

प्रदेश लोक सेवा आयोग, कर्णाली प्रदेश

प्रदेश निजामती सेवा र स्थानीय सेवाको ईञ्जिनियरिङ्ग सेवा, सिभिल समूह, विल्डिङ्ग एण्ड आर्किटेक्ट उपसमूह, अधिकृतस्तर सातौं तहको खुला, अन्तर तह र आन्तरिक अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम र परीक्षा योजना

पाठ्यक्रमको रूपरेखा:- यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ।

प्रथम चरण:-	लिखित परीक्षा (Written Examination)	पूर्णाङ्क:- २००
अन्तिम चरण:-	(क) सामूहिक परीक्षण (Group Test)	पूर्णाङ्क:- १०
	(ख) अन्तर्वार्ता (Interview)	पूर्णाङ्क:- ३०

परीक्षा योजना (Examination Schedule)

१. प्रथम चरण: लिखित परीक्षा (Written Examination) पूर्णाङ्क: २००

पत्र	विषय	खण्ड	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या Xअङ्क	समय
प्रथम	General Subject	Part I: General Knowledge and General Ability Test	१००	४०	वस्तुगत (Objective): बहुवैकल्पिक प्रश्न (Multiple Choice Questions)	५०X१=५०	१ घण्टा ३० मिनेट
		Part II: General Technical Subject				५०X१=५०	
द्वितीय	Technical Subject		१००	४०	विषयगत (Subjective): छोटो उत्तर लामो उत्तर	१०X५=५० ५X१०=५०	३ घण्टा

२. अन्तिम चरण: सामूहिक परीक्षण (Group Test) र अन्तर्वार्ता (Interview) पूर्णाङ्क: ४०

पत्र/विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
सामूहिक परीक्षण (Group Test)	१०	सामूहिक छलफल (Group Discussion)	३० मिनेट
अन्तर्वार्ता (Interview)	३०	बोर्ड अन्तर्वार्ता (Board Interview)	

द्रष्टव्यः

१. यस पाठ्यक्रम योजनालाई प्रथम चरण र अन्तिम चरणमा विभाजन गरिएको छ।
२. खुला र समावेशी समूहको एउटै प्रश्नपत्रबाट परीक्षा सञ्चालन हुनेछ।
३. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ।
४. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ। तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन।
५. बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा क्याल्कुलेटर प्रयोग गर्न पाइने छैन।
६. विषयगत प्रश्नहरूको हकमा तोकिएको अङ्कमा एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिनेछ।
७. परीक्षा हलमा मोबाइल फोन, स्मार्ट वाच, हेड फोन वा यस्तै प्रकारका विद्युतीय उपकरण, पुस्तक, नोटबुक, झोला लगायतका वस्तुहरू लैजान पाइने छैन।
८. परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिईए अनुसार हुनेछ।
९. विषयगत प्रश्न हुने पत्र/विषयका प्रत्येक भाग/खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक भाग/खण्डका प्रश्नहरूको उत्तर सोही भाग/खण्डको उत्तरपुस्तिकामा लेख्नुपर्नेछ।
१०. यस पाठ्यक्रम अनुसारका पत्र/विषयका विषयवस्तुमा जुनसुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगावै संशोधन भई कायम रहेका विषयवस्तुलाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
११. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अन्तिम चरणको परीक्षामा सम्मिलित गराइनेछ।
१२. लिखित परीक्षा र अन्तिम चरणको सामूहिक परीक्षण र अन्तर्वार्ताको कुल प्राप्ताङ्कको आधारमा अन्तिम परीक्षाफल प्रकाशित गरिनेछ।
१३. पाठ्यक्रम अध्यावधिक भई लागू हुने मिति: २०८१।०८।२४

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अधिकृतस्तर सातौं तहको खुला, अन्तर तह र आन्तरिक अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

प्रथम पत्र (Paper I): General Subject

Part (I):

General Awareness & General Ability Test

(50 Marks)

1. General Awareness and Contemporary Issues (25×1 Mark = 25 Marks)
 - 1.1 Physical, socio-cultural and economic geography and demography of Nepal with special focus on Karnali Province
 - 1.2 Major natural resources of Nepal
 - 1.3 Geographical diversity, climatic conditions, and livelihood & lifestyle of people
 - 1.4 Notable events and personalities, social, cultural and economic conditions in modern history of Nepal
 - 1.5 Current periodic plan of Karnali Province and Nepal
 - 1.6 Information on sustainable development, environment, pollution, climate change, biodiversity, science and technology
 - 1.7 Nepal's international affairs and general information on the FAO, SAARC & WTO
 - 1.8 The Constitution of Nepal
 - 1.9 Governance system and Government (Federal, Provincial and Local)
 - 1.10 Provisions of civil service act [(Karnali Province Civil Service Act, 2080 and Regulations, 2080], {Local Services (Formulation and Operation) Act, 2081} and regulation relating to organizational structure, posts of service, fulfillment of vacancy and code of conduct
 - 1.11 Functional scope of public services
 - 1.12 Public Service Charter
 - 1.13 Concept, objective and importance of public policy
 - 1.14 Fundamentals of management: planning, organizing, staffing, directing, controlling, coordinating, decision making, motivation and leadership
 - 1.15 Government planning, budgeting and accounting system
 - 1.16 Major events and current affairs of national and international importance
 - 1.17 Public service delivery system and its barriers in Nepal
2. General Ability Test (25 ×1 Mark = 25 Marks)
 - 2.1 Verbal Ability Test (8×1 Mark = 8 Marks)

Jumble words, Series, Analogy, Classification, Coding-Decoding, Matrix, Ranking Order Test, Direction and Distance Sense Test, Common Sense Test, Logical Reasoning, Assertion and Reason, Statement and Conclusions
 - 2.2 Numerical Ability Test (9×1 Mark = 9 Marks)

Series, Analogy, Classification, Coding, Arithmetical reasoning/operation, Percentage, Ratio, Average, Loss & Profit, Time & Work, Data interpretation & Data verification
 - 2.3 Non-verbal/Abstract Ability Test (8×1 Mark = 8 Marks)

Figure Series, Figure Analogy, Figure Classification, Figure Matrix, Pattern Completion/Finding, Analytical Reasoning Test, Figure Formation and Analysis, Rule Detection, Water images, Mirror images, Cubes and Dice & Venn-diagram

Part (II):
General Technical Subject (50 Marks)

1. Structural Engineering (5 marks)
 - 1.1 Center of gravity, moment of inertia, radius of gyration
 - 1.2 Stresses and strains, theory of torsion and flexure
 - 1.3 Analysis of beams, columns, slabs and frames: bending moment, shear force and deflection.
 - 1.4 Determinate structures (energy methods), three hinged systems, suspension cable system
 - 1.5 Indeterminate structures: slope deflection method and moment distribution method, use of influence line diagrams for simple beams, unit load method, two hinged arch
 - 1.6 Plastic analysis of beam and frame
2. Engineering Survey (6 marks)
 - 2.1 Introduction and basic principles, classification of surveys
 - 2.2 Linear measurement techniques: - chain and tape method, ranging rods and arrows, representation of measurement and common scales, sources of errors, effect of slope and slope correction, correction for chain and tape measurements, abney level and clinometers
 - 2.3 Compass: types of compasses, problems and sources of errors in compass survey
 - 2.4 Plane table surveying: principles and methods of plane tabling
 - 2.5 Leveling: principle of leveling, temporary and permanent adjustment of level, bench marks, booking methods and their recording, longitudinal and cross sectioning, reciprocal leveling, trigonometric leveling
 - 2.6 Contouring: contour interval and characteristics of contours, methods of contouring, interpolation, use of contour map
 - 2.7 Theodolite traversing: need of traverse and its significance, principle of traverse, computation of coordinates; adjustment of closed traverse and linked traverse, closing errors
 - 2.8 Tacheometry: principle, tacheometric formula, relation of distance and elevation
 - 2.9 Uses of total station and electronic distance measuring instruments
 - 2.10 Curves: types and suitability, elements, geometry and setting out of curves (simple circular curve, vertical curve, transition curve)
 - 2.11 Calculation of area and volume: methods of area calculation of land, methods of area and volume calculation of cut and fill, mass haul diagram
3. Construction Materials (7 marks)
 - 3.1 Properties of building materials: physical, chemical, constituents, thermal
 - 3.2 Stones: characteristics and requirements of stones as a building material
 - 3.3 Ceramic materials: ceramic tiles, mosaic tile, brick types and testing
 - 3.4 Cementing materials: types and properties of lime and cement; cement mortar tests
 - 3.5 Metals: types and properties of steel, alloys
 - 3.6 Timber and wood: timber trees in Nepal, types and properties of wood
 - 3.7 Miscellaneous materials: asphaltic materials (asphalt, bitumen and tar), paints and varnishes, polymers
 - 3.8 Soil properties and its parameters
 - 3.9 Local and modern building construction material in Nepal
 - 3.10 New construction technologies: Geo-grid, Geo-textile, Prefab, Reinforced wall and similar types of construction materials
4. Concrete Technology (5 marks)
 - 4.1 Constituents and properties of concrete (physical and chemical)
 - 4.2 Water cement ratio

- 4.3 Grade and strength of concrete, concrete mix design, testing of concrete
- 4.4 Mixing, transportation pouring and curing of concrete
- 4.5 Admixtures
- 4.6 High strength concrete
- 4.7 Pre-stressed concrete
- 5. Geotechnical Engineering (6 marks)
 - 5.1 Formation of soil, general classification of soil depending on transporting agent and deposit media
 - 5.2 Three phases of soil: basic terms, relation between basic terms, volumetric relationship: mass and volume, weight and volume, specific gravity of soil and laboratory test, field density and determination methods
 - 5.3 Types of water in soil, moisture content and relationship, organic content in soil
 - 5.4 Index properties of soil: grain size distribution and types of soil depending on grain size distribution, consistency limit, relative density, laboratory test of index properties
 - 5.5 Types of rock, dip, strike, fold, fault, cleavage, geographical divisions of Nepal,
 - 5.6 Earthquake: causes of earthquake, types of waves, grading of earthquake, seismic fault line in Nepal
 - 5.7 Tunnel: types of tunnels, components and method of tunneling.
 - 5.8 Soil stabilization technologies
- 6. Construction Management (6 marks)
 - 6.1 Construction scheduling and planning: network techniques (CPM, PERT) and bar charts
 - 6.2 Contractual procedure and management: types of contracts, bid and bid notice, preparation of bidding document, bidders' pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract, methods of procurement, dispute resolution, muster roll
 - 6.3 Material management: procurement procedures and materials handling
 - 6.4 Cost, quality and time control
 - 6.5 Project management
 - 6.6 Occupational health and safety
 - 6.7 Project monitoring and evaluation
 - 6.8 Quality assurance plan
 - 6.9 Variation, alteration and omission; extension of time, price adjustment.
- 7. Specification, Estimating, Costing and Valuation (5 marks)
 - 7.1 Types of estimates and their specific uses
 - 7.2 Methods of calculating quantities
 - 7.3 Key components of estimating norms and rate analysis
 - 7.4 Preparation of bill of quantities
 - 7.5 Purpose, types and importance of specification
 - 7.6 Purpose, principles and methods of valuation
- 8. Engineering drawing (4 marks)
 - 8.1 Drawing sheet composition and its essential components
 - 8.2 Suitable scales, site plans, preliminary drawings, working drawings
 - 8.3 Theory of projection drawing: perspective, orthographic and axonometric projection, first and third angle projection
 - 8.4 Drafting tools and equipments
 - 8.5 Drafting conventions and symbols
 - 8.6 Topographic, electrical, plumbing and structural drawings

- 8.7 Techniques of free hand drawing
- 8.8 Community buildings: School and hospital buildings and their architectural design considerations
- 9. Engineering Economics (3 marks)
 - 9.1 Benefit cost analysis, cost classification, sensitivity analysis, internal rate of return, time value of money; economic equilibrium, demand, supply and production, net present value, financial and economic evaluation
- 10. Professional Practices (3 marks)
 - 10.1 Ethics, integrity and professionalism: code of conduct and guidelines for professional engineering practices
 - 10.2 Nepal Engineering Council Act, 2055 and regulations, 2056
 - 10.3 Relation with clients, contractor and fellow professionals
 - 10.4 Public procurement practices for works, goods and services and its importance
 - 10.5 National Building Code: Hierarchy of building codes and its application, procedure for implementation of building code in Nepal
 - 10.6 Building Bylaws
 - 10.7 Engineering Bylaws, rules and regulations

--The End--

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अधिकृतस्तर सातौ तहको खुला, अन्तर तह र आन्तरिक अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको
पाठ्यक्रम

द्वितीय पत्र: प्राविधिक विषय (Technical Subject)

Section A – 25 Marks

1. Building Construction Materials and Construction in Nepal

1.1 Construction materials

- 1.1.1 Stone: Types of stones used in stone masonry, specification of stone masonry
- 1.1.2 Brick: Classification of bricks, specification of different types of bricks, testing of bricks, different shapes of bricks
- 1.1.3 Sand: Requirement of good quality sand, sieve analysis, fineness modulus
- 1.1.4 Lime: Different types of lime and their uses, test of freshness
- 1.1.5 Mortar: Types of mortar, specifications, proportion of mortar for various types of masonry works
- 1.1.6 Paint: Types of paints, specification for various types of painting works
- 1.1.7 Timber: Characteristics of good Timber, Treatment and Uses
- 1.1.8 Hollow Concrete Blocks: Various types of concrete blocks, use of concrete blocks in buildings
- 1.1.9 Water proofing materials: Water proofing at basement, ground floor, walls and roofs, common water proofing problems in Nepal
- 1.1.10 Roofing Materials: Materials, types and systems
- 1.1.11 Doors and Windows: Different types of doors and windows, door and window details, merits and demerits of metal door and windows
- 1.1.12 Walls: Different types of wall system, Load bearing walls, partition walls and curtain walls
- 1.1.13 Pre-fabrication: Principles of pre-fabrication, advantages and disadvantages of a pre-fabricated building
- 1.1.14 Flooring Materials: Different types of flooring, specification of floorings
- 1.1.15 Plaster: Different types of plasters and coating materials
- 1.1.16 Formworks: Shoring, underpinning, scaffolding and formworks
- 1.1.17 Building Elements: Horizontal and Vertical elements, Foundation, floors, roofs, super structure, lintel, Sun control devices, parapet, staircase, emergency stairs, elevators/lift and escalators
- 1.1.18 Building services: Water supply and sanitation, electrification, heating and ventilation and air-conditioning
- 1.1.19 National Building Codes: Hierarchy of building codes and its application, procedure for implementation of building code in Nepal
- 1.1.20 Development Control System in the municipalities in Nepal
- 1.1.21 Maintenance and repair of Buildings
- 1.1.22 Building Construction technologies in Nepal: Principles of low cost construction techniques, construction technology in urban and rural areas, improved methods of construction
- 1.1.23 Current building norms for estimating and costing

Section B- 25 Marks

2. Structural Analysis, Design and Earthquake Induced Disaster and its Management
 - 2.1 Design of RCC footings, columns, slabs, beams
 - 2.2 Analysis of structural system in a building
 - 2.3 Design of steel structure
 - 2.4 Design of timber structure
 - 2.5 Design of masonry structure
 - 2.6 Common structural problems in RCC buildings in Nepal
 - 2.7 Requirements of earthquake resistant building construction, retrofitting
 - 2.8 Computer Aided Design (CAD) of building structure
 - 2.9 Mandatory Rule of Thumb in building design
 - 2.10 Non-engineered earthquake resistant building design
 - 2.11 Earthquake zone and Nepal
 - 2.12 Earthquake induced energy
 - 2.13 After shocks
 - 2.14 Possible disaster from an earthquake in Nepal
 - 2.15 Risks after an earthquake
 - 2.16 Historical events/accidents caused by earthquakes in the World and Nepal
 - 2.17 Earthquake induced disaster management concept and application in our context
 - 2.18 Principles of Build Back Better
 - 2.19 Nepal's experience of recent devastating earthquake, rescue and recovery programs, and their achievements

Section C – 25 Marks

3. Housing and Urban Planning
 - 3.1 Definition of the terms: Rural areas, urban areas, housing, land pooling and house pooling
 - 3.2 Different types of housing
 - 3.3 Principles of housing design
 - 3.4 Squatters and slums
 - 3.5 Private housing development
 - 3.6 Rural housing and integrated settlement development programmes in Nepal
 - 3.7 Prospects of apartments and group housing in Nepal
 - 3.8 Hierarchy of urban settlements
 - 3.9 Types of urban settlements in Nepal
 - 3.10 Base Maps
 - 3.11 Hierarchy of plans
 - 3.12 Principles of land use planning, risk sensitive land use planning
 - 3.13 Building Bylaws
 - 3.14 Periodic plans of local and provincial governments
 - 3.15 Planning legislation of Nepal
 - 3.16 Environmental issues in urban and rural development
 - 3.17 Institutions involved in urban planning and development in Nepal
 - 3.18 Types of urban development programmes in Nepal
 - 3.19 Conservation of heritage sites
 - 3.20 Settlement planning for disaster mitigation
 - 3.21 Municipalities of Nepal and their role in urban development
 - 3.22 Town Development Committees and their role in urban development
 - 3.23 Different models of land development and their tools

Section D – 25 Marks

4. Architecture

- 4.1 History of architecture
- 4.2 Contemporary world architecture
- 4.3 Contemporary Nepalese architecture
- 4.4 Traditional architecture of Nepal
- 4.5 Architecture of Kathmandu Valley
- 4.6 Principles of architectural design
- 4.7 Factors to be considered while designing buildings
- 4.8 Standards to be followed while designing buildings in Karnali Province and Nepal
- 4.9 Contemporary world architects and their works
- 4.10 Architectural landmarks in Karnali Province and Nepal
- 4.11 Conservation of historic buildings
- 4.12 Ethics of architects in professional practice

--The End--

द्वितीयपत्रको प्रश्न तालिका

द्वितीयपत्रको एकाईहरूबाट यथासम्भव निम्नानुसार प्रश्नहरू सोधिनेछ ।

Section	A	B	C	D
Unit	1	2	3	4
Short Questions	3	3	1	3
Long Questions	1	1	2	1

सामूहिक परीक्षण

सामूहिक परीक्षण व्यक्तित्व परीक्षणको एक अंश हो। प्रदेश निजामती सेवा र स्थानीय सेवाको क्षेत्र विस्तार तथा कार्य पद्धति परिवर्तन समेत भैरहेको सन्दर्भमा नेपाल सरकारका नीति, योजना, कार्यक्रम लगायत शासन व्यवस्था सम्बन्धी समसामयिक विषयमाथि विचार-विमर्श, छलफल गरी तिनको अझै बढी प्रभावकारी तथा कार्यान्वयनयोग्य समाधान पहिल्याउने सम्बन्धमा उम्मेदवारहरुको क्षमता पहिचान गर्नु यस परीक्षणको मूलमर्म हो। यसको लागि छलफल, विचार-विमर्श गरी परिस्थिति बुझ्न सक्ने, निर्णय दिने, जनतालाई क्रियाशील बनाउने, चित्त बुझाउने, निर्धारित लक्ष्य अनुसार काम गर्ने/गराउने, जस्ता कामका लागि लेखन क्षमताका साथसाथै समस्यालाई यथार्थपरक ढंगले पहिचान गर्नसक्ने, वाक्पटुता, शिष्टता, तर्कशक्तिको पनि आवश्यकता पर्दछ।

त्यसैले यस परीक्षणमा उम्मेदवारहरुको बौद्धिक क्षमता, संचार सीप, समूह गतिशिलता, व्यवहार, व्यक्तित्व, मनोवृत्ति, क्रियाशीलता, निर्णयशक्ति, समस्या समाधान क्षमता, नेतृत्व क्षमता, समय व्यवस्थापन तथा व्यक्तित्वमा भएका अन्य गुणहरुको आँकलन अर्थात परीक्षण र मूल्याङ्कन गर्नको लागि उम्मेदवारहरुलाई कुनै समसामयिक विषय/सवाल/समस्यामा सामूहिक छलफल गरीसमस्या समाधान केन्द्रीत प्रभावकारी र कार्यान्वयन योग्य समाधान निकाल्न दिइन्छ।

सामूहिक छलफल

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफलको रूपमा अवलम्बन गरिनेछ। दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति गर्नुपर्नेछ। यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको ३ जना भन्दा बढीको समिति रहनेछ।

आयोगका अध्यक्ष वा अध्यक्षले तोकेको सदस्य	– अध्यक्ष
आयोगका सदस्य	– सदस्य
मनोविज्ञानवेत्ता	– सदस्य
दक्ष/विज्ञ (१ जना)	– सदस्य