

ANNEXURE – III
SYLLABUS FOR WRITTEN EXAMINATION
TOWN PLANNING

Paper-I

(P.G. DEGREE STANDARD)

SUBJECT CODE:326

UNIT – I: INTRODUCTION TO PLANNING – SCOPE AND CONTENT

Planning System in India, Introduction to 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, Regionalization – Evolution of Regional Planning. Institutional framework for Regional Planning – 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

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, GEOGRPAHY: THEORIES AND APPLICATIONS

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

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.

UNIT – V: URBAN INFRASTRUCTURE NET WORK PLANNING ISSUES

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

Types of Project, Project Cycle, Identification, Selection, Preparation - Capital Investment Programme, Internal Rate of Return, Net present Value - CostBenefit& Analysis, Social Cost Benefit analysis, Budgeting, Tender procedures - 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, CPM, PERT - Framework, Impact Evaluation – Approaches, Key issues, Alternative to large scale qualitative Evaluation designs.

UNIT – VII: PLANNING LEGISLATION AND LEGAL FRAMEWORK

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, Urban Development Act - Implications of Land ceiling, betterment levy and development charges .Concept of arbitration. The Tamil Nadu Real Estate (Regulation and Development) Act, 2016.

UNIT – VIII: ISSUES IN TRAFFIC AND TRANSPORTATION PLANNING

Highway classification - Traffic characteristics – Horizontal and Vertical alignment, Land use & Transportation relationships - Sight distance – Crosssectional 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, Transit Oriented Development, Bus Rapid Transit System.

UNIT – IX: REMOTE SENSING AND G.I.S., IN PLANNING

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, Applications of GPS - 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, Use of Satellites, Aerial Photographs, Drones in Physical Planning.

UNIT – X: CURRENT TRENDS AND ISSUES IN PLANNING

Concepts of sustainable urban development, sustainable Transportation, E – Governance – City Development Plans - Business Plans, JNNURM, AMRUT, National Rural 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.

ARCHITECTURE (DEGREE STANDARD)**Paper-I****SUBJECT CODE: 324****UNIT – I: THEORY OF ARCHITECTURE**

- Definition of Architecture, an 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.
- Functional aspects of architecture – site, structure, skin, circulation etc.
- Concepts in Architectural Design
- Understanding the meaning of character & style of buildings with examples
- Design Communication & Graphics

UNIT – II: HISTORY OF ARCHITECTURE & CULTURE

- Egyptian, West Asian, Greek & Roman Architecture – factors influencing the styles, understanding the architectural character with examples
- Buddhist Architecture
- Evolution of Hindu Temple and Architectural contributions of Dravidian, Pallava, Chola, Pandya and Indo-Aryan Periods – Outstanding examples of these periods.
- Development of Indo- Islamic Architecture – Delhi Sultanate, Provincial & Mughal styles
- Modern Architecture – various philosophies & schools of thought in Europe, three generations of modern architects & their contributions
- CIAM, TEAM X, Post Modern Architecture, Deconstruction, High-Tech Architecture, Critical Regionalism
- Architecture of India under Colonial rule
- Post independent architecture of India
- Contemporary World Architecture & Parametric Design

UNIT – III : MATERIALS AND CONSTRUCTION TECHNIQUES

- Properties, characteristics, strengths, manufacturing, components & applications of materials & methods of construction & 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.)

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

- Water Supply & Plumbing – Sources, treatment & distribution systems Sources of water, Quality of water & treatment methods, water requirements for different building typologies, Distribution of water – Choice of pipe materials, fittings & fixtures, Systems of plumbing in all types of buildings Types of pumps – Reciprocating, centrifugal, deepwell, submersible automatic pumps, sewerage

pump, compressors vacuum pump.

- Waste water & Sewage Disposal

Primary & Secondary treatments – Modern types of sewage treatment plants – Sewer line fixtures, traps, manholes & septic tanks.

- Solid Waste – collection, treatment, disposal & modern drainage systems – Incinerator, Composting, Vermi composting, Sanitary Land fill, Bio-gas system & modern renewable energy systems, Modern plumbing systems – Selection of pumps & construction of pump rooms.

- Electrical & Electronic Systems

Electrical installations in buildings – transformers, switch gears, sub stations Single/Three phase supply - Types of earthing for safety, Conduits laying, Busway & Bus bars, Main and distribution boards - Types of wires, wiring systems and their choice, Planning electrical wiring for building, Communication & data systems – communication spaces, pathways, cabling systems, voice & data, communication, electronic security systems, computer labs/server rooms, etc.

- Lighting Design –Installation & Application in buildings.

- Air conditioning – Systems & Applications

Window, Split & Packaged Units, Centralized a/c system – A/c plants, DX system, Chilled water system, Air cooled & water cooled condensers, Air distribution systems – VAV & VRV systems, Cooling towers, Fan coil units, circulation pumps, trenches & ducting – configuration, sizing & space requirements.

- Vertical Movement systems – Elevators, Escalators & moving walkways – design criteria & installation.

- Fire safety – Fire detection system, Fire alarm system, Fire fighting systems, Dry and wet risers, Automatic Sprinklers, Smoke detectors, NBC guidelines.

- Acoustics – Fundamentals, Building design & construction measures for good hearing & sound reinforcement & surface treatment for interiors.

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 – 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 – Master planning, Zoning regulations, SEZ, PUD, Urban Renewal Plan, Redevelopment, Rehabilitation & Conservation, JNNURM.

- DCR, CRZ for coastal areas.

- Issues in contemporary Urban planning.

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

- Urban Design – need, aspects, scope & components of urban space – Historic urban form of Greek, Roman, Mediaeval, Renaissance & Modern & post-modern periods - Indian Urbanism – temple towns, Mughal city form, medieval cities, colonial urbanism, planned capital cities - Theorising & Reading urban space – Image ability & 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 – URDPFI.

- Housing issues in the Indian Context, Socio-Economic aspects, Housing Standards, Site Planning & Housing Design, Housing Process.

- Conservation – Understanding the need & purpose, definition, Adaptive reuse, 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 – TDR, Heritage tourism.

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.

- 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.

UNIT – VIII: CLIMATIC DESIGN & ENERGY EFFICIENT ARCHITECTURE

- Climate & Human comfort, 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.

UNIT – IX: CONSTRUCTION TECHNOLOGY & PROJECT MANAGEMENT

- Construction systems & Practice – Construction methods & equipments, Construction Technology for High-rise buildings, Construction management.
- Project Management – Introduction, Project programming & Critical path method, Cost model analysis, Programming evaluation review technique – PERT network – Computerized Project Management.

UNIT – X: PROFESSIONAL ETHICS & TOOLS FOR PRACTICE

- Architectural profession – Code of conduct & ethics, role of COA & IIA – Architect's Services, Scale of fees, Architectural Competitions - Tender & Contracts – Legal aspects – Important Legislations & current trends.
- Specification – necessity, importance, types & classification – Specification writing - Estimation (Approximate & detailed) – Current trends.
- Drawing & visualization tools – image editing, 2D & 3D modelling, 3D visualization – Photoshop – AutoCad 2000 - Revit - 3D MAX - Sketch up

UNIT I: Building Materials and Construction Practices

Classification, Properties, Uses and Tests for stone, lime, bricks, cement and timber – materials for acoustics and insulation – Classification, construction details and supervision for masonry – DampProofing courses – Shoring, scaffolding and Underpinning – Ventilation and Fire resistant construction.

UNIT II: Engineering survey

Survey – Basic principles- Classification - computation of areas – chain survey – Compass surveying – Plane table survey – Levelling – Fly levelling – L.S and C.S – Contour Volumes – Theodolite survey – Traversing – Heights and Distances – Geodetic Observations-Tacheometry – Triangulation – Field Astronomy - Use of EDM – Global Positioning System - Principles of Photogrammetry - Concepts of Digital Elevation Modelling – Concepts of Remote sensing.

UNIT III :Strength of Materials and Analysis of Structures

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 arches and frames - analysis of statically indeterminate structures by slope-deflection and moment-distribution methods - influence lines for determinate and indeterminate structures - basic concepts of matrix methods of structural analysis.

UNIT IV : Concrete and Steel Structures

Working stress and limit states design concepts - design of members subjected to flexure, shear, compression and torsion (beams, columns isolated footings) - basic elements of Prestressed concrete: analysis of beam sections at transfer and service loads – Codal Provisions.

Design of tension and compression members, beams and beam-columns, column bases - Design of bolted and welded connections - simple and eccentric - plate girders and trusses

UNIT V :Geotechnical Engineering

Properties of soils - soil classification –Three phase system and inter-relationships - 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 – earth pressure theories - 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.

UNIT VI :Hydraulics and Water Resources Engineering

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 - hydraulic modeling. Applications of Momentum equation, Kinematics of flow Hydrologic cycle - Rainfall - draw down – recuperation test – well yield. Water resources of Tamil Nadu – Water policy – flood control – drought management

Duty, delta, Estimation of evapo-transpiration - design of lined and unlined canals, alluvial and non-alluvial canals - waterways – Irrigation methods. Irrigation efficiencies. Water quality and standards- tank irrigation- rehabilitation of irrigation works- ground water well irrigation- conjunctive- Cross Drainage works.

UNIT VII :Water Supply and Environmental Engineering

Sources of water and their characteristics - Surface and Groundwater - Development and selection of source -Water quality – Characteristics - 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 - Sources and effects of air pollution, monitoring and control of air pollution - Sources and impacts of noise pollution- measurement of noise and control of noise pollution.

UNIT VIII :Transportation Engineering

Different modes of transport and their characteristics Highway planning in India - Road classification - Geometric design of highways. – Traffic surveys- Traffic signs, road markings and traffic signals. Design and construction of bituminous and concrete roads - Drainage of roads - Maintenance of roads.

Railways-Components of permanent way - geometric design - Points & crossings – Track junctions- Signalling Interlocking and train control. Airport planning Components of Airport - Site selection - Airport zoning- Runways – Harbours & Ports - types - components & their functions - Layout of a harbour - Docks - Breakwaters.

UNIT IX: Town Planning and Urban Engineering

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 – preparation of regional and development plans/master plannational planning development controls - building bye – laws – zoning – town and country planning acts – land acquisition acts – principles of rural development– integral rural development programmes – rural housing – use of low cost materials.

UNIT X :Concrete Technology and Construction Management

Types of concrete – testing of fresh and hardened concrete – mix design – quality control – special concreting techniques - concreting equipments – centering and shuttering – slip and moving forms – construction joints.

Construction management – elements and principles of AOA and AON - Construction planning and scheduling – preparation of different types of schedules – methods of scheduling – CPM – PERT – updating of schedules – time-cost trade off – resource planning- Bar Chart- Inventory Management- Construction Contracts.

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

GENERAL STUDIES (DEGREE STANDARD)

CODE NO.003

UNIT-I : GENERAL SCIENCE

- (i) Scientific Knowledge and Scientific temper - Power of Reasoning - Rote Learning Vs Conceptual Learning - Science as a tool to understand the past, present and future.
- (ii) Nature of Universe - General Scientific Laws – Mechanics - Properties of Matter, Force, Motion and Energy - Everyday application of the basic principles of Mechanics, Electricity and Magnetism, Light, Sound, Heat, Nuclear Physics, Laser, Electronics and Communications.
- (iii) Elements and Compounds, Acids, Bases, Salts, Petroleum Products, Fertilizers, Pesticides.
- (iv) Main concepts of Life Science, Classification of Living Organisms, Evolution, Genetics, Physiology, Nutrition, Health and Hygiene, Human diseases.
- (v) Environment and Ecology.

UNIT-II: CURRENT EVENTS

- (i) History - Latest diary of events - National symbols - Profile of States - Eminent personalities and places in news – Sports - Books and authors.
- (ii) Polity - Political parties and political system in India - Public awareness and General administration - Welfare oriented Government schemes and their utility, Problems in Public Delivery Systems.
- (iii) Geography - Geographical landmarks.
- (iv) Economics - Current socio - economic issues.
- (v) Science - Latest inventions in Science and Technology.

UNIT- III: GEOGRAPHY OF INDIA

- (i) Location – Physical features - Monsoon, rainfall, weather and climate - Water resources - Rivers in India - Soil, minerals and natural resources - Forest and wildlife - Agricultural pattern.
- (ii) Transport - Communication.
- (iii) Social geography – Population density and distribution - Racial, linguistic groups and major tribes.
- (iv) Natural calamity – Disaster Management – Environmental pollution: Reasons and preventive measures – Climate change – Green energy.

UNIT – IV: HISTORY AND CULTURE OF INDIA

- (i) Indus valley civilization - Guptas, Delhi Sultans, Mughals and Marathas - Age of Vijayanagaram and Bahmani Kingdoms - South Indian history.
- (ii) Change and Continuity in the Socio - Cultural History of India.
- (iii) Characteristics of Indian culture, Unity in diversity – Race, language, custom.
- (iv) India as a Secular State, Social Harmony.

UNIT-V: INDIAN POLITY

- (i) Constitution of India - Preamble to the Constitution - Salient features of the Constitution - Union, State and Union Territory.
- (ii) Citizenship, Fundamental rights, Fundamental duties, Directive Principles of State Policy.
- (iii) Union Executive, Union legislature – State Executive, State Legislature – Local governments, Panchayat Raj.
- (iv) Spirit of Federalism: Centre - State Relationships.
- (v) Election - Judiciary in India – Rule of law.
- (vi) Corruption in public life – Anti-corruption measures – Lokpal and LokAyukta - Right to Information - Empowerment of women - Consumer protection forums, Human rights charter.

UNIT-VI: INDIAN ECONOMY

- (i) Nature of Indian economy – Five year plan models - an assessment – Planning Commission and Niti Ayog.
- (ii) Sources of revenue – Reserve Bank of India – Fiscal Policy and Monetary Policy - Finance Commission – Resource sharing between Union and State Governments - Goods and Services Tax.
- (iii) Structure of Indian Economy and Employment Generation, Land reforms and Agriculture - Application of Science and Technology in agriculture - Industrial growth - Rural welfare oriented programmes – Social problems – Population, education, health, employment, poverty.

UNIT-VII: INDIAN NATIONAL MOVEMENT

- (i) National renaissance – Early uprising against British rule - Indian National Congress - Emergence of leaders – B.R.Ambedkar, Bhagat Singh, Bharathiar, V.O.Chidambaranar, Jawaharlal Nehru, Kamarajar, Mahatma Gandhi, Maulana Abul Kalam Azad, Thanthai Periyar, Rajaji, Subash Chandra Bose and others.
- (ii) Different modes of Agitation: Growth of Satyagraha and Militant movements.
- (iii) Communalism and partition.

UNIT- VIII : History, Culture, Heritage and Socio - Political Movements in Tamil Nadu

- (i) History of Tamil Society, related Archaeological discoveries, Tamil Literature from Sangam age till contemporary times.
- (ii) Thirukkural :
 - (a) Significance as a Secular literature
 - (b) Relevance to Everyday Life
 - (c) Impact of Thirukkural on Humanity
 - (d) Thirukkural and Universal Values - Equality, Humanism, etc
 - (e) Relevance to Socio - Politico - Economic affairs
 - (f) Philosophical content in Thirukkural

- (iii) Role of Tamil Nadu in freedom struggle - Early agitations against British Rule - Role of women in freedom struggle.
- (iv) Evolution of 19th and 20th Century Socio-Political movements in Tamil Nadu - Justice Party, Growth of Rationalism - Self Respect Movement, Dravidian movement and Principles underlying both these movements, Contributions of Thanthai Periyar and Perarignar Anna.

UNIT – IX : Development Administration in Tamil Nadu

- (i) Human Development Indicators in Tamil Nadu and a comparative assessment across the Country – Impact of Social Reform movements in the Socio - Economic Development of Tamil Nadu.
- (ii) Political parties and Welfare schemes for various sections of people – Rationale behind Reservation Policy and access to Social Resources - Economic trends in Tamil Nadu – Role and impact of social welfare schemes in the Socio - economic development of Tamil Nadu.
- (iii) Social Justice and Social Harmony as the Cornerstones of Socio - Economic development.
- (iv) Education and Health systems in Tamil Nadu.
- (v) Geography of Tamil Nadu and its impact on Economic growth.
- (vi) Achievements of Tamil Nadu in various fields.
- (vii) e-governance in Tamil Nadu.

UNIT-X: APTITUDE AND MENTAL ABILITY

- (i) Simplification – Percentage - Highest Common Factor (HCF) - Lowest Common Multiple (LCM).
- (ii) Ratio and Proportion.
- (iii) Simple interest - Compound interest - Area - Volume - Time and Work.
- (iv) Logical Reasoning - Puzzles-Dice - Visual Reasoning - Alpha numeric Reasoning – Number Series.