

नेपाल विद्युत प्राधिकरण

प्राविधिक सेवा, सिभिल समूह, सर्भे उपसमूह, तह-७, सर्भे अधिकृत 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 प्रश्नपत्रबाट एकैदिन वा छुट्टाछुट्टै प्रश्नपत्रबाट 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 जेसुकै 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 विषय (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
(सर्भे उपसमूहका लागि)

१०० अङ्क

Section: A

(5x10=50)

1. Fundamentals of Surveying

- 1.1 Objective, Principles and Disciplines of surveying
- 1.2 Linear measurement techniques
- 1.3 Principle and methods of chain surveying
- 1.4 Types, sources of errors in measurements, precision and accuracy
- 1.5 Principle and methods of plain table surveying
- 1.6 Advantages and disadvantages of plain table surveying
- 1.7 Bearings, types and bearing systems, magnetic declination
- 1.8 Local attraction in compass survey
- 1.9 Compass traversing, computation of bearing, errors and adjustments
- 1.10 Application of surveying in hydropower development
- 1.11 Plotting and Mapping

2. Survey Management

- 2.1 Survey team
- 2.2 Terms of reference
- 2.3 Survey design, specification and costing
- 2.4 Equipment
- 2.5 Safety management
- 2.6 Professional ethics, code of conduct
- 2.7 Coordination with institutions

3. Levelling

- 3.1 Principle of levelling
- 3.2 Methods of computation of reduced level
- 3.3 Two peg test
- 3.4 Differential levelling, fly levelling, reciprocal levelling
- 3.5 Profile levelling, cross sectioning
- 3.6 Sources of errors in levelling
- 3.7 Errors, precision and adjustment of errors

4. Traversing

- 4.1 Measurement of horizontal and vertical angles
- 4.2 Closed traverse and linked traverse
- 4.3 Horizontal and vertical control of traverse
- 4.4 Computation of angles, bearings, latitudes and departures, independent coordinates
- 4.5 Errors, precision and adjustment in angles, bearings and coordinates
- 4.6 Plotting of traverse and topographic map

5. Tacheometry

- 5.1 Principle of tacheometry
- 5.2 Stadia method, tangential method and subtense bar method

6. Trigonometric levelling

- 6.1 Determination of height and distances of inaccessible objects
- 6.2 Reciprocal trigonometric levelling

7. Contouring

- 7.1 Characteristics of contouring
- 7.2 Method of contouring
- 7.3 Plotting of contours and detailing
- 7.4 Uses of contour maps

8. Orientation

- 8.1 Analytical intersection and resection
- 8.2 Two point and three points resection and their significance

9. Triangulation and Trilateration

- 9.1 Principles of triangulation and trilateration
- 9.2 Computations and adjustment of triangulation and trilateration

10. Computation of area and volume

- 10.1 Area by ordinates, coordinates and double meridian distance method
- 10.2 Volume by average end area, prismoidal formula, trapezoidal rule, and Simpson's 1/3 rule.

11. Photogrammetry and remote sensing

- 11.1 Types of aerial photography
- 11.2 Scale and coverage
- 11.3 Relief displacement
- 11.4 Aerial photo processing
- 11.5 Application of aerial photograph
- 11.6 Concept of remote sensing
- 11.7 Types of remote sensing
- 11.8 Image processing and interpretation
- 11.9 Electromagnetic radiation
- 11.10 Application of remote sensing

Section: B**(5x10=50)****12. Global positioning system (GPS)**

- 12.1 Introduction to space geodesy
- 12.2 Principle of GPS
- 12.3 GPS signals and positioning
- 12.4 Geometric coordinates and WGS 84
- 12.5 GPS data processing

13. Cartography

- 13.1 Concept of cartography
- 13.2 Scope of cartography
- 13.3 Conventional and digital cartography
- 13.4 Map compilation and production
- 13.5 Geographic and cartographic scale
- 13.6 Topographic cartography
- 13.7 Data acquisition, processing, analysis, visualization and presentation
- 13.8 Map reproduction, enlargement and reduction

14. Geographical information system (GIS)

- 14.1 Introduction to GIS
- 14.2 GIS component
- 14.3 Data model
- 14.4 GPS data processing
- 14.5 GIS operation and spatial analysis
- 14.6 Geometric coordinates and WGS 84
- 14.7 Application of GIS

15. Cadastral surveying

- 15.1 Cadastral concepts
- 15.2 Principles of cadastral surveying
- 15.3 Cadastral survey methods

- 15.4 Land laws
- 15.5 Land acquisition and compensation

16. Geodesy

- 16.1 Coordinate system and star coordinate updating
- 16.2 Mathematical model for latitude, longitude and azimuth
- 16.3 Transformation between local and global system
- 16.4 Celestial system

17. Plotting and mapping

- 17.1 Plotting of topographic map, L-section, Cross - section
- 17.2 Software of plotting and mapping
- 17.3 Mapping for hydropower project

18. Use of survey instrument

- 18.1 Plane table, Telescopic alidade, Compass, Level, Theodolite, EDM, Total station, GPS receiver
- 18.2 Aerial camera, process camera, digital camera, scanner, stereo plotter, stereoscope, scribing tools, drawing equipment

19. Transmission line survey

- 19.1 Route alignment survey of transmission line
- 19.2 Profile survey of transmission line and distribution line
- 19.3 Tower location
- 19.4 Angle points
- 19.5 Power line/Transmission line crossing

20. Tunnel survey

- 20.1 Alignment of the centerline of the tunnel
- 20.2 Transferring the alignment under ground
- 20.3 Transferring the levels under ground

21. Digital mapping

- 21.1 Capture and handling of digital data
- 21.2 Conversion of raster data to vector and vice-versa
- 21.3 Knowledge of Auto-CAD, Arch-INFO, Arch-VIEW

22. Construction Survey

- 22.1 Hydropower station: Intake, reservoir, dam, powerhouse
- 22.2 Road alignment survey: gradient, curve, cutting, filling
- 22.3 Curve: types of curve, setting out of simple circular curve and vertical curve

23. Power sector development and Engineering Economics

- 23.1 Potential of hydropower development
- 23.2 Identification of hydropower scheme
- 23.3 Payback period, cost benefit ratio, internal rate of return
- 23.4 Risk analysis, tariff structure.

