ANNEXURE – III

[SYLLABUS FOR WRITTEN EXAMINATION]

SUBJECT PAPER : HORTICULTURE (P.G. DEGREE STANDARD)

SUBJECT CODE: 279

UNIT- I: PRINCIPLES OF HORTICULTURE

Scope and importance of horticulture - Scenario of horticulture industry in the regional, National and global economy - Area and production - Export and import - Nutritive value of horticultural crops - Horticultural therapy - Role of soil and climate on crop production – Planting system – HDP, UHDP and meadow orchard - Importance and methods of Irrigation - Water stress management - Essential and beneficial nutrients – Classification – Functions and deficiency symptoms of primary, secondary and micronutrients in horticulture crops – Fertigation - Weed management – Training and pruning – Cropping systems – Mulching - Role of growth regulators – Off season production – Physiological disorders and its remedies – Pests and diseases management strategies - Maturity indices – Harvest – Grading – Post harvest handling - Importance of protected cultivation in horticultural crops – Vegetable forcing - Hydroponics – Nutrient Film Technique - Aeroponics - Precision horticulture – Commercial horticulture – GAP – GMP - Organic horticulture and certification – Horticulture developmental agencies, programmes and commodity boards.

UNIT-II: PROPAGATION AND NURSERY TECHNIQUES OF HORTICULTURAL CROPS

Sexual propagation, principles, advantages and disadvantages – Apomixis, polyembryony, seed dormancy and methods to overcome the dormancy - Factors influencing seed germination - Protrays - Containers - Media - Growing structures – Management of fruit nursery - Asexual propagation – Principles, advantages and disadvantages – Mist chamber - Rooting of vegetatively propagated plants - Physiological, anatomical and bio chemical basis of root induction - Layering, Grafting and budding principles – Methods - Problems and measures to overcome - Stock and scion relationship – Incompatibility - Propagation through specialized plant parts, rejuvenation of senile orchards through top working, progeny orchard and bud wood bank - Hardening - Nutrient management, pest and disease management in nursery. Nursery certification-micro propagation - principles and concepts – *in vitro* clonal propagation techniques – Media - Growth hormones - Callus induction - Direct and indirect organogenesis – Synthetic seeds - Meristem culture - Embryogenesis - Micro-grafting - Callus induction and sub culturing - Hardening - Packing and transport of micro propagated plants.

UNIT - III: GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS

Important phases of growth and development – Definitions, photosynthetic productivity, leaf area index (LAI) – optimum LAI in horticultural crops. Canopy development: Different stages of growth, growth curves, growth analysis in horticultural crops. Plant bio-regulators – Auxin, gibberellin, cytokinin, ethylene, inhibitors and retardants, basic functions, biosynthesis, role in crop growth and development, propagation, flowering, fruit setting, fruit thinning, fruit development, fruit drop and fruit ripening. physiological basis of training and pruning, source and sink relationship. Seed development and maturation, seed dormancy and bud dormancy, causes and breaking methods in horticultural crops. factors affecting flowering, physiology of flowering, photoperiodism in horticultural crops. Physiology of fruit growth and development, fruit setting, ripening-study of chemical manipulations on growth and development, understanding stress impact on growth and development.

UNIT - IV: BREEDING OF HORTICULTURAL CROPS

Scope and importance of plant breeding in horticultural crops – Breeding systems and objectives – Plant genetic resources - Modes of reproduction - Mechanisms of pollination control, sterility and incompatibility – Effect of mating systems. Methods of breeding in annual vegetable crops(cross and self pollinated crops) – Approaches for crop improvement – Introduction, selection, hybridization – Pedigree breeding, bulk, single seed descent method, mass selection, recurrent and reciprocal recurrent selection, back cross breeding – Heterosis breeding – Development of F1 hybrids, synthetics, composites, mutation breeding, polyploidy breeding, breeding for quality traits – Resistance breeding for biotic and abiotic stress. Methods of breeding in fruit crops - Objectives– modes of reproduction – Approaches for crop improvement – Introduction, selection, hybridization, mutation breeding , polyploidy breeding, breeding for quality traits – Resistance breeding for biotic and abiotic stresses - Biotechnological interventions. In vitro and molecular approaches - Molecular tools for breeding – Molecular markers – Protein based and PCR based detection for genetic confirmation – *in vitro* mutation breeding - Genetic transformation methods – Vector transformation and particle bombardment – RNAi technology – Emerging concepts and applications in horticultural crops.

UNIT – V: PRODUCTION TECHNOLOGY OF FRUIT CROPS

Scope and importance - Current scenario on national and international level production and trade of fruit crops – Field gene bank and cryopreservation of fruit crops - Species - Varieties / hybrids – Climate and soil requirements and its influence on crop growth - propagation methods and nursery technologies – Rootstocks influence-planting systems including high density planting(HDP) and ultra high density planting(UHDP) – Canopy management and crop regulation - Water management – Nutrient management – Fertigation - Cropping systems – Training and pruning - Mulching – Weed management – Use of plant growth regulators - Special horticultural practices - Role of biotic and abiotic factors, limits of fruit production and their management – Nutrient deficiency and physiological disorder and its corrective measures - Maturity indices – Harvesting - Ripening – Post harvest management – Supply chain management of important fruit crops **:** Mango, Banana, Acidlime, Sweet Orange, Grapes, Papaya, Guava, Sapota, Pineapple, Jackfruit, Pomegranate, Annona, Ber, Aonla, Apple, Pear, Plum, Peach, Strawberry, Litchi, Avocado, Walnut and Almond and minor fruit crops.

UNIT - VI: PRODUCTION TECHNOLOGY OF VEGETABLE CROPS

Scope and importance of warm, cool and under exploited vegetable crops -Current scenario on national and international level of production and trade of vegetable crops - Types of vegetable farming - Commercial varieties / hybrids - Climatic and soil requirements – Seasons - Seed rate and seed treatment - Nursery management - Protray nursery - Sowing/planting - Cropping systems – Nutrient management – Fertigation – Irrigation management – Plant growth regulators - Intercultural operations, weed management – Mulching - Biotic and abiotic stresses and their management - Nutrient deficiency and physiological disorder and its corrective measures - Maturity standards – Harvesting – Post harvest management -Protected cultivation – Precision farming - Seed production techniques of vegetable crops: Tomato, Brinjal, Chilli and Capsicum (Sweet pepper), Bhendi, Leguminous Vegetables (Beans, Peas, Cluster beans - Cowpea - Dolichos bean); Bulbous vegetables (onion)**;** Tuber crops - (Potato, Tapioca, Sweet potato, Elephant footyam, Colacassia); Cucurbitaceous Vegetables (Cucumber, Bittergourd, Snakegourd, Ridgegourd, Ashgourd, Musk melon, Watermelon, Pumpkin) - Cruciferous vegetables (Cabbage, Cauliflower and Knolkhol)**;** Root vegetables (Carrot, Radish, Beetroot, Turnip) – Leafy vegetables (Spinach, Lettuce, Palak, Amaranthus) – Perennial vegetables (Drumstick, Coccinea) – Underexploited vegetables.

UNIT - VII: PRODUCTION TECHNOLOGY OF COMMERCIAL FLOWER CROPS AND LANDSCAPING

Scope and importance of floriculture industry - Loose flower production and trade – National and international status – Commercial varieties/ hybrids - Climatic and soil requirements - Field preparation – Season - Systems of planting, transplanting techniques – Precision farming techniques - Water and nutrient management, Weed management - Training and pruning, Special horticultural practices - Pinching, disbudding, use of growth regulators - Physiological disorders and remedies – Biotic and abiotic stress management – Harvest indices, harvesting techniques - Post -harvest handling and grading, pre-cooling, packing and storage, transportation and marketing. value addition - Dry flowers - Pigment extraction - Concrete and essential oil extraction of important loose flower crops – Jasmine, Scented Rose, Chrysanthemum, Tuberose, Marigold, Crossandra, Celosia, Gomphrena, Nerium.

Scope and importance of cut flowers - Production and trade - Global and National scenario - Special nursery practices, growing environment, open cultivation, protected cultivation, soil requirements, soil decontamination techniques, planting methods, influence of environmental parameters, light, temperature, moisture, humidity and CO2 on growth and flowering – Water and nutrient management, Fertigation, weed management, ratooning, training and pruning, special horticultural practices - Use of growth regulators, flower forcing and year round flowering through physiological interventions, chemical regulation, physiological disorders and remedies, environmental manipulation – Biotic and abiotic stress management – Cut flower standards and grades, harvest indices, harvesting techniques, post-harvest handling of cut Rose, cut Chrysanthemum, carnation, gerbera, anthurium, orchids, gladiolus, cut foliages and fillers.

Principles of landscape designing – Styles of gardening - Types of gardening viz., Mughal, Japanese, English, Persian, Italian, French gardening - Garden components – Plants for container growing – Indoor plants - Plants for instant gardens – Plants for spring, summer, winter and autumn - Ornamental trees and burlapping - Shrub, annuals, climbers and creepers, hedge and edge plants (foliage and flowering) - Cactus and succulent, xeriscapping - Interior scaping – Garden adornments - Principles and styles of flower arrangements – Bonsai styles and culture – Different gardening: industrial, institutional, public and private landscaping **–** Vertical garden – Roof garden – Terrace garden – Sky rise garden – Scenic gardens - Landscaping for roadways and traffic islands – Garden with water features and water conservation – Speciality garden – Dish, terrarium, bottle, miniature, bog and rock garden.

Lawn – Classification of turf grasses - Conditions for healthy turf – Soil properties, micro irrigation, nutrient management – Turf grass establishment and maintenance – Astroturf and maintenance - Overview of software for Computer Aided Design and Drafting (CADD) - AUTOCAD plants and design - AUTOCAD - File handling.

UNIT - VIII: PRODUCTION TECHNOLOGY OF SPICES AND PLANTATION CROPS

Scope and importance of spices and plantation crops - Present status - National and International trade - Climatic and soil requirements - Commercial varieties/hybrids - Season – Propagation - Sowing/planting - Seed rate and seed treatment - Nutrient and water management – Intercropping - Mixed cropping - Multitier cropping - Weed management – Mulching - Shade and canopy regulation – Nutrient deficiencies – Biotic and abiotic stress management - Harvest and post- harvest management and processing - Organic farming and certification of major spices and plantation crops - Spice crops **:** Black pepper, Cardamom, Turmeric, Ginger, Coriander, Fenugreek, Fennel, Cumin and Ajowan, Nutmeg, Clove, Cinnamon, Allspice, Tamarind, Garcinia, Garlic, Vanilla, Curry Leaf and Paprika. Plantation crops**:** Coffee, Tea, Rubber, Cashew, Coconut, Oilpalm, Palmyrah, Arecanut, Cocoa and Betelvine.

UNIT - IX: PRODUCTION TECHNOLOGY OF MEDICINAL AND AROMATIC CROPS

Scope and importance of medicinal and aromatic plants. - Production and trade – National and International scenario of herbal and perfumery industry, WTO - Export and import status, Indian system of medicine, *in situ* and *ex situ* conservation. Classification of medicinal and aromatic crops - Organic production and certification - Climatic and soil requirements - Varieties and species – Propagation -Sowing/planting - Nutrient and water management, Weed management - Biotic and abiotic stress management - Harvest index-harvesting, Post harvest handling – Drying, processing, grading, packing and storage, processing and value addition**;** Quality standards in herbal products. Production of secondary metabolites - Distillation of essential oils and quality analysis. GAP – GCP – GMP**.** Medicinal crops**:** Senna, Periwinkle, Coleus, Aswagandha, Glory Lily and Sarpagandha. *Dioscorea sp.*, *Aloe vera, Phyllanthus amarus, Andrographis paniculata* and Medicinal solanum , Isabgol, Poppy, Safed Musli*, Stevia rebaudiana* and *Mucuna pruriens*, Aromatic crops**:** Palmarosa, Lemongrass, Citronella, Vettiver, Geranium, *Artemisia, Mentha*, *Ocimum*, Eucalyptus,Rosemary, Thyme, Patchouli, Lavender, Marjoram, Oreganum.

UNIT - X: POST- HARVEST TECHNOLOGY OF HORTICULTURAL CROPS

Scope and importance – National and Global scenario of post-harvest technology in horticultural crops – Harvest indices, harvesting methods in horticultural crops – Harvesting practices for specific market requirements - Influence of pre harvest factors on post harvest quality and shelf life of horticultural crops – Factors leading to post harvest losses. Ethylene action on ripening of fruits and ethylene management – Pre-cooling - Treatments prior to transport – Chlorination, waxing, chemicals, bio-control agents and natural plant products. Storage methods viz., ventilated, refrigerated, MAS, CAS – Physical injuries and disorders during storage – Post-harvest disease and insect management. Packaging technologies - Packaging materials and transport - Principles and methods of preservation – Minimal processing of fruits and vegetables – Pre-treatment – Blanching, canning and irradiation – Value added including, encapsulated fruit flavours, nutritionally enriched / fortified products in horticultural crops - Food safety standards.

SUBJECT PAPER : HORTICULTURE (DEGREE STANDARD)

SUBJECT CODE: 278

UNIT- I: FUNDAMENTALS OF HORTICULTURE

Scope and importance – State, National and Global scenario of horticultural crops – Area and production – Import and export – Nutritive value of horticultural crops – Horticultural zones of Tamil Nadu and India – National and regional agencies involved in promotion of horticultural Industry in India (NHB, APEDA and Commodity Boards) – Classification of horticultural crops – Factors limiting horticultural crop production – Role of season – Soil and climate requirements - Physical and chemical properties of soil - Climatic factors – Light, temperature, photoperiod, relative humidity, rainfall, altitude, microclimate – Kitchen gardening -Nutrition gardening – Truck gardening – Market gardening - Vegetable forcing - Protected and precision horticulture – Hydroponics, Aeroponics – Nutrient Film Technique - Horticulture therapy.

UNIT - II: GROWTH AND DEVELOPMENT OF HORTICULTURAL CROPS

Important phases of growth and development - Bearing habits – Classification of horticultural crops based on life cycle – Annual, biennial perennial (woody and herbaceous perennials) – Fruitfulness and unfruitfulness - External and internal factors associated with unfruitfulness – Physiology of flowering, fruit set, ripening and senescence – Fruitdrop - Causes and control measures - Plant growth regulators – Functions and role in horticultural crops – Bud dormancy – Dormancy breaking – Parthenocarpy – Parthenogenesis – Polyembryony – Stenospermocarpy – Vivipary - Apomixis.

UNIT - III: PROPAGATION OF HORTICULTURAL CROPS

Propagation – Definition – Establishment of nursery – Site selection - Tools and implements propagation structures - Mist chamber, phytotron - Humidifiers – Greenhouse – Glasshouse – Polyhouse - Shade net, glass house, poly tunnels, cold frames and hotbeds, pit nursery - Media and containers – Soil sterilization - Sexual propagation – Merits and demerits – Crops propagated through seeds - Seed viability, longevity, dormancy, germination – Pre-sowing treatment – stratification, scarification, seed priming, seedling vigour – Raised seed bed and pro-tray nursery – Asexual propagation – Merits and demerits – Methods of vegetative propagation – Identification of plus trees – Mother block, scion bank – Clonal nursery – Cutting – Layering – Grafting, budding types – Anatomical and physiological basis of grafting – Stock scion relationship, graft compatibility -Budwood selection and certification – Propagation through specialized plant parts (bulbs, tubers, offsets, runners, suckers, slip, crown, rhizomes, corms) – Quality management and nursery certification – Micro propagation – Application – infrastructure requirements – Types of media – Stages of micro propagation –Micro grafting – *in vitro* propagation of important horticultural crops.

UNIT - IV: MANAGEMENT TECHNIQUES FOR HORTICULTURAL CROPS

Planning – Layout and management of orchards – Fencing – Wind breaks and shelter beds – Spacing – Planting system – Physical and chemical properties – Soil reaction – acid, saline and alkaline soils – Soil fertility - Essential elements –Functions - Organic manures and inorganic fertilizers, bio-fertilizers, vermi-composting - Applications and management – Nutrient deficiencies and corrective measures - Physiological disorders and remedies - Irrigation – Critical stages of water requirement – Effect of water stress on crop yield – Anti-transpirants – management of irrigation water quality - Conventional and micro irrigation – Fertigation - Mulching – Sod culture – Weed management – Application growth regulators –Training and pruning principles and methods - Rejuvenation of senile and old orchards – Cropping systems - Cover cropping - Multitier cropping –Intercropping – Special horticultural techniques (pinching, thinning, disbudding, blanching, smudging, notching, ringing) - Principles of organic horticulture – GAP and GMP.

UNIT - V: PRODUCTION TECHNOLOGY OF FRUIT CROPS

Scope and importance of fruit crops - Composition and uses - Origin and distribution – Species – Season - Climate and soil requirement – Varieties and hybrids – Propagation techniques - Planting systems and planting density –Including High density planting (HDP) and ultra high-density planting (UHDP) –spacing – Water and nutrient management – Fertigation - Weed management - Canopy management - Training and pruning – Intercultural practices - Off season production - Special horticultural techniques – Use of plant growth regulators – Maturity indices - Harvest and yield – Nutrient deficiencies and physiological disorders and its corrective measures and management of important pest and diseases of important fruit crops **-** Mango, Banana, Acidlime, Sweet orange, Mandarin, Grapes, Papaya, Guava, Sapota, Pineapple, Jackfruit, Pomegranate, Aonla, Annona, Ber, Apple, Pear, Plum, Peach, Strawberry, Litchi, Avocado, Walnut and Almond and minor tropical, arid and temperate fruit crops.

UNIT- VI: PRODUCTION TECHNOLOGY OF VEGETABLE CROPS

Scope and importance of vegetable crops - Composition and uses - Origin and distribution – Area and production - Soil and climatic requirements - Varieties and hybrids – Propagation methods - Seed rate – Sowing and nursery practises – Containerized seedling production - Season – Planting methods – Water, nutrient and weed management – Fertigation – Training for vegetables – Intercultural practices - Maturity indices – Harvest and yield – Nutrient deficiencies and physiological disorder and its corrective measures of important vegetable crops**:** Tomato, Brinjal, Chilli and

Capsicum (Sweet Pepper), Bhendi, Leguminous vegetables (Beans, Peas, Cluster beans, Cowpea, Dolichos bean)**;** Bulbous vegetables (Onion, Garlic)**;** Tuber crops - (Potato, Tapioca, Sweet potato, Elephant footyam, Colacassia)**;** Cucurbitaceous vegetables (Cucumber, Bittergourd, Snakegourd, Ridgegourd, Ashgourd, Muskmelon, Watermelon, Pumpkin) - Cruciferous vegetables (Cabbage, Cauliflower and Knolkhol)**;** Root vegetables (Carrot, Radish, Bee root, Turnip) - Leafy vegetables (Spinach, Lettuce, Palak, Amaranthus) – Perennial vegetables (Drumstick, Coccinea) – Protected cultivation of vegetable crops -Precision farming of important vegetable crops and seed production.

UNIT – VII: FLORICULTURE & LANDSCAPE GARDENING

Scope and importance of flower crops production - Uses - Origin and distribution – Area and production - Climate and soil requirement - Species and varieties - Propagation, season - Spacing and planting methods - Irrigation, nutrient management – Fertigation – Weed management - Training and pruning – Intercultural operations – Special horticultural techniques – Growth regulators – Off season production - Maturity indices – Harvest and yield and management of important pest and diseases for important loose flower crops**:** Jasmine, Rose, Tuberose, Chrysanthemum, Marigold, Nerium and Crossandra – Cut flowers - Rose, Carnation, Anthurium, Orchid and Gerbera – Cutfoliage and fillers. Principles of Landscape designing – Styles of gardening - Types of gardening *viz*.,Hindu, English, Mughal, Japanese, Persian, Italian, French gardening -Garden components –Trees foliage flowering and avenue trees – Burlapping –Shrubs – Flowering annuals creepers and Climbers - Cacti and succulents -Lawn – Astroturf - Types of grasses – Layout, planting and maintenance of lawn – Hedge and edge plants - Indoor plants and interior scaping – Garden adornments - Principles and styles of flower arrangements – Bonsai styles and culture – Industrial, Institutional, Public and Private landscaping – Special types of gardening – Bog garden, dish, terrarium, bottle, roof, vertical gardening and greenwall.

UNIT – VIII: PRODUCTION TECHNOLOGY OF SPICES AND PLANTATION CROPS

Scope and Importance of spices and plantation crops - Composition and uses - Origin and distribution – Area and production – Climate and soil requirements - Species and varieties - Season, seed rate / propagation methods –Spacing - Planting system – High density planting – Irrigation and nutrient management – Fertigation and weed management – Training and pruning – Cropping systems – Multitier cropping – Cover cropping – Inter cropping - Growth regulators – Mulching - Shade and canopy regulation – Maturity indices, harvest, yield and management of important pest and diseases and processing m e t h o d s of important plantation and spice crops**:** Major, seed, tree, herbal spices and minor spices - Black Pepper, Cardamom, Turmeric, Ginger, Curry leaf, Clove, Nutmeg, Cinnamon, Coriander, Fenugreek, Cumin, Tamarind, all spice and vanilla

– Plantation crops - Tea, Coffee, Rubber, Cocoa, Coconut, Oilpalm, Cashew, Palmyrah, Arecanut.

UNIT – IX: PRODUCTION TECHNOLOGY OF MEDICINAL AND AROMATIC CROPS

Scope and importance of medicinal and aromatic crops - Composition and uses – Origin and distribution – Area and production - *Ex situ* and *insitu* conservation – Classification of medicinal and aromatic crops – Constraints in medicinal plant cultivation - Climate and soil – Varieties – Propagation - Nursery practices - Planting methods - Cropping systems – Manures & fertilizers – Irrigation – Intercultural operations – Harvest indices – Harvest & yield and management of important pest and diseases - Production systems – Contract farming – GAP – GCP – GMP - Organic production and certification – Classification and distillation methods of essential oils – Secondary metabolite production - Value addition - Organisational support for promotion of medicinal and aromatic crops - Medicinal crops**:** Senna, Periwinkle, Glory lily, Aswagandha, Medicinal coleus and Solanum, Sweet flag, Aloe, Isabgol, *Phyllanthus*, *Stevia*, Opium poppy. Aromatic crops**:** Lemon grass, Citronella, Vetiver, Ocimum, Davana, Mint, Geranium, Patchouli and Eucalyptus.

UNIT - X: POST- HARVEST TECHNOLOGY OF HORTICULTURAL CROPS

Importance of post-harvest handling in horticultural crops – Maturity indices – Post-harvest handling methods – Washing – Grading - Waxing – Grades and standards – Methods of packing - Types of containers and their advantages and disadvantages – Storage - Principles and methods of refrigerated and gas storage - Storage methods - Pre-cooling - Controlled atmospheric storage, Modified atmospheric storage – Low pressure storage and cold chain concept - Importance and scope of processing industry in India, general principles of fruit and vegetable preservation like canning, dehydration, freezing, fermentation - Use of chemicals(preservatives) and irradiation – GMP – Food safety and quality control.

SYLLABUS FOR WRITTEN EXAMINATION
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.

ANNEXURE - IV

TENTATIVE TIMELINE FOR THE RECRUITMENT PROCESS

Sl. No.	Process	Timeline
1.	Publication of Results	MAY 2021
2.	Certificate upload for C.V.	JUNE 2021
3.	Certificate Verification	JULY 2021
4.	Date of Oral Test	AUGUST 2021
5.	Counselling	AUGUST 2021

Secretary