

नेपाल विद्युत प्राधिकरण
प्राविधिक सेवा, सबै समूह/उपसमूहको तह ८, सहायक 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, व्यवस्थापन र व्यवसायीकता	१००	४०	(क)	छोटो आउने प्रश्न	४ प्रश्न * ५ अंक	३ घण्टा
				(ख)	लामो आउने प्रश्न	३ प्रश्न * १० अंक	
					छोटो आउने प्रश्न	४ प्रश्न * ५ अंक	
				लामो आउने प्रश्न	३ प्रश्न * १० अंक		
द्वितीय	सेवा सम्बन्धी (विस्तृत ज्ञान)	१००	४०	(क)	तर्कयुक्त विश्लेषणात्मक प्रश्न	३ प्रश्न * १० अंक	३ घण्टा
				(ख)	समस्या समाधानमूलक प्रश्न	१ प्रश्न * २० अंक	
					तर्कयुक्त विश्लेषणात्मक प्रश्न	३ प्रश्न * १० अंक	
				समस्या समाधानमूलक प्रश्न	१ प्रश्न * २० अंक		

द्वितीय चरणः अन्तर्वार्ता

पूर्णाङ्कः- ३०

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	३०	मौखिक

द्रष्टव्यः

- 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 खण्डका प्रश्नका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक खण्डका प्रश्नको उत्तर सोही खण्डको 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

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प्रथमपत्र

शासकीय प्रबन्ध, व्यवस्थापन र व्यावसायिकता
(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

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, Stress management, Participative management, Disaster Management
- 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 management:
 - 3.7.1. Project Planning and Scheduling: Network models-CPM/PERT, Human resource planning and resource scheduling, Project preparation for implementation and justification
 - 3.7.2. Project monitoring and control: System of control, Project control cycle, Feedback control systems, Cash control
 - 3.7.3. 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
- 3.8. 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. Challenges of corruption and corruption control strategies
- 4.5. Accountability, responsibility and authority
- 4.6. Compliance mechanism of public accountability

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- 5. Professionalism :** The foundational values for public service - integrity, impartiality, dedication, empathy, tolerance and compassion

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

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. Nepal Electricity Authority: Corporate structure, functions of different business groups, NEA's Subsidiary & Associate Companies, objective, achievement and challenges
- 7.6. Concept of NEA Restructuring in federal context, Operational Performance
- 7.7. Various model of Investment for Hydropower development
- 7.8. 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
- 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

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परीक्षाको लागि पाठ्यक्रम
द्वितीय पत्र
सेवा सम्बन्धी विस्तृत ज्ञान
खण्ड: (क) : ५० अङ्क

1. **Fundamentals of Surveying**

- 1.1. Introduction to Surveying: Concept and Principles
- 1.2. Linear and Angular Measurement Techniques
- 1.3. Basics of Chain, Tape, and Compass Surveying
- 1.4. Basics of Plane Table Surveying: Introduction and Techniques of Plane Table Surveying; Orientation, Intersection and Resection
- 1.5. Modern Equipment for spatial data collection, and linear and angular measurements
- 1.6. Survey computations: Bearing, Coordinates, Reduced Level, Area & Volume
- 1.7. Sources and Types of Errors; Propagation of error; Theory of Errors and Adjustment
- 1.8. Selection, Use, Feasibility, Sustainability, Transfer and Development of Surveying Technology
- 1.9. Procurement, Maintenance and Upgrading of Instruments, Hardware, and Software
- 1.10. Especial consideration of surveying in hydropower development, transmission line etc.

2. **Survey Management**

- 2.1. Survey Need Assessment
- 2.2. Survey Project Formulation
- 2.3. Logistical Arrangement for Surveying including Equipment and accessories
- 2.4. Safety Management
- 2.5. Community Skill of Surveyor
- 2.6. Professional Ethics and Code of Conduct
- 2.7. Institutional Coordination: Survey Office, Land Revenue Office, and other relevant organizations

3. **Levelling**

- 3.1. Introduction to Leveling: Definition, Principles, Applications, Technical Terminologies, Types
- 3.2. Leveling computations: reduced level, profile, cross sections
- 3.3. Sources of Error and Error Adjustment
- 3.4. Trigonometric levelling; determination of height and distances of inaccessible objects, reciprocal trigonometric levelling
- 3.5. Significance of Leveling in Hydropower Projects

4. **Traversing, Triangulation and Trilateration**

- 4.1. Definition, application, and Types
- 4.2. Traverse Computation
- 4.3. Sources of Errors and Error Adjustment
- 4.4. Principles of triangulation and trilateration
- 4.5. Computations and adjustment of triangulation and trilateration

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परीक्षाको लागि पाठ्यक्रम

5. **Computation of Area and Volume**
 - 5.1. Computation of Area: by ordinates, coordinates and double meridian distance method
 - 5.2. Computation of Volume: by average end area, Prismoidal formula, trapezoidal rule and Simpson's 1/3 rule

6. **Cadastral surveying and Land Administration**
 - 6.1. Basics of Cadastral Surveying and its application
 - 6.2. Cadastral surveying methods
 - 6.3. Land Administration System of Nepal
 - 6.4. Organizational Arrangement for cadastral surveying and land administration in Nepal
 - 6.5. Availability of cadastral and land ownership related data
 - 6.6. Process of land acquisition, complexities of land acquisition in Nepal, Compensation issues

7. **Photogrammetry and Remote Sensing**
 - 7.1. Basics of Photogrammetry; Principles, application, terminologies, types of aerial photographs
 - 7.2. Planning aerial flight, aerial camera, overlaps, scale, etc.
 - 7.3. Distortions, Displacement in photogrammetry and their corrections
 - 7.4. Photogrammetry processes: orientation, aerial triangulation, DTM generation, orthophoto production
 - 7.5. Modern Technologies like Unmanned Aerial Vehicle (UAV), LiDAR; basics, techniques and application
 - 7.6. Basics of Remote Sensing; Concept; Principles, types,
 - 7.7. Image acquisition techniques, types of scanners, source of errors and their removal
 - 7.8. Techniques of image data processing and interpretation
 - 7.9. Acquiring and processing photographs and satellite images for hydropower projects

खण्ड: (ख) : ५० अङ्क

8. **Geodesy**
 - 8.1. Coordinate system and star coordinate updating
 - 8.2. Mathematical model for latitude, longitude and azimuth
 - 8.3. Transformation between local and global system
 - 8.4. Celestial system

9. **Global Navigation Satellite System (GNSS)**
 - 9.1. Basics of Space Geodesy
 - 9.2. Concept and Principles of GNSS
 - 9.3. GNSS Components
 - 9.4. Types of GNSS; GPS, GLONAS, Bei Dou, Galileo, QZSS; significance of different GNSS systems
 - 9.5. GNSS Signals, biases and solutions
 - 9.6. Coordinate Systems and Spheroid used in different GNSS system
 - 9.7. Error and correction in GNSS
 - 9.8. GNSS Data processing; Significance of CORS, availability of CORS in Nepal

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- 9.9. Procurement of GNSS equipment; Availability of GNSS/GPS data / CORS data in Nepal
10. **Cartography**
 - 10.1. Concept and Scope of cartography
 - 10.2. Different Types of Maps
 - 10.3. Conventional and digital cartography
 - 10.4. Map compilation and production
 - 10.5. Map Generalization
 - 10.6. Modern map making techniques
 - 10.7. Thematic Mapping
 - 10.8. Web Cartography
11. **Geographical information system (GIS)**
 - 11.1. Introduction to GIS and its application
 - 11.2. Selection and handling of GIS software; proprietary, open source based
 - 11.3. GIS component
 - 11.4. Data model
 - 11.5. Compiling data from different sources
 - 11.6. Data processing techniques
 - 11.7. GIS operation and spatial analysis
 - 11.8. Availability of GIS data required for hydropower projects in Nepal
 - 11.9. Conversion of Raster to Vector and vice-versa
12. **Engineering Surveying**
 - 12.1. Road Survey: Alignment surveying, curve setting, different type of curves, profile surveying, cross section surveying
 - 12.2. Transmission line surveying; route surveying, Profile survey of transmission line and distribution line; fixing tower location; angle points; Power line/ Transmission line crossing
 - 12.3. Tunnel survey; Alignment of the centerline of the tunnel; Transferring the alignment underground; Transferring the levels under ground
 - 12.4. Hydropower station survey: Intake, reservoir, dam, power house
13. **Contract Management**
 - 13.1 Preparation of contract documents, specifications, condition of contract and other contractual procedures
 - 13.2 Familiarization with procurement guidelines and standards of PPMO Nepal, World Bank & Asian Development Bank (WB & ADB)
 - 13.3 Standard Bidding Document for ICB including for EPC contract, Standard Bidding Document for NCB including for EPC contract
 - 13.4 Settlement of contractual disputes (mediation, arbitration and negotiation)
14. **Power Sector Development and Engineering Economics**
 - 14.1. Potential of hydropower development and Identification of hydropower scheme
 - 14.2. Disbursement scheduling, Cash flow analysis, Time value of money
 - 14.3. Project evaluation indicators, IRR, Payback period, Choosing the best alternative
 - 14.4. Risk analysis, Inflation & price change
 - 14.5. Energy tariff schemes and regulatory issues