

## प्रदेश लोक सेवा आयोग

### गण्डकी प्रदेश

प्रदेश वन सेवा, जनरल फरेष्ट्री, फरेष्ट रिसर्च र स्वायल एण्ड वाटर कन्जरभेशन समूहका अधिकृत सातौं तहका पदहरूको खुला तथा अन्तरतह प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

## द्वितीय-पत्र (Paper II): Technical Subject

### Section (A) - 25 Marks

#### 1. Sustainable Forest Resource Management

- 1.1 Forests and forest types of Nepal
- 1.2 General principles of sustainable forest management (SFM); concept and approaches, principle, criteria and indicators, forest certification
- 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, tending operations
- 1.5 Drivers of deforestation and degradation in Nepal 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 and opportunities of urban forestry
- 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
- 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)
- 1.15 Role and importance of private sector involvement in forestry business
- 1.16 Carbon sequestration in the context of climate change

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### **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
- 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 GIS in forest management planning including land use and land cover changes detection
- 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

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### Section (C) - 25 Marks

#### 3. Soil Conservation and Watershed Management

- 3.1 Concept of soil conservation and watershed management
- 3.2 Understanding the concept of soil and water conservation in different ecological zones of Nepal
- 3.3 Natural and man-made erosion, mass movement, landslides, slope failure and factors responsible for water induced erosion
- 3.4 Preventive and rehabilitative measures for soil conservation methods and tools
  - 3.4.1 Contour trenching, bunding, diversion channels, gully plugging, shelter belt, green belt, contour planting, wattling, fascining, grass planting, reseedling, maintenance of forest biomass.
  - 3.4.2 Conservation farming, cover cropping, zero tillage, crop rotation, mulching. Green manuring, contour strip cropping, terracing, runoff harvesting and gully plugging
- 3.5 Understanding and use of universal soil loss equation
- 3.6 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
- 3.7 Principles and practices of sustainable soil management to land productivity conservation in Nepal
- 3.8 Basic concepts of hydrological cycle and its relationships to watershed management
- 3.9 Importance and relationship of watershed management to water harvesting development activities such as irrigation, hydropower and drinking water supply scheme.
- 3.10 Understanding of Soil formation process and its parent materials, geological process, soil profile, soil particles and size classes, soil texture and textural classification, soil structure and classification
- 3.11 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
- 3.12 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

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- 3.13 Understanding hydrology and its processes, precipitation, rainfall intensity, interception, evapotranspiration, runoff, movement of water into and through the soil, water yield.
- 3.14 General characteristics and principles of watershed prioritization, integrated approach of watershed management
- 3.15 Upstream and downstream linkages, payment for environmental services, equitable benefits sharing
- 3.16 Coordination mechanism and integration of agriculture, forestry, livestock and water resource interventions in integrated sub-watershed management plan.
- 3.17 Participatory approach of watershed management and decision making, participatory monitoring and evaluation of watershed management activities
- 3.18 Emerging problems of Churia watershed and strategies to mitigate the watershed degradation problems of Churia, Bhawar, Terai
- 3.19 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

### Section (D) - 25 Marks

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

- 4.1 History, development and status of protected areas in Nepal
- 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 Conservation biology, wildlife biology, forest ecology, mammalogy, ornithology and herpetology,
- 4.6 Wildlife farming, and market opportunities for sustainable management and trade of wildlife products;
- 4.7 Wildlife population dynamics, species status, abundance, distribution and classification (IUCN Red Data Book and CITES Appendix)
- 4.8 Engagement of local communities in protected area management system
- 4.9 Ecotourism in biodiversity conservation and protected area management
- 4.10 Wildlife habitat management including grassland and wetland management
- 4.11 Economic valuation of biodiversity conservation and environmental services

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- 4.12 Landscape level conservation planning, integrated protected area management, and species conservation action plan
- 4.13 Trans-boundary coordination and cooperation
- 4.14 Major threats and challenges of biodiversity conservation
- 4.15 Human wildlife conflicts: Pattern, remedies and existing policy mechanism
- 4.16 Management of endemic, endangered, rare and vulnerable species, introduction and reintroduction, translocation and meta population of the species,
- 4.17 Protected area management planning, implementation, monitoring and evaluation process
- 4.18 Zoological and botanical garden, rescue centers and wildlife hospitals

### **5. Crosscutting issues in forestry sector of Nepal (10 Marks)**

- 5.1 Initial Environment Examination, Environment Impact Assessment and Strategic Environment Assessment, conservation and development related projects
- 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
- 5.5 Monitoring and evaluation based on outcomes and impacts
- 5.6 Bottom-up planning process, project cycle and logical framework approach
- 5.7 International conventions, agreements, treaties and protocols related to forests, biodiversity conservation, climate change, land degradation such as UNFCCC, UNCCD, CBD, CITES, RAMSAR
- 5.8 Roles and scopes of national and international conservation partners
- 5.9 Role of conservation education, extension and awareness, outreach and communication, and media roles in conservation
- 5.10 Gender and social inclusion
- 5.11 Forestry sector governance
- 5.12 Organizational structures of government and its roles in forest conservation and management
- 5.13 Disaster risk reduction: earth quake, forest fire, landslides and floods,
- 5.14 Sustainable Development Goals (SDGs)/ Global Forest Goals
- 5.15 Quasi-judicial body and functions in forestry sector

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प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र

### लिइने सामूहिक परीक्षण (Group Test) को लागि

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफल (Leaderless Group Discussion) को रूपमा अवलम्बन गरिने छ। दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (Individual Presentation) गर्नु पर्नेछ। यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको कम्तीमा ३ जनाको समिति रहनेछ।

आयोगका अध्यक्ष वा अध्यक्षले तोकेको सदस्य - अध्यक्ष

विज्ञ - सदस्य

दक्ष/विज्ञ) १ जना (- सदस्य

### सामूहिक छलफलमा दिइने नमुना प्रश्न वा Topic

उदाहरणको लागि — उर्जा संकट, गरीबी निवारण, स्वास्थ्य बीमा, खाद्य सुरक्षा, प्रतिभा पलायन जस्ता Topics मध्येकुनै एक Topic मात्र दिइनेछ ।