नेपाल विद्युत् प्राधिकरण

प्राविधिक सेवा, सिभिल समूह, सिभिल उपसमूह, तह-५, सुपरभाइजर/ओभरसियर पदको खुल्ला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

१. शैक्षिक योग्यता: प्रचलित कर्मचारी सेवा विनियमावलीमा व्यवस्था भए अनुसार ।

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

पत्र	विषय	पूर्णांङ्क	परीक्षा प्रणाली	प्रश्न संख्या	प्रतिप्रश्न अंकभार	समय
प्रथमपत्र	सिभिल ईन्जिनियरिंङ्ग **(I)**	३०	वस्तुगत वहुउत्तर	३०	१	३० मिनेट
द्वितीयपत्र	सिभिल ईन्जिनियरिंङ्ग **(II)**	७०	विषयगत	१०	७	२ घण्टा ३० मिनेट

३. वस्तुगत वहुउत्तर परीक्षा प्रणालीमा प्रत्येक प्रश्नका चार वटा सम्भाव्य उत्तर दिइने छ । प्रश्नको उत्तर लेख्दा केरमेट गरेको, दोहोरो लेखेको, सच्याएको, निर्दिष्ट स्थानभन्दा अन्यत्र लेखेको वा उत्तर नै सारेकोलाई गलत मानिनेछ ।

४. प्रत्येक गलत उत्तर वापत सो प्रश्न वापत पाउने अंकको ०.२ (बीस प्रतिशत २०%) का दरले सो बिषयमा पाएको कुल प्राप्तांकबाट घटाईनेछ ।

५. कालो/नीलो मसी मात्र भएको डटपेन/कलमले उत्तरको लागि निर्धारित कोठाका प्रश्नमा क,ख,ग,घ मध्ये एउटा मात्र सहि उत्तर स्पष्ट रुपले लेख्नूहोला । पेन्सिलले लेखेकोलाई मान्यता दिइने छैन ।

६. प्रथम र द्वितीयपत्रको परीक्षा २ पटक गरेर हुनेछ । प्रथमपत्रको परीक्षा सकिएपछि द्वितीयपत्रको परीक्षा तत्काल हुनेछ ।

७. द्वितीयपत्रको लिखित परीक्षाको माध्यम नेपाली वा अंग्रेजी भाषा हुनेछ ।

प्रथम र द्वितीयपत्रको पाठ्यक्रम

1 DRAWING

1.01 Drafting techniques, development of plan and preparation of drawing. Section of Hydropower structures

1.02 Objectives and role of working drawing and its relationship with detail estimating and specifications

1.03 The comparative parameters of tender drawing and working drawing.

1.04 Preparation of large- scale construction details in plan and section. Importance of such details in terms of accuracy of estimation, Bill of Quantities and Construction supervision.

1.05 Tracing of topographical maps and drawings, of construction schedule and presentation of maps and drawings with required features, accuracy and standard.

2. SURVEYING

2.01 Different types of surveying methods.

2.02 Different types of surveying equipment.

2.03 Procedures of surveying.

2.04 Accuracy, errors and the methods of adjustments in surveying.

2.05 General concept of survey for power house and tunneling.

2.06 Preparation of plans, L- sections, Cross- sections and details.

3. ESTIMATING AND COSTING

3.01 Various methods of measurements and estimating quantities of civil works. Different units in, which the various quantities are expressed.

3.02 Bases and considerations in preparing analysis of rates for civil works.

3.03 Development of unit rates and factors affecting the unit rates.

3.04 Preparing analysis of rates for civil works with related to hydropower projects.

3.05 Methods of cost estimating. Preparation of project cost estimate.

3.06 Objectives and importance of specification for different types of work. Techniques of preparing specifications for different types of works.

3.07 Preparation of Bill of Quantities. Its functions and measurement techniques. Its significance.
3.08 Purpose of Measurement Book keeping. Important parameters that a Measurement Book should include.

4. GEO-TECHNICAL

4.01 General concept of geology. Geological investigation.
4.02 Classification of rocks (soil) and their significance.
4.03 Classification of soil, soil-water relation and their significance.
4.04 General concept of consolidation and compaction, and their distinguishing characteristics.
4.05 Factors affecting soil compaction.
4.06 Methods of soil compaction for preparing foundation. Foundation treatments.
4.07 Concept of optimum moisture content, its significance and methods to control moisture content.
4.08 Active and passive earth pressures, their definition and general understanding. Concept of surcharge load.
4.09 Bearing capacity, safe bearing capacity and ultimate bearing capacity of foundation.
4.10 Types of foundation and their application.
4.11 Soil exploration, its need and procedure.
4.12 General concept of diversion structure.
4.13 General concept about stability of structure, the destabilizing and stabilizing factors.
4.14 Safety criteria.

5. **CONSTRUCTION MATERIALS AND MANAGEMENT**

5.01 Construction materials, such as aggregates, stones, lime, cement, mortar, concrete, etc.
5.02 Grading concrete and the significance.
5.03 Tendering process, types of contract and general conditions of contract.
5.04 Measurement and Bill of Quantities.
5.05 Specifications of the works to be carried out under the contract.
5.06 Schedule or works, its components and deadlines.
5.07 Construction site planning, organizing labor and daily schedules.
5.08 Demand and supply of materials, equipments and including their schedule for construction project.
5.09 Safety measures and programs in excavation, drilling, blasting, underground works.
5.10 Concept of construction Management.
5.11 Methods of construction management.

6. HYDRAULIC STRUCTURES

6.01 Headwork structures (Dams, Spillways), types and components.
6.02 General concept of design parameters of headwork structure. Computation of waterpower potential.
6.03 Hydropower plants, type and components.
6.04 General concept of design parameters of hydropower plants.
6.05 Understanding of power station, substation, penstocks, turbine, surge tank, the draft tube, the tail race and energy dissipaters.
6.06 Causes of failures of dams (general knowledge).
6.07 General understanding of surface hydrology.
6.08 General functions of hydraulic structures. (Dams, spillways, intake, canal, tunnel.
6.09 Design and layout of form works (scaffolding).
6.10 Protective structures, types and functions.
6.11 River training works, types, functions and layouts.

7. TRANSMISSION LINES AND TOWERS

7.01 Types of electrical towers and transmission lines.
7.02 Design parameters of transmission towers.
7.03 Design parameters of transmission lines.
7.04 General understanding of power station, substation,

8. DISTRIBUTION

8.01 General knowledge of types and categories of distribution (transmission) cables with reference to distribution.
8.02 General knowledge about technical problems, such as, power loss, leakage and cases of thefts.
8.03 Knowledge of general internal wiring and connections.
8.04 General acquaintance with the social problems and issues in reference with distribution system.
8.05 Techniques of connection of single circuits with single phase, 3- phase power supply system.
8.06 Installation of a rigid PVC conduit (pipe or holder pipe) on masonry surface.
8.07 Mounting of fixtures such as wall plugs, boxes and blocks on wall surfaces.
8.08 Safety precautions.

9. ENGINEERING

9.01 External forces (loading) to be considered for the design.
9.02 Internal forces (axial tension/ compression, shear, bending, torsion).
9.03 Types of stresses. Stress- strain diagram.
9.04 Design of RCC members (beams, struts and columns, etc) with criteria and the procedure.
9.05 Understanding of steel structures and their simple design with criteria and the procedure.
9.06 General mechanical features of the transmission lines.
9.07 General precautions to be taken during the design and construction process.
9.08 Span length of transmission line.
9.09 Concept of line supports- poles and towers and their basic design.
9.10 General knowledge of types of conductors and fittings.
9.11 General idea of line insulator materials.
9.12 General idea of insulator protective fittings.
9.13 Construction and manufacture of poles and towers.
9.14 Live- metal clearance and effect of other materials in proximity.
9.15 General concept about stability of structure and the destabilizing and stabilizing factors.

10. INSTITUTIONAL KNOW-HOW

10.1. General knowledge of Nepal Electricity Authority, its organizational structure and function of various business groups
10.2. General knowledge of various power plants of Nepal, their types, salient features, and their geographical locations
10.3. General knowledge on Nepalese power transmission system, voltage levels and lengths, export-import links for power exchange with India.

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