

Combined Civil Services (Main) Examination (Group IA and Group VI Services)
Posts: Assistant Conservator of Forests and Forest Apprentice

Code:499

தாள் I - கட்டாயத் தமிழ் மொழி தகுதித் தேர்வு

(பத்தாம் வகுப்புத் தரம் - 100 மதிப்பெண்கள் - விரிந்துரைக்கும் வகை)

தேர்வுத் திட்டம்

மொழிபெயர்த்தல்: தமிழிலிருந்து ஆங்கிலத்துக்கு மொழிபெயர்த்தல், ஆங்கிலத்திலிருந்து தமிழுக்கு மொழிபெயர்த்தல்; சுருக்கி வரைதல்; பொருள் உணர்திறன்; சுருக்கக் குறிப்பிலிருந்து விரிவாக்கம் செய்தல்; திருக்குறள் தொடர்பான கட்டுரை வரைதல்; கடிதம் வரைதல் (அலுவல் சார்ந்தது); தமிழ் மொழி அறிவு.

பாடத்திட்டம்

தற்கால நிகழ்வுகள்; சமுதாயப் பிரச்சனைகள்; சுற்றுச்சூழல் தொடர்பான தலைப்புகள்; இந்தியப் பொருளாதரம் தொடர்பான தலைப்புகள்; அறிவியலும் தொழில்நுட்பமும்; கலையும் பண்பாடும்; பகுத்தறிவு இயக்கங்கள் - திராவிட இயக்கம், சுயமரியாதை இயக்கம்; இக்காலத் தமிழ்மொழி - கணிணித் தமிழ், வழக்கு மன்றத் தமிழ், அலுவலக மொழியாகத் தமிழ், புதிய வகைமைகள்; தமிழ்நாட்டின் சமூகப் பொருளாதார முன்னேற்றம் மற்றும் தமிழ்நாட்டு அரசின் நலத்திட்டங்கள் (பெண்கள், விவசாயிகள்...), சமூக நலத்திட்டங்களை நடைமுறைப்படுத்துதலில் சமூக சீர்திருத்த இயக்கங்களின் பங்கு - இட ஒதுக்கீடும் அதன் பயன்களும் - தமிழ்நாட்டின் சமூகப் பொருளாதார வளர்ச்சியில் சமூக நீதி மற்றும் சமூக ஒற்றுமையின் பங்கு; சொந்த வாக்கியத்தில் அமைத்து எழுதுக, பொருள் வேறுபாடு அறிதல்; பிரித்தெழுதுக, எதிர்ச்சொல், எதிர்மறை வாக்கியம், பிழை நீக்கி எழுதுக; திருக்குறளிலிருந்து தலைப்புகள் தொடர்பாக கட்டுரை எழுதுதல்: மதச் சார்பற்ற தனித் தன்மையுள்ள இலக்கியம், அன்றாட வாழ்வியலோடு தொடர்புத் தன்மை, மானுடத்தின் மீதான திருக்குறளின் தாக்கம், திருக்குறளும் மாறாத விழுமியங்களும் - சமத்துவம், மனிதநேயம் முதலானவை; சமூக அரசியல் பொருளாதார நிகழ்வுகளில் திருக்குறளின் பொருத்தப்பாடு, திருக்குறளில் தத்துவக் கோட்பாடுகள்.

Paper II – General Studies I (Degree Standard – 250 Marks)

Unit I: Modern History of India with specific reference to Tamil Nadu (70 Marks)

Advent of Europeans: The Portuguese, the Dutch, the English, the Danish and the French; Expansion of British rule: Carnatic Wars; Early uprisings against British Rule: Revolt of Poligars, South Indian Rebellion, Vellore Mutiny, Indian National Movements - Moderates, Extremists and Terrorist Movements – Gandhian Era; Early stage of Freedom movement in Tamil Nadu – First voice for freedom struggle from Tamil Nadu – Protests by Pulithevar, Veerapandya Kattabomman, Dheeran Chinnamalai, Velunachiar, Kuyili and others; Role of Tamil Nadu in freedom struggle – V.O.Chidambaram, Bharathiyar, V.V. Subramanian, Vanchinathan, Subramania Siva, T.S.S Rajan, Rajaji, Sathyamoorthy, Kamaraj, Rukmani Lakshmi Pathi, Ambujammal and others; Types of freedom struggle – Sacrifices – Magazines – Literature – Plays/Drama – Songs – Films etc.; Contribution of women in the freedom struggle and social work: Dr Muthulakshmi Ammaiyar, Muvalur Ramamirtham, Cuddalore Anjalai Ammal, Thillaiyadi Valliammai, and others; Impact of British Rule: Christian Missionaries, Development of Education, Judiciary, Local Self Governance System, Police, Transport and Communication Disappearance of Indigenous Industries - Spread of Western Culture; Origin and Growth of “Social – Justice” ideology, Socio- Religious Movements, Political Parties and Achievements; Archaeological excavation evidence – Arikamedu, Adichanallur, Keezhadi.

Unit II: Tamil Nadu Economy and Social Issues in Tamil Nadu (80 Marks)

Tamil Nadu Economy – Features – State Budget: Major revenue and expenditure – State Income types – State's Economic growth: Agriculture - Industry – Service Sector; Agriculture: Major crops – Food grains – Cash crops – Types of farming – Organic farming – Inorganic farming – Contract farming – Farmers Producers Organisation (FPO) – Agricultural Marketing – Issues of Marketing – Online Marketing – Agriculture Budgeting in Tamil Nadu – Features; Education: Illiteracy - Gross Enrolment Ratio (GER) in schools and colleges – Measure and recent data - Student welfare schemes – Recent schemes for education - Linkage between education and social development; Poverty and Unemployment: Unemployment issues in Tamil Nadu - State Government poverty alleviation schemes and employment generation schemes; Labour migration; Population growth rate – Sex ratio – Density of population – Causes for population growth - Population control programmes – Family planning and its achievements; Child Labour issues; Health: Vital Statistics – Recent health schemes; Women Empowerment: Domestic violence – Dowry problems – Sexual assault – Laws and awareness programmes - Women welfare schemes - Self Help Groups; Marginalised Groups: Problems – Scheduled Castes and Scheduled Tribes

- Elderly – People with disability – Transgender – Religious minorities – State Government welfare programmes to marginalised groups; Current Affairs.

Unit III: Constitution, Polity and Governance in India with specific reference to Tamil Nadu (100 Marks)

Constitution of India: Preamble and Philosophical features – Salient features and Sources – Union, States and Union Territories - Citizenship - Fundamental Rights, Fundamental Duties, Directive Principles of State Policy; Union Executive: President, Vice-President, Prime Minister and Council of Ministers – Cabinet – Parliament (Lok Sabha and Rajya Sabha) – Parliament Committees – Major Constitutional Amendments; State Government: Chief Minister and Council of Ministers – Tamil Nadu Legislative Assembly: Structure, Powers and Functions; Local Governments: Three-tier system - 73rd and 74th Constitutional Amendments - Tamil Nadu Panchayat Act 1994 – Grama Sabha – Working of PRIs in Tamil Nadu – District Collector's role in Development Administration; Dynamics of Indian Federalism: Centre-State relations: Administrative, Legislative, Financial – Issues and Challenges; Judiciary in India: Supreme Court, High Courts, District Courts – Subordinate Courts (Structure and Functions) – Judicial Review - Judicial Activism – Public Interest Litigation; Electoral System in India – Election Commission (Constitutional Provisions, Composition, powers and functions); Party system in India: Regional and National political parties in India and Tamil Nadu; Integrity in Indian Polity: Corruption in Politics – Anti-Corruption measures: Lokpal and Lok Ayukta – Central Vigilance Commission, Comptroller and Auditor General of India - Central Bureau of Investigation – Enforcement Directorate - Right to Information – Right to Services – Consumers' Rights – Consumer Protection Act 2019 – Human Rights Act 1993 – National Human Rights Commission, State Human Rights Commission - Social Audit – Citizen's Charter; Political parties in Tamil Nadu: Regional and National Parties – Welfare schemes and measures of successive Governments in Tamil Nadu after 1947 – Reservation and Language policy in Tamil Nadu – Impact of welfare schemes and measures in the socio-economic development of Tamil Nadu; Education and Health Administrative Structure in Tamil Nadu: Evolution – Achievements of Tamil Nadu in various fields: Education, Health, Industrial, Information Technology, Agriculture, Women and Marginalised Groups; E-governance and Mobile-governance initiatives in Tamil Nadu – Public Service Delivery through e-governance. TNeGA – eService Centres; Problems in Public Service delivery in Tamil Nadu; Current Affairs.

Paper III – General Studies II (Degree Standard – 250 Marks)

Unit I: General Science (100 Marks)

Diversity in the living world, Structural Organization in plants and animals – Economic importance of invertebrates - Cell structure and functions - Mendelian principles and inheritance – human physiology - Gametogenesis and Fertilization – Origin of life – Theories of evolution – Animal behaviour – Ecology - Biotic and abiotic factors – Structure and functions of different ecosystem – Structure and functions of biomolecules – Metabolic pathways – Antigen–Antibody and types – Micro techniques – Separation techniques of biomolecules.

Plant diversity – General features and economic importance; Morphology and classification systems of Angiosperms – Herbarium Techniques; Plant tissue and Tissue system – Primary and Secondary structure of Monocot and Dicots – Microsporogenesis and Megasporogenesis; Transport in plants – Mineral nutrition – Photosynthesis and Respiration – Plant growth regulators; Vegetation analysis; Biotechnology: Principal and processed, Bio technology and its applications.

Properties of matter (Various states and thermal properties, surface tension and viscosity) –Energy – Power - Newton's laws of motion - Simple harmonic motion – Electromagnetic radiation – Absorption and Emission - Laws of reflection and refraction – Interference – Diffraction – Lenses - Prism - Basic principle and applications of X-ray and Laser - Classification of materials (conductors, semiconductors and insulators) - Diodes and transistors and their applications - Applications of communication systems - Artificial Intelligence - Properties of nucleus - Nuclear fission - Nuclear fusion - Construction, working and applications of solar cell, LED and LCD - Introduction to magnetism - Classification of magnetic materials and magnetic properties.

Periodic classification based on periodic properties and trends along periods and groups; Elements and Compounds, Acids, Bases and Salts – Oxidation and reduction. Chemical Bonding: Types of Bonds - Lattice energy - VSEPR theory – Fajan's Rule - Coordination Chemistry: Nomenclature - isomerism – Metallurgy: Occurrence, Concentration, Extraction and Refining process - Chemical Kinetics: Rate law - Rate constant - Order and molecularity of reactions – Thermodynamics - I and II law - Isothermal, Adiabatic, reversible, irreversible, and cyclic systems - Electrochemistry: Conductance in electrolytic solution - Nernst equation - IUPAC Nomenclature of Organic compounds - Hybridization and geometry of molecules - Electronic effect - Nucleophilic, Electrophilic, Addition and Elimination reactions - carbohydrates, amino acids and nucleic acids.

Unit II: Science and Technology in Development (80 Marks)

Atomic and Nuclear Physics – Applications of nuclear energy; Diodes and Transistors and their Applications; Broadcasting Technology; Electrochemical cells - Types of electrodes – Batteries - Lithium-ion Battery; Fuels: Gaseous fuels – LPG, Natural gas and water gas; Polymers: Thermoplastics and Thermosetting plastics, PVC, PET, Nylon 66, Teflon; Medicinal Chemistry: Analgesics - Paracetamol and Aspirin, Antibiotics - Penicillin and Chloromycetin; Biotechnology: Applications of Biotechnology – Plant Genetic Engineering – concepts – transgenic plants, edible vaccines, Terminator Gene technology, BT Cotton, Golden rice, Flavr Savr tomato, Social and ecological impact of genetically modified crops - Biotechnological methods for crop improvement – Application of plant tissue culture in Forestry, Horticulture - Recombinant DNA Technology – DNA cloning - DNA fingerprinting – applications of PCR and ELISA in disease diagnosis – hybridoma techniques in the production of Mono Clonal Antibodies (MCA) – Animal cell culture techniques – stem cells and its applications; Applications of GIS; Nanotechnology – Fundamentals – Applications – Nano Fertilizer, Nano Pesticides, Green Nanotechnology and Nano-farming; Advanced reproductive techniques: In-Vitro Fertilisation (IVF) – Intra-Uterine Insemination (IUI) – Intra Cytoplasmic Sperm Injection (ICSI) – Gamete Intra-Fallopian Transfer (GIFT) – cryopreservation of sperm; Components of Computer – Computer Organization and Architecture – System Software and Application Software – Data Communication Networks – Cryptography – Computer Graphics and Multimedia – Mobile Computing and Communication – Web Technology and applications – E-Commerce – Cloud Computing Architecture – IOT – Artificial Intelligence Applications – Machine learning - Cyber Security – Biometrics – Blockchain Technology; Robotics and Applications; Current Affairs.

Unit III: Geography of India, Climate Change and Disaster Management (70 Marks)

Geography: Geographical Location – Physical units – River system – Climate – Soil – Natural vegetation – Agriculture crops – Livestock – Fisheries; Irrigation – Multipurpose Projects; Minerals: iron ore, manganese, copper, bauxite, gold, silver, mica, coal, petroleum and natural Gas; Energy Resources: hydel, thermal, nuclear, wind, tidal and solar; Industries: textile, jute, sugar, cement, iron and steel, automobile and shipbuilding; Transport: road, railway, water and air; Current Affairs.

Climate change: Green house Gases – Effects – Global warming and dimming – Climate change and variability – El Nino and La Nino – Global warming potential – Radiative forcing – IPCC reports and Conference of Parties – Climate Change Future Projections – Shared Socio Economic Pathway (SSP) Scenarios; Impact of climate change on terrestrial and aquatic ecosystem – agriculture – livestock – fisheries; Climate change adaptation – Autonomous and planned – Vulnerability Assessment – Global Climate Change adaptation initiatives; Mitigation – Targets – Key international Mechanisms – Carbon sequestration – Carbon trading – Clean Development Mechanism (CDM) – Joint Implementation (JI); National initiatives – Climate resilient agriculture; Nationally Determined Concentrations (NDC) – Climate funding; Current Affairs.

Disaster Management: Disaster – Types; Natural – Floods, Drought, Cyclone, Earthquake, Land Slides, Volcanic eruption, Heat and Cold waves; Manmade – Nuclear, Chemical, Biological, Fires, Rail road air accidents; Disaster Management – Concepts; DM Frame work – NDMA, NDRF, Armed forces; Nodal agencies for disaster warning; Current Affairs.

Paper IV – General Studies III (Degree Standard – 250 Marks)

Unit I: Forestry (90 Marks)

Silviculture: Forests – Extent of Forests in India and Global States - Forest types – Forest classification – Role of Forest – Factors of locality - Silviculture concepts – Regeneration – Propagation techniques – Silvicultural systems.

Agroforestry and Social forestry: Agroforestry – Classification – Agroforestry systems – Social forestry and Urban forestry – Objectives, Scope and necessity – Choice of Species – Joint Forest Management (JFM)

Forest Mensuration and Management: Forest mensuration – Volume estimation – Forest inventory – Techniques and methods – Forest management – Objectives and principles – Forest organisation – Sustainable Forest Management – Sustainable yield – Rotation – Normal forest – growth stock determination – GIS for forest management and modelling - Working plan.

Surveying and Forest Engineering and Forest soils: Forest Soils: classification - Soil formation, properties - Forest surveying – Methods of surveying, maps and map reading – Forest engineering – Building materials and construction – Roads and Bridges; design and construction of bridges, culverts and check dams - Soil conservation – Soil erosion – Reclamation of forest soils – Role of forests in soils - water conservation techniques – Watershed management.

Tree Improvement and Seed Technology: Tree improvement concepts and techniques - provenance,

seed source, exotics; quantitative aspects of forest tree improvement, seed orchards, progeny tests in tree improvement - Genetic testing programming, selection and breeding for desirable traits - Genetic base - In situ and ex-situ conservation – Cost benefit ratio - economic evaluation.

Forest Resources and Utilization: Extraction of timber – Conversion methods – Transportation of timber – Grading, storage and sales of timber – Ergonomics and reduce impact logging (RIL) – Wood products – Wood composites – Non-timber forest products (NTFP) – Collection, processing and storage of NTFPs – marketing and certification of wood and non-timber forest products – wood seasoning and preservation – Natural and seasoning defects.

Forest Protection: Forest protection – Injuries caused by various agencies – Forest fire – Fire prevention and control – Alien or invasive weeds and their management – Forest encroachments and grazing.

Forest Economics, Policies and legislations: Fundamental principles of Forest economics – cost-benefit analysis – NPV, IRR analysis – demand and supply estimation – Forest valuation – National Forest Policy of 1894, 1952 and 1988 – National and International forest organizations and Institutions – Laws and Policies related to Forest and Wildlife Conservation.

Unit II: Environment (80 Marks)

Ecology: Levels and concepts of ecological organization: Types of Ecology – Autecology and Synecology; Ecosystem Structure and Functions – Primary, Gross, Net Productivity - Food Chain – Food Web – Ecological Pyramid – Biotic Interactions – Ecological Adaptations of Plants and Animals; Ecological Succession – Types and Stages; Biogeochemical cycles – Carbon, Nitrogen, Phosphorus and Sulphur cycles.

Natural Resources and Sustainable Development: Soil, Minerals, Water resources: Availability - Over Exploitation and Environmental issues; Energy – Renewable – Non-renewable – Environmental Implications of Energy use; Sustainable Developmental Goals – Targets and Indicators.

Environmental Pollution: Environmental segments – Atmosphere – Lithosphere – Hydrosphere – Biosphere; Pollution – Point and Non point pollution – Primary and secondary pollution; Air pollution: sources – pollutants – Acid rain – Oxidising and reducing smog – Ozone depletion – Criteria pollutants - VOCs, PAN, PAHs, POPs – Indoor air pollutants - Human health and air pollution – NAAQS – Air pollution control - Scrubbers – Cyclone separators – Electrostatic precipitator; Water Pollution: sources, eutrophication, nitrate pollution, Oil spills – hydrocarbon pollution - Bio-magnification – Heavy Metals: As, Fl, Cr, Hg, Cd, Pb – Control measures: settling and sedimentation – coagulation and flocculation – sand and carbon filtration – activated sludge and trickling filter process – water disinfection – Soil and Solid waste pollution – Sources – control – Bioremediation.

Environmental Management and Policy Frameworks: Environmental Impact Assessment Steps; Environmental audit; Life cycle analysis; Circular Economy; Ecolabelling; Environmental laws and Rules; Standards - drinking water quality (BIS), CPCB limits - treated water and air; National Green Tribunal; International efforts – Stockholm conference 1972, Rio Summit 1992, UNCCD, Vienna Convention, Montreal protocol, Basel Convention, Rotterdam Convention, Stockholm Convention, UNFCCC, Kyoto protocol.

Unit III: Biodiversity Conservation and Wildlife Management (80 Marks)

Biodiversity Conservation: Genetic diversity, Species diversity, Ecosystem diversity and their conservation: Structural and functional aspects - Bio-geographic classification of India -Conservation biology - Current practices in conservation.

Values of Biodiversity: Consumptive, productive use, social, ethical, aesthetic and option values - Utilization values - Biodiversity and ecosystem functioning - Biodiversity at global, national and local levels - Biodiversity hotspots.

Threats to Biodiversity: Habitat loss and fragmentation, pollution, species introduction, global climate change, over exploitation, poaching of wildlife - Rare species – Extinction - Ecosystem degradation, over exploitation - Invasive species - Endangered and endemic species of India.

Biodiversity conservation strategies: In-situ and ex-situ conservation – Strategies for in situ conservation - Protected areas - Strategies for ex situ conservation.

Organisation and Policies of Biodiversity: Techniques of species reintroduction and restoration of the degraded habitat - Biodiversity policy and legislation - Status of biodiversity conservation in India - Conservation Practices in India and World - Organizations involved in resource conservation IUCN, WWF, UNEP, UNESCO, Biodiversity International, IPGRI, FAO, BSI, ZSI.

Marine Biodiversity: Major divisions of marine environment; Primary and secondary productivity: phyto and zoo plankton; Community ecology: Intertidal, pelagic and deep sea; animal associations; migrations and adaptations; marine protected areas; Marine plants: mangroves, sea grass and seaweeds; Marine fauna: marine reptiles, birds, and mammals; keystone species - Coastal Regulation Zone (CRZ); Coastal Zone Management (CZM); law of the sea: Territorial sea, Contiguous Zone, Exclusive Economic Zone (EEZ); Continental shelf, High seas, Deep sea bed and Area; scheduled marine organisms; trans-

boundary fishing conflicts - Marine pollution: Heavy metal, pesticides, oil spills, micro plastics; fish kill phenomena; bioremediations; bio-indicators; tsunami; sea level rise - Mangrove restoration and afforestation; coral, sea grass conservation and transplantation; coral bleaching; seaweed culture.

Introduction to Wildlife Management: History of wildlife management and conservation in India - Zoogeographic regions, Major biomes of the world. Biogeographic zones of India.

Habitats and Status of Wildlife: Habitat requirements of animals - Red Data Book and red listing, IUCN revised red list categories – Extinct, Extinct in the wild, Vulnerable, Near Threatened and Least concerned - Management of protected areas – Wildlife management plan – Role of Remote Sensing and GIS in Wildlife management

Wildlife Management in Captivity: Zoos and safari parks - Captive breeding for conservation; Central Zoo Authority of India - Wildlife (Protection) Act, 1972 – amendments, schedules, CZA, NTCA - Special projects for wildlife conservation - Introduction and reintroduction of species -Wildlife corridors - MAB, CITES, TRAFFIC; NGOs - WWF, IUCN. Wildlife Damage - Appraisal, Control and Management.

Human Wildlife Conflict: Reasons, Prevention and Management

Health and Nutrition: Healthcare, Disease Management and Nutrition in Wild Animals – Major protected areas of India – Wildlife education.