams for statically determinate beams - Geometrical properties of sections - Stresses in beams due to bending – Stresses in shafts due to torsion – Pin jointed perfect frames with vertical loads on nodal points (method of joints only).

UNIT - II: MECHANICS OF STRUCTURE

Deflection of cantilever and simply supported beams – Shear force and bending moment diagrams for statically indeterminate structures (Propped cantilever, Fixed Beams, continuous beams, Non-sway Portal frames) using Mohr's theorems and moment distribution method. Euler's and Rankin's formula for columns – Stresses due to eccentric loads – combined stresses due to direct loads and bending moments in rectangular sections.

UNIT - III: CONSTRUCTION MATERIALS & CONSTRUCTION PRACTICE

Bricks, Tiles, Cement, Fine Aggregate, Coarse Aggregate, Timber, Ply wood, Steel, Glass, Plastics, PVC, UPVC, Paints, Mortars, Concrete – Different types, qualities, requirements, standard specifications, Admixtures for cement mortar and concrete. Different types of Foundations, Masonry, Floors, Roofs, Doors and Windows, Weathering Course, Damp proof course, Plastering, Painting, Colour Washing – Specifications for different works.

UNIT - IV: TRANSPORTATION ENGINEERING

Roads – Different types – methods of formation of water bound macadam, bituminous and concrete roads – Hill roads – Requirements – Camber, gradient, super elevation, carriage way, pavements, drainage system, sight distance etc., Traffic Engineering, Bridges – Classification of bridges – Site selection and alignment – Foundation, substructure and super-structure. Sub-grade soil – Soil mass as a three phase system – Grain size classification - Atterberg limits – IS Classification of soils–Compaction – Shear strength – Road Arboriculture – Express Highways – Rapid Transport System.

UNIT - V: HYDRAULICS

Measurement of pressure in liquids – Pressure distribution and total pressure on immersed surfaces – Types of flow (Laminar, turbulent, steady, unsteady, uniform, nonuniform) – Flow through pipes –Losses – Hydraulic gradient and total energy lines. Bernoulli's theorem – use of Orifice, Mouthpiece, Orifice meter and Venturimeters – Flow through channels – Bazin's and Manning's formula – Economical sections for open channels, Pumps – Reciprocating pumps – Centrifugal pumps – Characteristics – Discharge – Power and efficiency, Ground water – Types of well – Test for yield of wells.

UNIT - VI: SURVEYING

Types of Surveys –Chain surveying – Compass surveying – Levelling – Contour surveying – Theodolite surveying – Trigonometrical levelling – Tacheometry – Field work – Simple problems. Curves, Global Positioning System (GPS), Remote sensing – Photogrammetric Surveying and Hydrographic Surveying, Total Station and Geographical Information System (GIS).

UNIT - VII: ENVIRONMENTAL ENGINEERING AND POLLUTION CONTROL

Sources of water – Conveyance of water – Treatment of water – Quality of water – Tests on water – Distribution systems – Sewers – Collection and conveyance of sewage – Sewer Appurtenances – Drainage arrangements and Sanitary fittings in buildings – Treatment and disposal of sewage, Solid waste Management. Environmental pollution – Air – water – Soil – Noise - Pollution Control.

UNIT - VIII: ESTIMATING AND COSTING

Systems of taking out quantities – Trade and Group systems – Material requirement for different items of works – Preparation of data for works – Report writing – Valuation of buildings and properties – Fixation of rents – Approximate estimates – Detailed estimate and Abstract estimate for buildings, well, sump, septic tanks, compound wall, roads etc.

UNIT - IX: STRUCTURAL ENGINEERING

Reinforced cement concrete structure – 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 – simple beams – Tension and compression members – simple columns.

UNIT - X: CONSTRUCTION MANAGEMENT

Planning of a project – Factors to be considered – Project reports – Organization structure on construction departments – Construction planning – CPM and PERT networks – Contracts – Tenders and Tender documents – Bill- Supervision and Quality control – Safety measures in construction sites – Banking practice – Cash flow diagrams. Entrepreneurship, Ethics in Engineering, Use of computers – Information Management, Financial Management, Disaster Management – Types of Natural calamities – Causes for major disaster – Preparedness – Response and Recovery.

PAPER- II (Objective Type)
GENERAL STUDIES (DIPLOMA STANDARD)

Unit-I GENERAL SCIENCE

Physics - Nature of Universe-General Scientific laws-Inventions and discoveries-National scientific laboratories-Mechanics and properties of matter-Physical quantities, standards and units-Force, motion and energy-Magnetism, electricity and electronics- Heat, light and sound.

Chemistry - Elements and Compounds-Acids, bases and salts-Fertilizers, pesticides, Insecticides.

Botany-Main Concepts of life science-Classification of living organism-Nutrition and dietetics-Respiration.

Zoology-Blood and blood circulation-Reproductive system-Environment, ecology, health and hygiene-Human diseases, prevention and remedies-Animals, plants and human life.

Unit- II. CURRENT EVENTS

History- Latest diary of events-national -National symbols-Profile of States-Eminent persons & places in news-Sports & games-Books & authors -Awards & honors'-India and its neighbours.

Political Science-Problems in conduct of public elections-Political parties and political system in India-Public awareness & General administration-Welfare oriented govt. schemes, their utility.

Geography-Geographical landmarks.

Economics -Current socio-economic problems.

Science- Latest inventions on science & technology.

Unit- III. GEOGRAPHY

Earth and Universe-Solar system-Monsoon, rainfall, weather & climate-Water resources - rivers in India-Soil, minerals & natural resources-Forest & wildlife-Agricultural pattern-Transport & communication-Social geography – population-density and distribution-Natural calamities – Disaster Management.

Unit-IV. HISTORY AND CULTURE OF INDIA AND TAMIL NADU

Indus valley civilization-Guptas, Delhi Sultans, Mughals and Marathas-Age of Vijayanagaram and the bahmanis-South Indian history-Culture and Heritage of Tamil people-India since independence-Characteristics of Indian culture-Unity in diversity – race, colour, language, custom-India-as secular state-Growth of rationalist, Dravidian movement in TN-Political parties and populist schemes.

Unit-V. INDIAN POLITY

Constitution of India--Preamble to the constitution- Salient features of constitution- Union, state and territory- Citizenship-rights amend duties- Fundamental rights- Fundamental duties- Human rights charter- Union legislature – Parliament-. State executive-. State Legislature – assembly-Local government – panchayat raj – Tamil Nadu- Judiciary in India – Rule of law/Due process of law-. Elections-. Official language and Schedule-VIII-. Corruption in public life-. Anti-corruption measures –CVC, lokadalats, Ombudsman, CAG- Right to information- Empowerment of women- Consumer protection forums.

Unit-VI. INDIAN ECONOMY

Nature of Indian economy- Five-year plan models-an assessment-Land reforms & agriculture-Application of science in agriculture-Industrial growth-Rural welfare oriented programmers-Social sector problems – population, education, health, employment, poverty-Economic trends in Tamil Nadu.

Unit-VII. INDIAN NATIONAL MOVEMENT

National renaissance--Emergence of national leaders-Gandhi, Nehru, Tagore-Different modes of agitations-Role of Tamil Nadu in freedom struggle Rajaji, VOC, Periyar , Bharathiar & others.

Unit-VIII - APTITUDE & MENTAL ABILITY TESTS (SSLC STANDARD)

Conversion of information to data-Collection, compilation and presentation of data - Tables, graphs, diagrams-Parametric representation of data-Analytical interpretation of data -Simplification-Percentage-Highest Common Factor (HCF)-Lowest Common Multiple (LCM)-Ratio and Proportion-Simple interest- Compound interest-Area-Volume-Time and Work - Logical Reasoning-Puzzles- Dice-Visual Reasoning-Alpha numeric Reasoning-Number Series.
