

# नेपाल विद्युत प्राधिकरण

प्राविधिक सेवा, विविध समूह, वातावरण उपसमूह, तह-७, वातावरणविद पदको

## खुल्ला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

१. लिखित परीक्षाको विषय, पूर्णाङ्क, परीक्षा प्रणाली, प्रश्नसंख्या, अंकभार र समय निम्नानुसार हुनेछ ।

पत्र	विषय	पूर्णाङ्क	उत्तिर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या	प्रति प्रश्न अंकभार	समय
प्रथम	सामान्यज्ञान तथा सेवा सम्बन्धि सामान्य विषय	१००	४०	(क) सामान्यज्ञान र बौद्धिक परीक्षण	वस्तुगत बहु बैकल्पिक प्रश्न	२५	२	२ घण्टा
				(ख) सेवासम्बन्धी सामान्य विषय	छोटो उत्तर आउने प्रश्न	१०	५	
द्वितीय	सेवा सम्बन्धी	१००	४०	विषयगत	लामो उत्तर आउने प्रश्न	१०	१०	३ घण्टा

- वस्तुगत प्रश्नमा प्रत्येक प्रश्नका चार वटा सम्भाव्य उत्तर दिइने छ । जस मध्ये एउटा सही उत्तरमा (लोकसेवा आयोगले तोके बमोजिम) चिन्ह लगाउने वा लेख्नु पर्नेछ । गलत उत्तर बापत प्रति गलत उत्तर २० प्रतिशतका दरले अंक घटाइनेछ ।
- प्राविधिक सेवा अन्तर्गतका सबै समूह/उपसमूहहरूको प्रथम पत्रको पाठ्यक्रम एउटै हुनेछ । प्रथम पत्रको लिखित परीक्षा सबै समूह/उपसमूहका लागि संयुक्त रूपमा एउटै प्रश्नपत्रवाट एकैदिन वा छुट्टाछुट्टै प्रश्नपत्रवाट छुट्टाछुट्टै दिन हुन सक्नेछ ।
- प्रथमपत्र र द्वितीयपत्रको परीक्षा फरक फरक हुनेछ । द्वितीय पत्रमा २ खण्डहरू हुनेछन् । प्रत्येक खण्डको लागि फरक फरक उत्तर पुस्तिका प्रयोग गर्नुपर्नेछ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी वा दुवै हुन सक्नेछ ।
- सामान्यतः प्रत्येक इकाईबाट प्रश्नहरू सोधिनेछन् । प्रत्येक इकाईको अंकभार तोकिए बमोजिम हुनेछ । लामो उत्तर दिनुपर्ने प्रश्न एकै वा खण्ड खण्ड गरी (दुई वा सो भन्दा बढी) सोध्न सकिनेछ । यस्तो प्रश्न एक भन्दा बढी इकाईबाट पर्ने गरी सोध्न सकिनेछ ।
- यस पाठ्यक्रममा जसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- परीक्षामा कालो मसी भएको कलम वा डटपेन मात्र प्रयोग गर्नुपर्नेछ ।

### प्रथमपत्र: सामान्य ज्ञान तथा सेवासम्बन्धी सामान्य विषय

(प्राविधिक सेवा, तह-७ का सबै समूहका लागि)

खण्ड (क): सामान्य ज्ञान र बौद्धिक परीक्षण

[५० अंक]

१. सामान्यज्ञान :

(१५x२=३०)

- नेपालको भूगोल र आर्थिक तथा सामाजिक कृयाकलाप: धरातलीय स्वरूपको किसिम र विशेषता, नेपालमा पाईने हावापानीको किसिम र विशेषता, नदीनाला, तालतलैया, खनिज पदार्थ, प्राकृतिक स्रोत साधन, विद्युत, शिक्षा, स्वास्थ्य र सञ्चारसम्बन्धी जानकारी
- नेपालको सामाजिक एवं सांस्कृतिक अवस्था: प्रथा, परम्परा, धर्म, जातजाति, भाषाभाषी, कला, संस्कृति र साहित्य
- नेपालमा विद्युत विकास, ऊर्जाका स्रोत र सम्भावना
- नेपालको संघीय, प्रादेशिक र स्थानीय संरचना तथा शासन प्रणालीसम्बन्धि जानकारी

- ड) विश्वको भूगोल: महादेश, महासागर, अक्षांश, देशान्तर, अन्तर्राष्ट्रिय तिथि रेखा, समय, पर्वतश्रृंखला, नदी, हिमनदी, ताल, हिमताल
- च) अन्तर्राष्ट्रिय सम्बन्ध तथा संघ/संस्था: संयुक्त राष्ट्र संघ र यसका एजेन्सीहरू (UNO and Its Agencies, दक्षिण एशियाली क्षेत्रीय सहयोग संगठन (SAARC) सम्बन्धी जानकारी
- छ) राष्ट्रिय तथा अन्तर्राष्ट्रिय महत्वका समसामयिक घटना तथा नविनतम गतिविधिहरू

## २. बौद्धिक परीक्षण:

### २.१ Verbal and Non-verbal Aptitude: (१०x२=२०)

Vocabulary, Alphabetical ordering of words, Classification, Coding-Decoding, Insert the missing character, Direction and Distance sense test, Ranking order test, Relationship Test, Logical sequence of words, Common sense test, Assertion and Reason, Logical reasoning, Figure series, Figure analogy, Figure Classification, Figure Matrix, Pattern completion/finding, Construction of squares and triangles, Analytical reasoning.

### २.२ Numerical Ability and Quantitative Aptitude :

Arithmetical reasoning, Insert the correct mathematical signs, Decimal and Fraction, Percentage, Ratio, Average, Profit and Loss, Time and work.

## खण्ड (ख): सेवासम्बन्धी सामान्य बिषय (५० अङ्क)

### 1. Constitution, Act and Rules

3\*5= 15

- 1.1. Present Constitution of Nepal
- 1.2. Nepal Electricity Act, 2041
- 1.3. Nepal Electricity Authority, Present Employee Service by laws
- 1.4. Electricity Regulatory Commission Act, 2074
- 1.5. Electricity Act, 2049 and Electricity Regulation, 2050
- 1.6. Public Procurement Act, 2063
- 1.7. Nepal Electricity Authority, Present Financial Administration by laws
- 1.8. Corruption Control Act, 2059
- 1.9. Good Governance ( Management and Operation) Act, 2064
- 1.10. Land Acquisition Act, 2034
- 1.11. Environment Protection Act, 2053 and Environment Protection Regulation, 2054

### 2. Electricity Development in Nepal

2\*5= 10

- 2.1. History of power development in Nepal; energy supply demand trends
- 2.2. Recent trends in power sector reform; Hydropower potential of Nepal and prospects and challenges for its development
- 2.3. Nepal Electricity Authority: objective, functions, corporate structure, achievement and challenges
- 2.4. Concept of NEA Restructuring in federal context
- 2.5. Silent features of energy crisis decade by government of Nepal

### 3. Development

1\*5= 5

- 3.1. General concept of development administration
- 3.2. Planning in Nepal: efforts, achievement and challenges
- 3.3. Sustainable Development
- 3.4. Public Private Partnership

### 4. Management and financial analysis:

2\*5= 10

- 4.1. Concept of Management
- 4.2. Motivation, Leadership, Control, Coordination and Team work, Decision making
- 4.3. Corporate planning and strategic management
- 4.4. Corporate social responsibility

- 4.5. Project management: Use of network models like CPM, PERT, manpower planning and resource scheduling; project monitoring and control; project control cycle
- 4.6. Financial analysis: Methods of financial analysis such as benefit cost ratio, internal rate of return, net present value, payback period, minimum attractive rate of return and their application; Concept of EIRR and FIRR; tariff structure

## 5. New Trends of Power Sector

2\*5= 10

- 5.1. Various Sources of Energy: trend, Possibilities and challenges
- 5.2. Role of IPP (Independent Power Producer), opportunities and challenges
- 5.3. Power Purchase Agreement (PPA), Power development agreement (PDA)
- 5.4. Concept of Energy Pool Market and Energy Banking
- 5.5. Regional and sub regional interconnections with Nepalese grid

द्वितीय पत्र: सेवा सम्बन्धी

(अङ्क १००)

## Section: A

{5x10=50}

### 1. Basic Concept of Environmental Science:

Concept of environment and environmental science and its importance; Life supporting system; Major environmental issues; Limiting factors for life; Ecosystem dynamics; Biotic community analysis; Biodiversity; Ecological niche; Specification, community, community change; Positive and negative biotic interactions; Functions of biotic community in maintaining the ecological balance; Population growth forms; Population distribution; Concept of density dependent and independent factors. Environmental chemistry and atmospheric environment.

### 2. Natural Resources of Nepal:

Water resources (surface and underground) and their utilization; Forest resources; soil resources; wild life resources; Wind resources; Mineral resources: metallic and non-metallic; Energy (renewable and non-renewable) resources: Fossil fuels, Geothermal, Solar, Biomass. Natural Resource utilization policies. Contribution of the natural resources in nation development.

### 3. Climate Change:

Climate change and variability; Paleoclimatology; Climate during post glacial period; Causes of climate change: natural and manmade; Greenhouse effects; Historical emission of CO<sub>2</sub>; Climate change and its impacts on agriculture, forest, water resources, ecosystem and biodiversity, human health and natural disasters; Biosphere and climate system; Sensitivity of community to climate change; Climate modelling and analysis; Global and regional assessments of climate change; Climate change scenarios in Nepal, Climate change mitigation and adaptation; National Adaptation Program for Action (NAPA) and Local Adaptation Program for Action (LAPA) process in Nepal; Kyoto protocol. Possible impacts of climate change in hydropower generation in Nepal. Positive effects of global warming.

### 4. Environmental Pollution:

Types of pollutions; Types of water pollutants and water pollution sources; Water quality criteria and standards; Method of water analysis; Waste water treatment and other types of water pollution control; Economics of water pollution and water pollution control; water and pollution control legislation. Sources and causes of air pollution; Influence of weather and other

synergistic factors in air pollution; Effects of air pollution on human health, animals, plants, microorganism, ecosystems, materials and climate; Acid rain; The greenhouse effects and effects of air pollution in ozone shield; Air quality criteria and standards; Methods of air analysis; The economics of air pollution; Air pollution and the law; Air pollution control strategies and technologies. Noise pollution.

### **5. Environmental Management and Conservation:**

Concept of environmental conservation and preservation in Nepal; Resource management, Forest and forest type of Nepal; Categories of forest in Nepal; Status of wildlife in Nepal; Protected areas; Methods of wildlife study; Threat to wildlife; Wildlife conservation issues; people's participation in conservation of wildlife; in-situ and ex-situ conservation; animal reintroduction program; Regional and global wildlife conservation conventions. Soil conservation, conservation tillage, improving energy efficiency; advantages and disadvantages of using hydropower; World human population; Environmental and socioeconomic factors affecting birth; World agricultural systems, major types of agriculture.

### **6. Environmental Earth Science:**

Hydrological Processes in different climatic zones: Process of precipitation, evaporation, snowmelt, Runoff generation. Soil-water dynamics and ground water recharge, Hyetograph, Intensity-duration of rain fall, River discharge. Floods.

Geological process and mechanisms: weathering and erosion; fluvial, glacial and periglacial process. Earth hazards: Concept of hazard, exposure, vulnerability and risk; Landslide; Glacial Lake Outburst Flood (GLOF); Earthquake and seismicity of Nepal; Hazard assessment and mapping.

### **7. Environmental policy and Regulations in Nepal**

## **Section: B {5x10=50}**

### **1. Fundamental Approach for EIA**

Different levels of assessments such as Environmental Impact Assessment (EIA) and Initial Environmental Examination (IEE) and their importance, Basic concepts for EIA and IEE process in general, Steps in EIA process in Project Planning, Preparation of Scoping Document, Terms of Reference, Methods of Impacts Analysis, Assessment of the impacts on : Physical environment, biological environment: aquatic and land, hydrological environment, atmospheric environment, socioeconomic

### **2. Environmental Impact Management of Hydropower Projects**

Components of Hydropower Project , Basic concept for EIA and IEE process in hydropower projects, Assessment of impacts of hydropower development to resettlement, watershed erosion, silt runoff, water use conflicts, downstream flow variations, impact on air, noise and water quality, impacts of ground water quality, eutrophication, reservoir shoreline erosion, encroachment into precious ecology; impact on wildlife, fisheries, neighborhood people's health, income, social relations; impact due to possible change in livelihood; gender issues, Effects to project components and different phases of project construction (construction, operation, Environmental

mitigation, monitoring and management plans for Storage, Run-of-River, Peaking run-of-river projects at different phases, Auditing of hydropower projects, process and significance of environmental auditing, Environmental enhancement measures like rural electrification, watershed management, reservoir fishery etc.

### **3. Environmental Impact Management of Transmission Line Projects**

Basic process for EIA and IEE of Transmission line projects, Assessment of impact related to transmission like resettlement, encroachment into precious ecology, encroachment on historical/cultural values, land value changes, fragmentation, aesthetics, electrical shock hazards, health and safety and gender issues, impact on neighborhood people's health, income, social relations; impact due to possible change in livelihood etc., Environmental mitigation, monitoring and management plans for the identified impacts, Effects and mitigation to project components and different phases of project construction (construction, operation), Mitigation and monitoring and auditing of transmission line projects, Process and significance of environmental auditing

### **4. Environmental Impact Management of Thermal Power Plants**

Basic process for EIA and IEE of Thermal Power Plants, Assessment of possible impacts of Thermal Power Plants development to resettlement, air, water quality; noise; encroachment into precious ecology, waste emission problems, hazardous spills, occupational health and safety, nuisance from fuel spills, impacts on neighborhood people's health, income, social relations; impact due to possible change in livelihood etc., Effect and mitigation related to project components and different phases of project construction (construction, operation), Environmental mitigation, monitoring and management plans, Knowledge of pollution control equipment, Mitigation, monitoring and auditing

### **5. World Commissions on Dams**

Major issues on world Commission on Dam Report

### **6. Public Involvement in the EIA Process: Its Importance and Methodology**

Knowledge of public involvement in the EIA and IEE process as per the EPA and EPR method and guidelines for public consultations, Identification of the stakeholders of the project

### **7. Ethics in EIA Process**

Practical ethics, Libertarianism, Discourse or communicative ethics, Procedural fairness or equity, Critical ethics, Communitarian ethics, Egalitarian ethics, Distributional or outcome equity or fairness, Research ethics, Professional ethics, Environmental ethics, Feminist ethics, Sustainability ethics, Ethical pluralism

