नेपाल विद्युत प्राधिकरण

प्राविधिक सेवा, सिभिल समूह, सिभिल उपसमूह, तह–४, फोरमेन पदको

खुल्ला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

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

पत्र	विषय	पूर्णांङ्क	उत्तिर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या	प्रति प्रश्न अंकभार	समय
प्रथम	आधारभूत सामान्य ज्ञान र सेवा सम्बन्धी	१००	४०	वस्तुगत वहु बैकल्पिक प्रश्न	खण्ड (क) आधारभूत सामान्य ज्ञान	२०	२	४५ मिनेट
					खण्ड (ख) सेवा सम्बन्धी	३०	२	
द्वितीय	सेवा सम्बन्धी	१००	४०	विषयगत प्रश्न	छोटो उत्तर आउने प्रश्न	१०	५	२ घण्टा ३० मिनेट
					लामो उत्तर आउने प्रश्न	५	१०	

२. प्रथमपत्रको खण्ड क सबै समुहको लागि एउटै हुनेछ । प्रथमपत्रको खण्ड क समाप्त भएपछि एकै सिटिङ्ग खण्ड ख को परीक्षा हुनेछ । प्रथमपत्रको खण्ड ख र द्वितीयपत्रको पाठ्यक्रम एउटै हुनेछ ।

३. 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 ।

४. प्रथमपत्र र द्वितीयपत्रको परीक्षा फरक फरक हुनेछ ।

५. परीक्षाको माध्यम नेपाली वा अंग्रेजी भाषा हुनेछ ।

६. सामान्यत: प्रत्येक इकाईबाट प्रश्नहरु सोधिनेछन् । इकाईको अंकभार तोकिए बमोजिम हुनेछ । लामो उत्तर दिनुपर्ने प्रश्न एकै वा खण्ड खण्ड गरी (दुइ वा सो भन्दा बढी) सोध्न सकिनेछ ।

<u>प्रथमपत्र:</u>

<u>खण्ड (क) आधारभूत सामान्य ज्ञान (प्राविधिक सेवा, तह-४ का सबै समूहका लागि):</u>

१.१ नेपालको भूगोल: धरातलीय स्वरुपको किसिम र विशेषता, नदीनाला, तालतलैया र खनिज पदार्थ ।
१.२ नेपाल विद्युत प्राधिकरण सम्बन्धि जानकारी: स्थापना, संचालक समिति, निर्देशनालयहरु, प्राधिकरणका उत्पादन केन्द्र तथा प्रमुख आयोजनाहरु ।
१.३ राष्ट्रिय महत्वका समसामयिक घटना तथा नविनतम गतिविधिहरु ।
१.४ सामान्य गणितिय अभ्यास: प्रतिशत, अंकगणितिय तर्क, नाफा-नोक्सान, श्रेणीक्रम ।
१.५ विद्युत चोरी नियन्त्रण ऐन, २०५८ अनुसार विद्युत चोरी मानिने अवस्था, विद्युत चोरी नियन्त्रण नियमावली, २०५९ अनुसार विद्युत आपूर्ति बन्द गर्न सक्ने, पून: जडान गर्ने अवस्था र पुरस्कार व्यवस्था ।

प्रथमपत्र खण्ड ख र द्वितीयपत्रको पाठ्यक्रम (सिभिल समूह)

1. DRAWING (2x2=4)

1.1 Importance of Drawing in Engineering
1.2 Drawing sheet and their standard sizes, scales and different types of lines
1.3 Construction of different regular geometrical figures,
1.4 Draw isometric view, oblique view, section and developments
1.5 Draw Plan and Sections of Simple buildings, Prepare site plan and location plan.
1.6 Draw Plan, Elevation and Section of Staircase, Door and Windows.
1.7 Understanding of different types of drawing such as tender drawing and construction drawing

2. SURVEYING (2x2=4, 1x5=5)

2.1 Definition of Surveying and Importance of Surveying in Engineering
2.2 Classification, types and Objectives of surveying
2.2 Precision, accuracy, errors and tolerance
2.3 Tools and equipment used for measurement
2.4 Linear and angular measurement.
2.5 Method of Surveying: Levelling-Abney level, Auto level; Tachometric survey and its calculation.
2.6 Simple curves, contour map and introduction to Total Station

3. **CONSTRUCTION MATERIALS (4x2=8, 1x5=5, 1x10=10)**

3.1 Stone: Formation of rocks; Igneous, Sedimentary and Metamorphic ; Source; River boulders, Stone Quarry; Characteristics of good building stones; Shape: Rounded, irregular, angular and flaky; Selection and use of stones for various construction; Dressing, seasoning and stacking (Extraction and preparation for use)
3.2 Aggregate: Classification according to nature of formation, size and shape; Test (concept only) Testing of sand: Silt content; Sieve Analysis.
3.3 Brick and Tiles: Composition (mud, cement); Manufacturing : Soil/mortar preparation, Molding, Drying, Burning; Brick types and their uses ; Machine made and locally made bricks and their sizes.
3.4 Testing of bricks; Types of tiles and Test of tiles.
3.5 Cement: Composition, Manufacturing process, Types, Test, Storage and Setting
3.6 Mortar: Definition, Types, Water Cement Ratio, batching, mixing, transporting and placing, Curing processes.
3.7 Concrete: Definition, Types: PCC & RCC, Water Cement Ratio, Preparation: Batching and Mixing, Transporting, Placing, Compacting, Curing , Grade/Strength, Tests (Concept only): Slump test, Compression test.

4. CONSTRUCTION TECHNOLOGY (4x2=8, 1x5=5, 1x10=10)

4.1 Stone Masonry: Types, Tools and Equipment, Dressing, Wall and their Types
4.2 Brick Masonry: Types of Brick Bond, tools and Equipment, procedure of making bonds
4.3 Wall: Definition and types of walls

4.4 Protective Measures in Building: Dampness its causes and effects, method of damp proofing, anti termite treatments.

4.5 Concrete Works: PCC and RCC and their ingredients, water cement ratio and strength, Batching, mixing, transporting, compacting and curing, Roles of steel reinforcement.

4.6 Flooring and Finishing: Types of flooring, Plastering, Pointing, Cladding etc.

4.7 Building and Components: Types of Building, Components of Buildings, Foundation, Stairs, doors and windows, roof and roof covering, false ceiling.

4.8 Common problems in Building: Cracks and its causes, floor shrinking and its remedies

4.9 Earthquake resistant Buildings: Earthquake resistant design of load bearing and frame structure buildings, retrofitting techniques.

4.10 Temporary Construction: Shoring, Scaffolding, Formwork

5. ESTIMATING AND COSTING (2x2=4, 1x5=5, 1x10=10)

5.1 Introduction and purpose of estimating

5.2 Types of estimate, Unit of measurement for different items and data required for estimating

5.3 Estimate of Earthwork, masonry footing, wall of building, RCC works, plastering, punning, pointing works,

5.4 Rate Analysis: Definition, Current district rate, Format for rate analysis, Factor affecting rate analysis, Rate of material, Transportation rate related to capacity of vehicle and Procedure of rate analysis

5.5 Analysis of rate of Brickwork, PCC, Steel reinforcement

6. CONSTRUCTION SUPERVISION (4x2=8, 1x5=5, 1x10=10)

6.1 Role of Supervisor: Supervisor as a builder's/employee's agent, Duties of supervisor, Relationships between client, consultant and contractor.

6.2 Manage Construction sites: Major component of construction site (site office, site store, fabrication yard, perishable item stock yard, workers' & technicians' accommodation etc.) **,** List of site logistics, Arrangement of utilities (water supply, electricity, telephone etc.) **,** Surface water control, Maintaining good sanitary condition/Effect of unsanitary condition **,** Arrangement of equipment, Necessity of safety construction, Safety rules

6.3 Prepare Progress report and builders diary: Daily work progress report, Monthly progress report, Definition of builder's diary, Supervisor's daily diary, Methods to entry diary.

6.4 Log book, Muster roll, Measurement Book, Running bill, Final Bill

6.5 Tender notice, tender evaluation, award and signing of contract, contract document and conditions of contract

6.6 Completion certificate and post construction activities.
Concept of gabion protection works.)

7 **GEO-TECHNICAL (2x2=4)**

7.1 Methods of excavation and measurements.

7.2 Methods of soil compaction for preparing foundation.

7.3 Different types of rock in general

7.4 Different types of soil in general.

8 HYDRAULIC STRUCTURES (2x2=4, 1x5=5)

8.1 Types of headwork.
8.2 Design parameters of headwork structure.
8.3 Hydropower plants, type and components.
8.4 General knowledge of power station, substation, penstocks, turbine, surge tank, the draft tube, the tail- race and energy dissipaters.
8.5 Causes of failures of dams.
8.6 Functions of hydraulic structures. (Dams, spillways, intake, canal, tunnel.
8.7 River training works, types, functions and layouts.
8.8 Heavy equipment and their utilities for the construction of hydropwer projects.

9 TRANSMISSION LINES AND TOWERS (2x2=4, 1x5=5)

9.1 General knowledge of types of electrical towers and transmission conductors.
9.2 General concept of design parameters of transmission lines and towers.
9.3 General understanding of power station, substation.

10 DISTRIBUTION LINES (2x2=4, 1x5=5)

10.1 General knowledge of types and categories of distribution (transmission) cables with reference to distribution.
10.2 General knowledge about technical problems, such as, power loss and leakage etc.
10.3 General knowledge of house wiring, connection and installations.
10.4 General acquaintance with the social problems such as the cases of thefts and issues in reference with distribution system.

11. ENGINEERING SERVICE (2x2=4, 1x5=5, 1x10=10)

11.1 General mechanical features of the transmission lines.
11.2 General knowledge of types of conductors and fittings.
11.3 General idea about line insulator materials.
11.4 General idea about insulator protective fittings.
11.5 General knowledge about truss structure.
11.6 General idea about the safety factors on design and fitting/ construction of transmission/ distribution wires and towers.

12. INSTITUTIONAL KNOW-HOW (संस्थागत जानकारी) (2x2=4, 1x5=5)

12.1 General knowledge of Nepal Electricity Authority
12.2 General knowledge regarding capacities of various power plants of Nepal and their locations

द्रष्टव्य: पाठ्यक्रममा राखिएका संविधान, ऐन, नियम र विनियमहरु परीक्षा हुनु भन्दा ३ महिना अगाडी सम्म संशोधन वा खारेज भई त्यसको सट्टा हाल प्रचलनमा रहेकालाई सोही अनुरुप पाठ्यक्रममा समावेश भएको मानिने छ ।

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