

प्रदेश लोक सेवा आयोग
कोशी प्रदेश, विराटनगर, नेपाल

प्रदेश निजामती सेवा तथा स्थानीय सरकारी सेवा अन्तर्गतका प्राविधिक तर्फ वन सेवा, जनरल फरेष्ट्री, फरेष्ट रिसर्च, स्वायल एण्ड वाटर कन्जरभेसन तथा वाईल्डलाईफ कन्जरभेसन समूह, सातौँ तहका पदको खुला, अन्तर स्थानीय तह तथा अन्तर तह प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पाठ्यक्रमलाई निम्नानुसार विभाजन गरिएको छ :

परीक्षाको चरण	परीक्षाको किसिम	पूर्णाङ्क
प्रथम	लिखित परीक्षा	२००
अन्तिम	सामूहिक परीक्षण र अन्तर्वार्ता	४०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण (First Phase)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या X अङ्क	समय
प्रथम	सामान्य विषय	१००	४०	वस्तुगत: बहुवैकल्पिक प्रश्न (MCQs)	१०० प्रश्न X १ अङ्क	१ घण्टा ३० मिनेट
द्वितीय	सेवा सम्बन्धी विषय	१००	४०	विषयगत (Subjective)	लामो उत्तरात्मक ८ प्रश्न X १० = ८० छोटो उत्तरात्मक ४ प्रश्न X ५ = २०	३ घण्टा

३. अन्तिम चरण:- सामूहिक परीक्षण र अन्तर्वार्ता (Group Test & Interview)

विषय	पूर्णाङ्क	परीक्षण प्रणाली	समय
सामूहिक परीक्षण (Group Test)	१०	सामूहिक छलफल (Group Discussion)	३० मिनेट
व्यक्तिगत अन्तर्वार्ता (Individual Interview)	३०	मौखिक (Oral)	-

द्रष्टव्य:-

- यो पाठ्यक्रम योजनालाई प्रथम चरण (लिखित परीक्षा) तथा अन्तिम चरण (सामूहिक परीक्षण र अन्तर्वार्ता) गरी दुई भागमा विभाजन गरिएको छ।
- प्रश्न पत्र अंग्रेजी वा नेपाली भाषामा हुनेछ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कटौत गरिने छ। तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कटौत पनि गरिने छैन।
- परीक्षा हलमा मोबाइल फोन, स्मार्ट वाच, हेडफोन वा यस्तै प्रकारका विद्युतीय उपकरण, पुस्तक, नोटबुक, झोला लगायतका वस्तुहरू लैजान पाइने छैन।

६. विषयगत प्रश्नका लागि तोकिएका अङ्कका हकमा एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुईभन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्नअन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिनेछ।
७. परीक्षामा सोधिने प्रश्न संख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिइए अनुसार हुनेछ।
८. द्वितीय पत्र (विषयगत प्रश्न हुने पत्र) का हकमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको उत्तर पुस्तिकामा लेख्नु पर्नेछ।
९. प्रथम र द्वितीय पत्रका पाठ्यक्रमका एकाईहरूबाट सोधिने प्रश्नहरूको अङ्क भार र संख्या देहाय अनुसार हुनेछः

प्रथम पत्रका एकाई	१	२	३	४	५	६	७	८	९	१०	११	१२	जम्मा
प्रश्न संख्या	२५	२५	५	५	५	५	५	५	५	५	५	५	१००
द्वितीय पत्रका खण्ड	A			B			C			D			
प्रश्न संख्या र अंक भार	२*१०=२० १*५=५			२*१०=२० १*५=५			२*१०=२० १*५=५			२*१०=२० १*५=५			८*१०=८० ४*५=२०

१०. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भइ हटाइएका वा थप गरी संशोधन भएका) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
११. प्रथम चरणको लिखित परीक्षामा छनौट भएका उम्मेदवारहरूलाई मात्र अन्तिम चरणको सामूहिक परीक्षण र अन्तर्वार्तामा सम्मिलित गराइने छ।
१२. प्रथम चरणको लिखित परीक्षा र अन्तिम चरणको सामूहिक परीक्षण र अन्तर्वार्ताको कूल अङ्क योगका आधारमा अन्तिम परीक्षाफल प्रकाशित गरिनेछ।
१३. पाठ्यक्रम लागू हुने मिति:- २०८०/०२/२६

प्रदेश लोक सेवा आयोग,

कोशी प्रदेश, विराटनगर

प्रदेश निजामती सेवा तथा स्थानीय सरकारी सेवा अन्तर्गतका प्राविधिक तर्फ वन सेवा, जनरल फरेष्ट्री, फरेष्ट रिसर्च, स्वायत्त एण्ड वाटर कन्जरभेसन तथा वाईल्डलाईफ कन्जरभेसन समूह, सातौँ तहका पदको खुला, अन्तर स्थानीय तह तथा अन्तर तह प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

प्रथम पत्र (Paper I): सामान्य विषय (General Subject)

1. General Awareness and Contemporary Issues

- 1.1 Physical, socio-cultural and economic geography and demography of Nepal; special attention to Koshi Province
- 1.2 Major natural resources of Nepal; special attention to Koshi Province
- 1.3 Geographical/ethnic diversity, climatic conditions, and livelihood & lifestyle of people of Nepal and special attention to Koshi Province
- 1.4 Current periodical plan of Nepal and that of Koshi Province
- 1.5 Information on sustainable development, environment, pollution, climate change, biodiversity, science and technology
- 1.6 Nepal's international affairs and general information on the UNO, SAARC, UNESCO and BIMSTEC
- 1.7 Governance system and Government (Federal, Provincial and Local)
- 1.8 General knowledge on Civil service act and regulation (Federal, Provincial and Local)
- 1.9 Functional scope of Public Services and Citizen Charter
- 1.10 Corruption control, ethics and morality
- 1.11 Concept, objective and importance of public policy
- 1.12 Fundamentals of Organization and Management System: planning, organizing, directing, controlling, coordinating, decision making, motivation, leadership
- 1.13 Planning, monitoring and evaluation; Government budgeting and accounting system
- 1.14 General information on Public Procurement
- 1.15 General information on government planning, budgeting and accounting
- 1.16 Province Good Governance (Management and Operation) Act, 2076 and regulation, 2079
- 1.17 Province Financial Procedure and Fiscal Accountability Act, 2078

2. Forest Service-related General Subjects

- 2.1 The Constitution of Nepal: Policies of State about Natural resources, & Schedule 5 to 9 exclusive and concurrent list of powers (Federal, Province, Local) related to forest and other natural resources
- 2.2 Current Forestry Sector Policy, Strategy, Acts and Regulations in Federal level and Koshi Province, and salient features of civil service act and regulation of Koshi Province
- 2.3 Interrelationship between the three levels of governments (Federal, Provincial, Local) of Nepal and communication and coordination mechanism between them
- 2.4 Local Government Operation Act 2074 and its provision on natural resources conservation and utilization
- 2.5 Public procurement management and application of relevant laws
- 2.6 Major objectives and policies of current National Five-Year Plan of Nepal and Koshi Province Five Year Plan
- 2.7 Sustainable Development Goals 2015-2030 and their target and indicators for the forestry sector in Koshi Province, United Nations Strategic Plan for Forests 2030 and their Global Forest Goals, Urban forestry
- 2.8 Present forestry sector organization structure of Koshi Province government and need for revision and reform

- 2.9 Priority and programs of Koshi Province government, Province pride and game changer projects
- 2.10 Gender and social inclusion, gender sensitivity, equality, non-discrimination and gender-based violence
- 2.11 Natural hazards and disaster risk reduction: forest fire, landslides and floods
- 2.12 Role and use of computer and information technology in database management, innovation and service delivery
- 2.13 Roles and responsibilities of government officials in different levels of election carried out by the Election Commission of Nepal.
- 2.14 People's participation in environment and development - civil society, NGOs, CBOs, various groups
- 2.15 Office management principles and practices, human resources management, effective work force management and mobilization, good governance, professional ethics, accountability, social behavior, norms and values

3. Silviculture

- 3.1 Common silvicultural terms, locality factors as well as ecophysiology of tree growth, effect of radiation & water relationship, mineral nutrients and temperature
- 3.2 Basic concepts on land use, edaphic, hydrological, geological, topographical features in relation to biotic factors
- 3.3 Forest ecosystem concept, stand dynamics-forest succession, competition and tolerance, classification of Nepal's forest vegetation; integration of economics with silviculture
- 3.4 Forest types of Nepal, with special attention to Koshi Province
- 3.5 Types of different silvicultural systems and their application on the major forest types
- 3.6 Silvicultural practices adopted for the community-based forest management (e.g., community forest, buffer zone community forest, collaborative forest, leasehold forest, religious forest), forest conservation area, government managed forest and private forest.
- 3.7 Effects of Silvicultural systems on soil and water conservation, as well as on the management and conservation of wildlife, wildlife habitat and recreation.
- 3.8 Challenges to the application of silvicultural principles in forest management with special attention to Koshi Province
- 3.9 Principles and practices of natural and artificial regeneration, various techniques of plant propagation, plantation establishment at different sites, forest landscape restoration for sustainable development
- 3.10 Suitable and appropriate techniques for the establishment and management of nurseries
- 3.11 Procedure and methodology for identifying suitable seed plant communities, collection of quality seeds, seed test, seed processing, storage and certification
- 3.12 Silvicultural treatments (thinning, pruning, tree stand improvement, shrub land management, release operations, improvement cuttings, prescribed burning and others); silvicultural treatment impact on wood quality; relationship of silvicultural treatment with biodiversity conservation
- 3.13 General concept of forest tree breeding, tree improvement and forest genetics.
- 3.14 Silviculture of commercial tree species of Nepal with special attention to Koshi Province

4. Forest Management

- 4.1. Understanding about common forest management terms
- 4.2. Concept of natural resource management in terms of socioeconomic and environmental prospective, common resource management (Reference, Ostrom)

- 4.3. Principles of forest management; scope and object of forest management, development of forest management in Nepal
- 4.4. Basic concept on sustainability, rotation, normal forest, growth, yield, stand density, increment, growing stock; site quality evaluation and importance
- 4.5. Forest certification: types, processes, importance and practices in Nepal
- 4.6. Principles and practices of management of different types of natural and manmade forests in Koshi Province's particular regions and localities
- 4.7. Criteria and indicators of sustainable forest management and their application in Nepal
- 4.8. Principles and practices of tree and forest measurement; diameter and height measurement; volume calculation of standing trees, logs and converted timber; measurement of growing stock and yield regulation; estimation of biomass
- 4.9. Preparation, implementation and evaluation of forest operational plan and forest management plans
- 4.10. Emerging issues of forest management in Koshi Province.
- 4.11. Carbon sequestration and carbon footprint assessment, carbon offset
- 5. Forest Research, Survey and Extension**
 - 5.1. Concept and methods of experimental design (Blocking, replications, treatments, randomization)
 - 5.2. Designs used in forestry experiments- Randomized block design, Split plot design, factorial designs, Latin Square Design
 - 5.3. Statistical methods used in forestry research – statistical parameters, F-test, t- test, z-test, chi-square test, analysis of variance, covariance analysis, correlation and regression
 - 5.4. Theory and principles of tree selection, progeny and provenance trial
 - 5.5. Tools and techniques of socio-economic surveys – PRA, RRA, D&D
 - 5.6. Preparation of simple experimental protocols for forestry research
 - 5.7. Theory and skills in review of literature, field data collection, analysis, report writing and referencing
 - 5.8. Forest statistics of Nepal special attention to Koshi Province
 - 5.9. Principles and methods of forest sampling– size, intensity, unit, simple random sampling, stratified random sampling, systematic sampling etc.
 - 5.10. Principles of forest biometrics, tree and forest growth models, volume and yield tables
 - 5.11. Carbon estimation technique
 - 5.12. Principles, tools and techniques used in Remote Sensing, GIS and photo Interpretation
 - 5.13. Application of GIS in forestry and other natural resource management
 - 5.14. Use of surveying and mapping instruments and preparation of forest maps
 - 5.15. Theory and practice of National Forest Inventory and role of ground verification
 - 5.16. Basic concept of extension methods, forest extension teaching aids, extension program planning and monitoring/evaluation of forestry extension program
- 6. Soil Conservation and Watershed Management**
 - 6.1. Soil Classification types (USDA, FAO and UNESCO systems), Soil profile, physical, chemical and biological properties of soil, soil survey, soil map, interpretation of soil resource map, major soil types of Koshi Province
 - 6.2. Land use and land capability classification; Concept of hydrological cycle
 - 6.3. Types of soil erosions and their preventive and control measures
 - 6.4. Major watershed areas, rainfall and flooding status in Koshi Province
 - 6.5. Major landslide zones of Koshi Province, occurrence and impacts

- 6.6. Soil and water conservation structures - breast walls, retaining wall, check dams, conservation ponds, slope stabilization, methods of top soil cover, roadside stabilization
- 6.7. Bioengineering, soil fertility and indigenous soil fertility management practices
- 6.8. Concepts and basics of soil loss assessment and soil analysis
- 6.9. Concept and approaches to sustainable watershed management, Basin Approach
- 6.10. Identification, planning and management of micro and macro watershed areas
- 6.11. Interrelationship between forestry, agriculture, livestock and development & infrastructure activities with respect to integrated watershed management
- 6.12. Early warning and prevention from natural hazards, measuring water discharge, water quality analysis and checking water runoff and erosions
- 6.13. Developing economically and ecologically sustainable agroforestry systems for watersheds; water harvesting and its efficient use; rehabilitation of watersheds. Conservation farming and suitable tree planting techniques in watersheds. Suitable trees/shrubs and grasses for watershed for different agroclimatic regions of Koshi Province
- 6.14. Application of remote sensing and GIS in watershed management
- 6.15. Stakeholder analysis in integrated watershed management and stakeholder involvement in sustainable watershed management
- 6.16. Strength, weakness, opportunities and threats of *Chure* conservation of Koshi Province; *Chure* degradation and its implications in down stream
- 7. Planning and Management of Protected Areas and Wildlife**
 - 7.1. Concepts, approaches and evolution in Protected Area management systems, Landscape approach
 - 7.2. Status and classification of Protected Areas in Nepal (National Park, Conservation Area, Hunting reserves, Wildlife Reserve, Buffer Zone) and Major protected areas of Koshi Province
 - 7.3. Preparation and implementation of management plans for different types of Protected Areas. Conflict resolution and monitoring of Protected Areas
 - 7.4. Conservation education, motivation, communication, exhibition and public relations
 - 7.5. Management of human-wildlife conflict; issues related to cross boundary wildlife crime and trespass of wildlife organs; human-elephant conflict management in Koshi Province
 - 7.6. Wildlife census (Purpose, techniques. direct and indirect methods of population estimation. Sample and total counts, indices, encounter rates and densities); Translocation and reintroduction
 - 7.7. Geographical distribution, habitat and behavior of common and endangered wild mammals, birds, reptiles, insects and fish in Nepal, special attention to Koshi Province and Eastern Himalayas, Biogeographical assessment of Nepal
 - 7.8. Types of wildlife habitats, habitat analysis and management techniques
 - 7.9. General understanding about IUCN Red list, CITES appendices
 - 7.10. Fundamental concepts of ecotourism, importance and its impact on sociocultural and biological environment; ecotourism potentials in Koshi Province
 - 7.11. Strategy and Action Plans for the management of rare and endangered wildlife species (including Elephant, Snow leopard, Wild Water Buffalo, Pangolin, Red Panda, Pheasant, Owl, Vulture, Dolphin); Red panda conservation initiatives in *Taplejung-Ilam-Panchthar* landscape
 - 7.12. Wetland Management; Ramsar enlisted wetlands in Nepal and in Province One
 - 7.13. Role of Koshi Tappu Wildlife Reserve in conservation of birds

8. Forest Ecology, Biodiversity and Environmental Management

- 8.1. Types, attributes and productivity of ecosystem; analysis of ecosystem; restoration of ecosystem processes and characteristics; animal population restoration; nutrient cycle; ecological successions
- 8.2. Population ecology, population density, carrying capacity, forest community dynamics, forest community structure and analysis, forest productivity, ecology of forest landscapes spatial heterogeneity; Hierarchy issues in ecology
- 8.3. Principles, methods and basic strategies of biodiversity conservation; implication for biological conservation and its linkage with human society; impact of climate change in biodiversity: mitigation and adaptation measures
- 8.4. Landscape level conservation and ecosystem services; Physical/socio-economic features, ecological attributes, conservation gap, threats of Kanchenjunga Landscape (KL), Sacred Himalayan Landscape (SHL) and other proposed Landscape in Koshi Province; transboundary conservation
- 8.5. Habitat diversity (forest biodiversity, agro-biodiversity, rangeland biodiversity, wetland biodiversity, mountain biodiversity); importance, uses and conservation of biodiversity; key gaps, issues and challenges in management of biodiversity; impacts of biodiversity loss; sampling strategies for genetic diversity assessments; qualitative and quantitative assessment of biodiversity, biodiversity hotspots
- 8.6. Approaches for in-situ and ex-situ biodiversity conservation at ecosystem, species and genetic level; and major threats to biodiversity conservation in Koshi Province
- 8.7. Documentation and evaluation of forests genetic resources (FGR). Biological diversity and its significance to sustainable use. Handling and storage of FGR. Indigenous knowledge and Intellectual property rights. Quarantine laws and FGR exchange
- 8.8. Bio-safety protocol and Biodiversity registration at local level
- 8.9. Significance of *Tinjure-Milke-Jaljale* area with reference to Rhododendron Conservation in Nepal; Peculiarity of *Jalthal* forest in Jhapa
- 8.10. Role of international organizations in biodiversity conservation of Nepal
- 8.11. Concepts, effects and controlling measures of environmental pollution (air, water, land, noise, solid waste, hazardous waste, chemical waste pollution), polluter's pay principle
- 8.12. Environmental Assessment (Brief Environmental Study, Initial Environmental Examination, Environmental Impact Assessment, Cumulative Impact Assessment, Strategic Environmental Assessment), environmental and social safeguards and Monitoring and Auditing
- 8.13. Formulation of readable adaption and mitigation measures of environmental impacts, species conservation action plan of Nepal

9. Forest Protection

- 9.1. Importance of Forest Pathology, tree disease classification, Principles of tree disease management - Causes, symptoms and losses, Etiology, mode of spread, epidemiology, including chemical, biological, cultural and silvicultural practices
- 9.2. Important diseases and insect pests of nurseries, farm forestry, plantations, avenue trees, natural forest and their management. Theories of natural regulation of insect populations. Assessment of losses due to diseases, insect pests, vertebrate pests, adverse weather, forest fires and weeds. Insect pests and mycoflora of seeds of forest trees and their management
- 9.3. Biodegradation of wood – microscopic and chemical effects of white rot, brown rot, soft rot and wood discoloration. Rots – factors affecting heart and root rots, damage caused,

- compartmentalization of decay in trees and management of heart and root rots. Role of mycorrhiza in tree health
- 9.4. Symptoms, pathogenic organisms, mode of infection, Life cycle and control measures for: *Sal, Sissoo, Khair, Teak, Populus, Eucalyptus, Chir Pine, Blue Pine, Deodar, Utis* and other major timber species.
 - 9.5. Biological control of insect pests and diseases of forest trees. Molecular tools for developing disease resistance trees.
 - 9.6. Injury to forests due to fires, grazing, mining, man and his domestic animals, wild animals, invasive species, weeds, frost, flood, landslides, drought, etc. and protection measures
 - 9.7. Causes, drivers and impacts of forest degradation and deforestation
- 10. Forest Economics**
- 10.1. Total economic value (TEV) of forest, instrumental or intrinsic values, and non-market valuation methods, introduction to green GDP
 - 10.2. Definition and basic concepts of economics, Theory of consumption- Laws of utility, Consumer surplus, Demand and supply with reference to timber and non-timber products. Production – Meaning, factors & functions, Marketing- definition, process, Need, Role, functions and channels, Classification of markets, Price spread, Marketing Efficiency, Integration, Constraints in marketing of forest produce. SWOT analysis. Markets features and classification, Market inefficiencies in timber and NTFP's and measures to check it
 - 10.3. Role of forests in economic development and application of microeconomics in solving forest resource problems
 - 10.4. Fundamental concepts of managerial economics in forestry
 - 10.5. Basic concepts in forest valuation and forest investment analysis (Compounding, discounting, present values, interest rate, inflation, risk, uncertainty, taxes and social considerations etc.); Optimal Forest rotation
 - 10.6. Market failures and externalities in forestry
 - 10.7. Methods and decisions about un-priced values of forestry goods and services; Estimating recreation demand; Consideration of risk and uncertainty in natural resource planning and management; welfare theory and pricing of natural resources
 - 10.8. Forest taxes and other charges; forest products trade; cost estimation of harvesting forest products.
 - 10.9. Property rights and forest tenure; private forest, tree outside forest
 - 10.10. Economic aspects of climate change; Nationally Determined Contributions (NDCs); Payment for ecosystem services (PES)
- 11. Forest Utilization**
- 11.1. Basic concepts on properties of wood, wood conversion, grading, seasoning and preservation; wood defects; wood identification; sustainable harvesting of forest products; wood and non-wood products certification
 - 11.2. Composite wood, wood lumber products, pulp, paper, paperboard and other cellulose-based products; status of forest-based industries in Koshi Province.
 - 11.3. Concept of biomass energy
 - 11.4. Non-timber forest products and their economic importance in Nepal
 - 11.5. General information on the most commercially cultivated and harvested forest products (*Uttis, Rudraksha, Chiraito, Majitho, Satuwa*, etc)
 - 11.6. Community based forest management forest products extraction and collection; monitoring and facilitation of community-based forest products harvesting

- 11.7. Management, collection, processing and marketing of high value NTFPs in Nepal, value chain of high value wood and non-wood products, forest certification
- 11.8. Role and function of private sector, cooperatives and parastatal institutions in development of forest enterprise
- 11.9. Scope and potential role of different forest products in poverty reduction
- 11.10. Importance of newly introduced high value trees and plants (Eucalyptus, Teak, Mahogany, *Patula* pine, Red and white sandalwood, Agarwood, Paulownia, Stevia etc) in commercial forestry
- 11.11. Concept and potential of forestry for the prosperity of Nation
- 12. Forestry Sector Policy, Strategy and Legal Instruments**
 - 12.1. Forest Act, 2076 and Regulation 2079, Koshi Province Forest Act 2077
 - 12.2. Koshi Province Tourism Act, 2076 and regulation, 2077
 - 12.3. Environment Protection Act 2076 and Regulation, Koshi Province Environment Protection Act 2076 and Regulation 2077
 - 12.4. Soil and Watershed Conservation Act 2039
 - 12.5. National Parks and Wildlife Conservation Act 2029 (with amendments) and Regulation 2030 (with amendments)
 - 12.6. CITES Act 2073 and Regulation 2076
 - 12.7. National Forest Policy 2075 and Forest Sector Strategy 2072
 - 12.8. National Environment Policy 2076
 - 12.9. Land Use Policy 2072
 - 12.10. Buffer Zone Management Regulation 2052
 - 12.11. REDD Strategy 2075 (2018)
 - 12.12. Wetland Policy 2069
 - 12.13. National Climate Change Policy 2076 (2019)
 - 12.14. National Adaptation Plan (NAP) 2021-2050
 - 12.15. President Chure-Tarai Madhesh Conservation and Management Master Plan
 - 12.16. Various guidelines and directives related to forestry sector

Model Questions

1. The rate of replacement of species composition with the change in the environment constitutes____
 - A. Gamma diversity
 - B. Beta diversity
 - C. Species diversity
 - D. Genetic diversity
2. Which type of soil water is most useful for plants?
 - A. Hygroscopic
 - B. Capillary
 - C. Chemically combined water
 - D. Gravitational
3. Applying of tree seeds to the harvested area or prepared beds is called____
 - A. Seed tree method
 - B. Direct seeding
 - C. Natural seeding
 - D. Indirect seeding
4. Dendrology is commonly defined as the ____
 - A. Study of forest measurement
 - B. Study of tree growth
 - C. Taxonomy of all woody plants
 - D. Taxonomy of trees
5. Von mantel's formula for calculating yield needs____
 - A. Actual Growing Stock Only
 - B. Actual growing stock and rotation
 - C. Normal Growing stock and rotation
 - D. Normal Growing stock only
6. Stumpage Value of a stand of tree is ____
 - A. Value of timber in the stand
 - B. Value of timber in the stand, minus the cost of harvesting the tree and minus the cost that was incurred for planting the tree
 - C. Value of timber in the stand, minus the cost of harvesting the tree
 - D. Value of timber in the stand, plus the cost of harvesting the tree.
7. To stop the continuously rising price of timber from further rising, government sets a price ceiling. How would this price ceiling affect the current rate of harvesting of trees?
 - A. The rate of harvesting will increase
 - B. The rate of harvesting will decrease
 - C. The rate of harvesting will remain the same
 - D. The effect on rate of harvesting is indeterminate

प्रदेश लोक सेवा आयोग
कोशी प्रदेश, विराटनगर, नेपाल
प्रदेश निजामती सेवा तथा स्थानीय सरकारी सेवा अन्तर्गतका प्राविधिक तर्फ वन सेवा, जनरल फरेष्ट्री, फरेष्ट रिसर्च, स्वायत्त एण्ड वाटर कन्जरभेसन तथा वाईलडलाईफ कन्जरभेसन समूह, सातौँ तहका पदको खुला, अन्तर स्थानीय तह तथा अन्तर तह प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र (Paper II): सेवा सम्बन्धी विषय (Technical Subject)

Section (A) - 25 Marks

1. Sustainable Forest Resource Management

- 1.1 Forests and forest types of Nepal with special attention to Koshi Province
- 1.2 General principles of sustainable forest management; concept and approaches, principles, criteria and indicators
- 1.3 Historical perspectives of forest management in Nepal
- 1.4 Principles and practices of silviculture including forest regeneration, plant propagation, nursery practice, growth and yield modeling, silvicultural systems, silvicultural treatments
- 1.5 Major forest problems in Koshi Province and recommended mitigation measures
- 1.6 Forest management practices adopted in different forest types, emerging issues, opportunities and threats in Nepal
- 1.7 Community based forest management systems in Nepal (community forest, collaborative forest, pro-poor leasehold forest, religious forest, buffer zone forest): policies, institutions and operational modalities
- 1.8 Scope, opportunities, potentiality of urban forestry in Koshi Province and its impact on socioeconomic, cultural and biophysical environment
- 1.9 Importance of human resource development for sustainable forest management
- 1.10 Role of Non-Timber Forest Products (NTFPs) in local livelihoods and national economy special attention to Koshi Province
- 1.11 Issues and challenges in production, processing, trade, domestication and commercialization of high value NTFPs in Nepal
- 1.12 General concept on forestry project formulation, project valuation and project management
- 1.13 Contribution of forestry sector in national economy
- 1.14 Demand and supply situation of forest products in Nepal (production sources and value chains); valuation of forest products and forest investment analysis
- 1.15 Silvicultural investment on public and private lands of Nepal
- 1.16 Silvicultural challenges and options in the context of climate change
- 1.17 The role and application of economic models in forest management of Koshi Province
- 1.18 Role and importance of private sector involvement in forestry business
- 1.19 Carbon sequestration in the context of climate change
- 1.20 Adaptation to climate change in forest management as well as its challenges and opportunities
- 1.21 Ergonomics and its applications in forestry in Nepal
- 1.22 Science-policy interaction in forestry sector of Nepal
- 1.23 Forest certification: principles, criteria and indicators

Section (B) - 25 Marks

2. Forest Resource Survey, Inventory and Research

- 2.1 Basic principles of statistics: measure of central tendency, coefficient of variation, standard error of mean, measure of skewness, continuous and discrete variables
- 2.2 Forest statistics of Nepal, special attention to Koshi Province
- 2.3 Basic knowledge on computer based statistical packages, data processing and analysis

- 2.4 Basic principles, practices and techniques used in Remote Sensing (RS) and Geographic Information System (GIS) in forest management planning including land use and land cover changes detection, Aerial Photography and Photo-interpretation techniques
- 2.5 Principles and practices of forest resource surveys, inventory and mapping
- 2.6 Principles and applications of experimental design in forestry research
- 2.7 Importance of forest genetics and tree improvement in natural and artificial forest resource management
- 2.8 Research, extension and development linkages in forestry
- 2.9 Measuring trees and forest in the natural stand and plantations
- 2.10 Inventory techniques of non-timber forest products
- 2.11 Principles and practices of parametric and non-parametric statistical tests used in forestry research
- 2.12 Principles and practices of forest surveying
- 2.13 Principles of forest biometrics, tree and forest growth models and preparation of volume tables, yield table and biomass tables
- 2.14 National forest inventory, procedures used in planning, management, field data collection, data compilation and presentation in forest surveying
- 2.15 Importance of forestry research and associated issues in forest management and silviculture, biodiversity conservation, tree improvement and agroforestry, soil and water conservation, protected areas and wildlife management, NTFPs and other forestry related areas
- 2.16 Types of research (basic research, adaptive research, action research), and advantages/disadvantages and their limitations, basics of forestry research planning, design and field implementation
- 2.17 Research on socio-economic and policy aspects of forests, wildlife and watershed management, wildlife census, monitoring and camera trapping

Section (C) - 25 Marks

3. Soil Conservation and Watershed Management

- 3.1 Concept of soil conservation and watershed management in different ecological zones of Nepal
- 3.2 Natural and manmade erosion, mass movement, landslides, slope failure and factors responsible for water induced erosion
- 3.3 Preventive and rehabilitative measures for soil conservation - methods and tools
- 3.4 Contour trenching, bunding, diversion channels, gully plugging, shelter belt, green belt, contour planting, wattling, fascining, grass planting, reseeding, maintenance of forest biomass
- 3.5 Conservation farming, cover cropping, zero tillage, crop rotation, mulching, green manuring, contour strip cropping, terracing, runoff harvesting
- 3.6 Understanding and use of universal soil loss equation (USLE)
- 3.7 Bio-engineering techniques and their importance to stabilize slope failure, stream/riverbank cutting, control of erosion along small streams and rivers, improvement of irrigation canals
- 3.8 Principles and practices of sustainable soil management to land productivity conservation in Nepal; application of soil map in the sustainable management of the Koshi Province forests
- 3.9 Basic concepts of hydrological cycle and its relationships to watershed management
- 3.10 Importance and relationship of watershed management to water harvesting development activities such as irrigation, hydropower and drinking water supply scheme
- 3.11 Understanding of Soil formation process (pedogenesis) and its parent materials, geological process, soil profile, soil particles and size classes, soil texture and textural classification, soil structure and classification
- 3.12 Maintenance of soil fertility and effect of vegetation on physical, chemical and biological properties of soil and its organic matter, decomposition of plant residues and development of humus, importance of macroscopic and microscopic organisms in soil
- 3.13 Empirical estimation of stream flow, estimation of runoff volume and yield, water flow regulating structures, catchments ponds, stream gauging for measuring discharge, weirs and flumes,

- retaining walls, different kinds of check dams, embankments, spurs, spillways, chutes, culvert designs
- 3.14 Understanding hydrology and its processes, precipitation, rainfall intensity, interception, evapo-transpiration, runoff, movement of water into and through the soil, water yield
 - 3.15 General characteristics and principles of watershed prioritization, integrated approach of watershed management, springshed management
 - 3.16 Upstream and downstream linkages, linking *Churia* and Terai from the perspective of environmental services, payment for environmental services, equitable benefits sharing
 - 3.17 Coordination mechanism and integration of agriculture, forestry, livestock and water resource interventions in integrated sub-watershed management plan
 - 3.18 Participatory approach of watershed management and decision making, participatory monitoring and evaluation of watershed management activities
 - 3.19 Emerging problems of *Churia (Siwaliks)* watershed and strategies to mitigate the watershed degradation problems of *Churia (Siwaliks)*, Bhawar, Terai. Unplanned road construction in sensitive (fragile soil) areas and its impacts in the natural environment
 - 3.20 Theory and practices of agro-forestry in Nepal, and criteria and indicators for selection of agro-forestry species with respect to ecological zone of Nepal
 - 3.21 Issues and challenges of soil conservation in *Chure*
 - 3.22 Issues on soil management and conservation in Koshi Province

Section (D) - 25 Marks

4. Biodiversity Conservation and Protected Area Management (15 Marks)

- 4.1 History, development and status of protected areas in Nepal with special focus on Province One
- 4.2 Principles and practices of protected area management
- 4.3 Protected area types and management modalities: national parks, wildlife reserve, hunting reserve, conservation area, buffer zone
- 4.4 Concept of ex-situ and in-situ biodiversity conservation at different levels (species, genetic and ecosystems)
- 4.5 Documentation and evaluation of forests genetic resources (FGR)
- 4.6 Conservation biology, wildlife biology, forest ecology, mammalogy, ornithology and herpetology
- 4.7 Wildlife farming, and market opportunities for sustainable management and trade of wildlife products
- 4.8 Wildlife population dynamics, species status, abundance, distribution and classification (IUCN Red Data Book and CITES Appendix)
- 4.9 Engagement of local communities in protected area management system
- 4.10 Ecotourism in biodiversity conservation and protected area management
- 4.11 Community Based Eco-Tourism in Koshi Province and its social entrepreneurship
- 4.12 Wildlife habitat management including grassland and wetland management
- 4.13 Economic valuation of biodiversity conservation and environmental services
- 4.14 Landscape level conservation planning, integrated protected area management, and species conservation action plan
- 4.15 Trans-boundary coordination and cooperation in wildlife management
- 4.16 Major threats and challenges of biodiversity conservation
- 4.17 Human wildlife conflicts and co-existence: Pattern, remedies and existing policy mechanism
- 4.18 Management of endemic, endangered, rare and vulnerable species, introduction and reintroduction, translocation and meta-population of the species,
- 4.19 Protected area management planning, implementation, monitoring and evaluation process
- 4.20 Zoological and botanical garden, concept of open zoo, rescue and rehabilitation centers and wildlife hospitals
- 4.21 Migratory movements of wild elephants and birds in Koshi Province

5. Crosscutting issues in forestry sector of Nepal

(10 Marks)

- 5.1 Brief environmental study, initial environment examination, environment impact assessment, cumulative impact assessment and strategic environment assessment, conservation and development related projects, environment and social safeguards; free, prior and informed consent (FPIC)
- 5.2 Research and extension in forestry sector
- 5.3 Forest and wildlife crime and law enforcement, legal procedures and provisions
- 5.4 Climate change, mitigation and adaptation measures; climate risk assessment and management; and its mainstreaming in development
- 5.5 Mapping and assessment of ecosystem services
- 5.6 Involvement of federal, provincial, local governments and other related institutions in climate change mitigation and adaptation activities
- 5.7 Forest-based industrialization in Koshi Province
- 5.8 Monitoring and evaluation of forestry programs and projects
- 5.9 Bottom-up planning process, project cycle and logical framework approach
- 5.10 International conventions, agreements, treaties and protocols related to forests, biodiversity conservation, climate change, land degradation such as UNFCCC, UNCCD, CBD, CITES, RAMSAR, Paris Agreement, Cartagena Protocol on Biosafety, 2000
- 5.11 Sustainable Development Goals (SDGs)/ United Nations Strategic Plan for Forests 2030 and Global Forest Goals
- 5.12 Roles and scopes of national and international conservation partners such as BCN, NTNC, IUCN, ICIMOD, WWF, etc.
- 5.13 Role of conservation education, extension and awareness, outreach and communication, and media roles in conservation
- 5.14 Forestry sector governance; gender and social inclusion; grievance management in forestry sector
- 5.15 Organizational structures of government and its roles in forest conservation and management
- 5.16 Disaster risk management: drought, earth quake, forest fire, landslides and floods
- 5.17 Quasi- judicial body and functions in forestry sector

Model Questions

1. Specify the goods and services of a particular Forest Ecosystem (say Sal Forest in the Terai and Temperate mixed hardwood forest in the mid hill). How would you assess them in economic term? Illustrate with example. [5+5]
2. Why is forest inventory needed? How would you plan an inventory of a Forest area? Describe in brief. [4+6]
3. How can we convince the value of Watershed Management to decision makers in terms of upstream and downstream relation in Nepal? Present it with analytical framework and example? [10]
4. Why the registration of biological diversity is important? What logical steps you might wish to follow if you have been interested to carry out the registration process in the district you work? [4+6]
5. If you have a limited budget and you want to allocate it among variety of potential silvicultural projects to maximize the economic benefits, what criterion would you use to establish priorities among projects?
6. Write Short note on: [5+5]
 - a. Application of remote sensing and GIS in watershed management
 - b. Role of protected area system in ecotourism
