

**नेपाल विद्युत प्राधिकरण**  
**प्राविधिक सेवा, सबै समूह/उपसमूहको तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक**  
**परीक्षाको लागि पाठ्यक्रम**

पाठ्यक्रम योजनालाई निम्नानुसार दुई चरणमा विभाजन गरिएको छः

|              |               |                 |
|--------------|---------------|-----------------|
| प्रथम चरणः   | लिखित परीक्षा | पूर्णाङ्कः- २०० |
| द्वितीय चरणः | अन्तर्वार्ता  | पूर्णाङ्कः- ३०  |

परीक्षा योजना (Examination Scheme)

**प्रथम चरणः लिखित परीक्षा** पूर्णाङ्कः- २००

| पत्र    | विषय   | पूर्णाङ्क | उत्तिर्णाङ्क | खण्ड                     | परीक्षा प्रणाली                | प्रश्न संख्या * अङ्कभार        | समय     |
|---------|--|-----------|--------------|--------------------------|--------------------------------|--------------------------------|---------|
| प्रथम   | शासकीय प्रबन्ध,<br>व्यवस्थापन र<br>व्यवसायीकता | १००       | ४०           | (क)                      | तर्कयुक्त विश्लेषणात्मक प्रश्न | ३ प्रश्न * १० अंक              | ३ घण्टा |
|         |  |           |              | विषयगत                   | समस्या समाधानमूलक प्रश्न       | १ प्रश्न * २० अंक              |         |
|         | (ख)  |           |              |                          | तर्कयुक्त विश्लेषणात्मक प्रश्न | ३ प्रश्न * १० अंक              |         |
|         | सेवा सम्बन्धी<br>सामान्य विषय                  |           |              | समस्या समाधानमूलक प्रश्न | १ प्रश्न * २० अंक              |                                |         |
| द्वितीय | सेवा सम्बन्धी<br>(विस्तृत ज्ञान)               | १००       | ४०           | (क)                      | तर्कयुक्त विश्लेषणात्मक प्रश्न | ३ प्रश्न * १० अंक              | ३ घण्टा |
|         |  |           |              | विषयगत                   | समस्या समाधानमूलक प्रश्न       | १ प्रश्न * २० अंक              |         |
|         |  |           |              |                          | (ख)                            | तर्कयुक्त विश्लेषणात्मक प्रश्न |         |
|         |  |           |              | समस्या समाधानमूलक प्रश्न | १ प्रश्न * २० अंक              |                                |         |

**द्वितीय चरणः अन्तर्वार्ता** पूर्णाङ्कः- ३०

| विषय         | पूर्णाङ्क | परीक्षा प्रणाली |
|--------------|-----------|-----------------|
| अन्तर्वार्ता | ३०        | मौखिक           |

**दृष्टव्यः**

- लिखित परीक्षाको माध्यम भाषा नेपाली र अंग्रेजी अथवा नेपाली अंग्रेजी दुवै हुन सक्नेछ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ।
- लिखित परीक्षामा सोधिने प्रश्नसंख्या र अंकभार यथासम्भव सम्बन्धित पत्र/विषयमा दिईए अनुसार हुनेछ।
- विषयगत प्रश्नहरूको हकमा एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more Parts of a single question) एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिनेछ।
- विषयगत प्रश्न हुने पत्र/विषयमा प्रत्येक खण्ड/प्रश्नका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक खण्ड/प्रश्नको उत्तर सोही खण्ड/प्रश्नको उत्तरपुस्तिकामा लेख्नु पर्नेछ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जुनसुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्नेछ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराईनेछ।
- पाठ्यक्रम स्वीकृत मिति:- २०८०/०८/२१

नेपाल विद्युत प्राधिकरण  
प्राविधिक सेवा, सबै समूह/उपसमूहको तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
परीक्षाको लागि पाठ्यक्रम  
प्रथमपत्र  
शासकीय प्रबन्ध, व्यवस्थापन र व्यवसायिकता  
(Governance, Management and Professionalism)

खण्ड (क) : ५० अङ्क

1. **Governance**
  - 1.1. Meaning, features and dimensions of governance
  - 1.2. Global Governance System
  - 1.3. Corporate governance System
  - 1.4. The federal, provincial and local level governance
  - 1.5. New Public Governance
  
2. **Public Administration**
  - 2.1. Concept of Public Administration
  - 2.2. Basics elements of Personnel Administration
  - 2.3. financial Administration: Budget Preparation, Implementation, Monitoring and Evaluation
  - 2.4. Fiscal Federalism: Managing Federal, Provincial and Local Government Revenue and Expenditure
  - 2.5. Public Policy: Formulation, Implementation, Monitoring and Evaluation
  
3. **Management and Financial Analysis**
  - 3.1. Contemporary issues and Emerging concept of management: Time management, Resource management, Change management, Technology management, Information management, Performance Management, Grievance management, Team management, Conflict management, Crisis management, Stress management, Risk management, Participative management, Disaster Management and Work culture
  - 3.2. Role and Importance of Leadership, Motivation, Team work, Decision making, Control and coordination in management
  - 3.3. Corporate planning and strategic management
  - 3.4. Skill, Competencies and knowledge for successful manager
  - 3.5. Issues and Challenges for Manager
  - 3.6. Corporate social responsibility
  - 3.7. Project monitoring and control: System of control, Project control cycle, Feedback control systems, Cash control
  - 3.8. 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; tariff structure
  - 3.9. Management Information system (MIS) and Enterprise Resource Planning (ERP)
  
4. **Ethics, morality and Accountability**
  - 4.1. Essence, determinants, consequences and dimensions of ethics
  - 4.2. Human values, Norms and Perceptions
  - 4.3. Ethics in public service
  - 4.4. Ethical issues in public service delivery and utilization of public funds
  - 4.5. Challenges of corruption and corruption control strategies

**नेपाल विद्युत प्राधिकरण**  
**प्राविधिक सेवा, सबै समूह/उपसमूहको तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक**  
**परीक्षाको लागि पाठ्यक्रम**

- 4.6. Accountability, responsibility and authority
- 4.7. Compliance mechanism of public accountability

**5. Professionalism**

- 5.1. The foundational values for public service - integrity, impartiality, dedication, empathy, tolerance and compassion
- 5.2. Method and significance of Dispute Management

**खण्ड: (ख) : ५० अङ्क**

**6. Constitution, Policy, Act and Rules**

- 6.1. Constitution of Nepal
- 6.2. Nepal Electricity Authority Act, 2041
- 6.3. Present Nepal Electricity Authority, Employee Service bylaws
- 6.4. Public Procurement Act, 2063, and Public Procurement Regulation, 2064
- 6.5. Present Nepal Electricity Authority, Financial Administration bylaws
- 6.6. Electricity Act, 2049 and Electricity Regulation, 2050
- 6.7. Electricity Regulatory Commission Act, 2074
- 6.8. Good Governance (Management and Operation) Act, 2064
- 6.9. National Water Resources Policy, 2075
- 6.10. Corruption Control Act, 2059
- 6.11. Land Acquisition Act, 2034
- 6.12. Environment Protection Act, 2076 and Environment Protection Regulation, 2077
- 6.13. Present Nepal Electricity Authority, Electricity distribution bylaws
- 6.14. Hydropower development policy, 2058
- 6.15. Labor Act, 2074 and Labor Regulation, 2074

**7. Power Sector Development in Nepal**

- 7.1. Energy Supply & Demand - trend and challenges
- 7.2. Power Sector Development - history, generation structure, challenges and prospects
- 7.3. Private sector's participation in hydropower and solar generation
- 7.4. Power Development Agreement (PDA), Power Purchase Agreement (PPA), licensing, feasibility study, Detail Engineering Design
- 7.5. Role of community electrifications and AEPC in public access to electricity
- 7.6. Nepal Electricity Authority: Corporate structure, functions of different business groups, NEA's Subsidiary & Associate Companies, objective, achievement and challenges
- 7.7. Concept of NEA Restructuring in federal context, Operational Performance
- 7.8. Various model of Investment for Hydropower development
- 7.9. Corporate Development Plan (CDP) of NEA

**8. New Trends of Power Sector**

- 8.1. Energy security, present and future energy mix scenario of : (1) Nepal, (2) Bilateral: BBIN, SAARC and (3) The world
- 8.2. Global efforts and achievements on Energy Efficiency, energy intensity
- 8.3. Concept of Energy banking, Energy Trade, Energy Exchange and Regional Grid, International Energy market trends

नेपाल विद्युत प्राधिकरण  
प्राविधिक सेवा, सबै समूह/उपसमूहको तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
परीक्षाको लागि पाठ्यक्रम

- 8.4. Financial & Technical Aspects of Cross Border Grid Connectivity
  - 8.5. Recent international practices in power sector reform; Energy wheeling charge, Energy pool market, Availability based tariff
9. **Grid Operation**
- 9.1. Management of Active/Reactive power in complex system-challenges and opportunities for management
  - 9.2. Power system stability –Issues and challenges
  - 9.3. Control and protection: Importance, trends and challenges in complex electrical systems

नेपाल विद्युत प्राधिकरण  
प्राविधिक सेवा, मेकानिकल समूह, तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
परीक्षाको लागि पाठ्यक्रम  
द्वितीय पत्र  
सेवा सम्बन्धी विस्तृत ज्ञान  
खण्ड: (क) : ५० अङ्क

1. **Hydropower Engineering**
  - 1.1 History and development of Hydro power in Nepal and world
  - 1.2 Types of power plant: run-of-river, Peaking RoR, storage, pumped storage
  - 1.3 Classification of hydropower plant with different criteria : Head, Layout, Size
  - 1.4 Safety measures and precautions applied in power plant
  - 1.5 Environmental impact of hydropower plant and its Sustainability
  
2. **Hydro Power Station**
  - 2.1 Turbine: types, selection, capacity, speed, equipment layout
  - 2.2 Main components of turbine and their maintenance: runner, guide and thrust bearings, guide vanes/nozzles, draft tube, head cover, wearing & facing plates, shaft, labyrinth ring
  - 2.3 Governor: type, design criteria, installation and maintenance
  - 2.4 Turbine Inlet valve: types, design criteria, installation and maintenance
  - 2.5 Types, design criteria, installation and maintenance of Plant ancillary system (high-pressure oil system, lubricating oil system, cooling water system, drainage and dewatering system, compressed air system, unit braking system, automatic grease lubrication system, oil handling system, air conditioning and ventilation system, fire detection and firefighting system)
  - 2.6 Auxiliary equipment: overhead traveling crane, diesel engine generating set
  - 2.7 Instrumentation
  - 2.8 Penstock: types, design criteria, installation and maintenance
  - 2.9 Gates and hosting equipment: types, design criteria, installation, operation and maintenance
  - 2.10 Valve: types, design criteria, installation and maintenance
  - 2.11 Different types of metals and related composition
  - 2.12 Trace rack set and its types
  - 2.13 Types of pumps and pump maintenance
  - 2.14 Hydro-electrical machines – DC motors, generators, transformers
  
3. **Thermal Power Station**
  - 3.1 Prime mover: types, selection, installation, operation and maintenance
  - 3.2 Fuels: types, properties, alternative fuels; Lubricants: Types and Grading
  - 3.3 Repair and maintenance of equipment of thermal power stations.
  - 3.4 Solor Power Station: Mechanical Parts of design and implementation
  - 3.5 Wind Power Station: Design of single and Multifold Mechanical Parts of wind power
  
4. **Metal Towers & Poles**
  - 4.1 Desige of Poles: Single and multifold tower and poles
  - 4.2 Distribution Pole: Single, Two Fold, Three Fold
  - 4.3 Steel Pole (Transmission Line): Towers, Mono Pole and its Reliability
  - 4.4 Transmission & Distribution line tower: maintenance types, design criteria, erection and maintenance

नेपाल विद्युत प्राधिकरण  
प्राविधिक सेवा, मेकानिकल समूह, तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
परीक्षाको लागि पाठ्यक्रम

5. **Safety Engineering and Equipment Replacement Policy**
  - 5.1 Principles of industrial hygiene
  - 5.2 Occupational safety and hazard control
  - 5.3 System safety & Reliability
  - 5.4 Industrial health and safety, Safety Guidelines & regulation in Nepal
  - 5.5 Life cycle costing
  - 5.6 Standardization of equipment /Machinery
  - 5.7 Equipment /Machinery selection/ alternatives
  
6. **Automobiles and its Repair and Maintenance**
  - 6.1 Diesel/Petrol Vehicle
  - 6.2 Electrical Vehicle
  - 6.3 Motorcycle
  
7. **Quality Control**
  - 7.1 Need of Quality Control
  - 7.2 Mechanism of Quality Control: Type and Performance Test, Nano Technology in Quality Control
  - 7.3 Technical Auditing
  - 7.4 Quality Control Management
  - 7.5 Quality Assurance Plan
  - 7.6 Accrediation and Calibration of Testing Equipment
  

**खण्ड (ख) : ५० अङ्क**

8. **Condition Monitoring of Power Plant Equipment**
  - 8.1 Turbine
  - 8.2 Generators
  - 8.3 Gates
  - 8.4 Transformers
  
9. **Maintenance Management**
  - 9.1 Maintenance Management and strategy
  - 9.2 Operational manual, As-build drawing and Condition Monitoring
  - 9.3 Failure analysis
  - 9.4 Various Maintenance Practices in Powerplant
  - 9.5 Abrasion/ erosion resistant Coating process
  
10. **Contract Management**
  - 10.1 Preparation of contract documents, specifications, condition of contract and other contractual procedures
  - 10.2 Familiarization with procurement guidelines and standards of PPMO Nepal, World Bank & Asian Development Bank (WB & ADB)
  - 10.3 Standard Bidding Document for ICB including for EPC contract, Standard Bidding Document for NCB including for EPC contract
  - 10.4 Settlement of contractual disputes (mediation, arbitration and negotiation)

नेपाल विद्युत प्राधिकरण  
प्राविधिक सेवा, मेकानिकल समूह, तह ९, उप प्रबन्धक पदको खुला/आन्तरिक प्रतियोगितात्मक  
परीक्षाको लागि पाठ्यक्रम

11. **Engineering Economics**

- 11.1 Disbursement scheduling, Cash flow analysis, Time value of money
- 11.2 Project evaluation indicators: Payback Period, IRR and others criteria, choosing the best alternative
- 11.3 Energy tariff schemes and regulatory issues

12. **International Treaty and Conventions**

- 12.1 Koshi Agreement, Gandak Agreement and Electricity Exchange agreements
- 12.2 Treaty between the then Government of Nepal and Government of India concerning the integrated development of Mahakali River including Sarada Barrage, Tanakpur Barrage and Pancheswar Project
- 12.3 Trends and issues in Project Development Agreements (PDA) and Power Purchase Agreements (PPA)

13. **Service-Related Manuals**

- 13.1 Manual for public Involvement in Environmental Impact Assessment (EIA) process of Hydropower Projects
- 13.2 Manual for preparing Terms of Reference (TOR) for environmental Impact Assessment, (EIA) of Hydropower Projects
- 13.3 Manual for preparing Scoping Document for Environmental Impact Assessment (EIA) of Hydro power Projects
- 13.4 Manual for preparing Environmental Management Plan (EPM) for Hydropower Projects
- 13.5 National Environmental Impact Assessment Guidelines, 1993
- 13.6 Safety Guidelines and Standards for Generation, Transmission and Distribution of Hydro Electricity
- 13.7 Manual or Guideline for operation & Maintenance of Hydropower Plant