

नेपाल सरकार
गृह मन्त्रालय
नेपाल प्रहरी प्रधान कार्यालय
(मानवश्रोत विकास विभाग, भर्ना छनौट शाखा)
नक्साल, काठमाण्डौ ।

प्राविधिक प्रहरी निरीक्षक (बिल्डिङ्ग एण्ड आर्किटेक्ट) पदको खुला प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

सेवा: नेपाल प्रहरी

उपसमूह: इन्जिनियरिङ, आवास तथा भौतिक इन्जिनियरिङ

समूह: प्राविधिक प्रहरी

श्रेणी: राजपत्राङ्कित तृतीय

परीक्षा योजना (Examination Scheme)

क्र.सं.	परीक्षा चरण	विवरण	पूर्णाङ्क
१.	प्रथम चरण	प्रारम्भिक तथा विस्तृत स्वास्थ्य परीक्षण	-
२.	द्वितीय चरण	लिखित परीक्षा	२००
३.	तृतीय चरण	विशेष स्वास्थ्य परीक्षण	-
४.	चतुर्थ चरण	अन्तरवार्ता	३०

प्रथम चरण:- प्रारम्भिक तथा विस्तृत स्वास्थ्य परीक्षण

- प्रहरी सेवाको पदमा नियुक्ति र बढुवा गर्दा अपनाउनु पर्ने सामान्य सिद्धान्त, २०६९ को अनुसूची-६ र ८ बमोजिम हुने ।

द्वितीय चरण:- लिखित परीक्षा योजना (Written Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या अङ्कभार	समय
प्रथम	Professional and Service Specific Test (PSST)	१००	४०	वस्तुगत बहुवैकल्पिक प्रश्न (Multiple Choice)	१०० प्रश्न×१ अंक = १००	१ घण्टा १५ मिनेट
द्वितीय		१००	४०	विषयगत (Subjective)	<u>छोटो उत्तर</u> ४ प्रश्न×५ अंक = २० <u>लामो उत्तर</u> ८ प्रश्न ×१० अंक = ८०	३ घण्टा

तृतीय चरण:- विशेष स्वास्थ्य परीक्षण

- प्रहरी सेवाको पदमा नियुक्ति र बढुवा गर्दा अपनाउनु पर्ने सामान्य सिद्धान्त, २०६९ को अनुसूची-९ बमोजिम हुने ।

चतुर्थ चरण:- अन्तरवार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तरवार्ता	३०	मौखिक

१. यो पाठ्यक्रमको योजना अनुसार दुई पत्रको लिखित परीक्षा हुनेछ ।
२. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
३. पाठ्यक्रमको प्रथम र द्वितीय पत्रको विषयवस्तु एउटै हुनेछ ।
४. प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
५. लिखित परीक्षाको प्रथम तथा द्वितीय पत्रको पाठ्यक्रमका इकाइहरूको प्रश्नहरूको संख्या निम्नानुसार हुनेछ ।

प्रथम पत्रका इकाइ	१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५
प्रथम पत्रका प्रश्न संख्या	५	५	५	५	५	५	५	५	२	३	१०	५	१५	१५	१०
द्वितीय पत्रका खण्ड	खण्ड-क (A)										खण्ड-ख (B)			खण्ड-ग (C)	
द्वितीय पत्रका इकाइ	१	२	३	४	५	६	७	८	९	१०	११	१२	१३	१४	१५
द्वितीय पत्रका	छोटो	१										१			२
प्रश्न संख्या	लामो	३										५			-

६. यस पाठ्यक्रममा जे सुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका ऐन नियमहरू तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा रहेको सम्झनु पर्छ ।
७. वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत १ (एक) अंक दिईने छ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २०% अंक कट्टा गरिने छ । तर उत्तर नदिएमा त्यस बापत अंक दिईने छैन र अंक कट्टा पनि गरिने छैन ।
८. द्वितीय पत्रको विषयगत प्रश्नका लागि तोकिएका १० अङ्कका प्रश्नहरूको हकमा १० अङ्कको 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 ।
९. द्वितीय पत्रको पाठ्यक्रमलाई ३ वटा खण्डमा विभाजन गरिएको छ । ३ वटा खण्डको लागि ३ वटै उत्तर पुस्तिका दिईनेछ र परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको उत्तर पुस्तिकामा लेख्नुपर्नेछ ।
१०. यस भन्दा अगाडि लागू भएको माथि उल्लेखित समूहको पाठ्यक्रम खारेज गरिएको छ ।

पाठ्यक्रम लागू मिति:- २०७९/१०/१९ गते ।

लिखित परीक्षा (Written Examination)

प्रथम र द्वितीय पत्र :- Professional and Service Specific Test (PSST)

खण्ड “क” (Section-A)

1. Structural Engineering:

- 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 and frames: bending moment, shear force and deflection of beams and frames
- 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:

- 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 compass, 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:

- 3.1. Properties of building materials: physical, chemical, constituents, thermal
- 3.2. Stones: characteristics and requirements of stones as a building materials
- 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

4. Concrete Technology:

- 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:

- 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 lab 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, lab test of index properties
- 5.5. Types of rock, dip, strike, fold, fault, cleavage, geographical divisions of Nepal, earthquake: causes of earthquake, types of wave, grading of earthquake, seismic fault line in Nepal
- 5.6. Tunneling: types of tunnels, component parts of a tunnel and tunnel cross section, survey for tunnel alignment, drainage, lighting and ventilation requirements for tunnels, method of tunneling in soft soils and rock

6. Construction Management:

- 6.1. Construction scheduling and planning: network techniques (CPM, PERT) and bar charts
- 6.2. Contractual procedure and management: types of contract, bid and bid notice, preparation of bidding document, contractors pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract, quotation and direct purchase, classifications of contractors, 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 omissions

7. Estimating, Costing, Specification and Valuation:

- 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:

- 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 design considerations

9. Engineering Economics:

- 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:

- 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

खण्ड “ख” (Section-B)

11. Building Materials and Construction

- 11.1. Stone masonry: Types of stone used in stone masonry, specifications of stone masonry
- 11.2. Brick masonry: Classification of bricks, specifications of different types of bricks, testing of bricks, different shapes of bricks
- 11.3. Concrete Blocks: Various types of concrete blocks, use of concrete blocks in buildings
- 11.4. Sand: Requirement of good quality sand, sieve analysis, fineness modules
- 11.5. Lime: Different types of lime and their uses test of freshness
- 11.6. Mortar: Types of mortar, specifications, proportion of mortar for various types of masonry works
- 11.7. Paintings: Types of paints, specification for various types of painting Works.
- 11.8. Water proofing: Water proofing at basement, ground floor and roofs, common water proofing problems in Nepal
- 11.9. Roofing Systems: Different types of roofing system
- 11.10. Doors and windows: Different types of doors and windows, door and window details, merits and demerits of metal door and windows
- 11.11. Walls: Different types of wall system, Load bearing walls, partition walls and curtain walls.
- 11.12. Pre-fabrication: Principles of pre-fabrication, advantages and disadvantages of a pre-fabricated building
- 11.13. Flooring: Different types of flooring, specification of floorings
- 11.14. Plastering: Different types of plasters and coating materials
- 11.15. Formworks: Shoring, underpinning, scaffolding and formworks
- 11.16. Building Elements: Foundation, super structure, lintel, floors, roofs, sun control devices, parapet, staircase, emergency stairs, elevators and escalators
- 11.17. Building services: water supply and sanitation, electrification, heating and ventilation and air-conditioning.
- 11.18. National Building Code: Hierarchy of building codes and its application, procedure for implementation of building code in Nepal
- 11.19. Development Control System in municipalities in Nepal
- 11.20. Maintenance and repair of buildings.
- 11.21. Principles of low cost construction techniques.
- 11.22. Current building norms for estimating and costing

12. Structural Design and Analysis

- 12.1. Design of RCC footings, columns, slabs, beams
- 12.2. Analysis of structural system in a building

- 12.3. Design of steel structure
- 12.4. Design of timber structure
- 12.5. Design of masonry structure
- 12.6. Common structural problems in RCC buildings in Nepal
- 12.7. Requirements of earthquake resistant building construction
- 12.8. Computer Aided Design (CAD) of building structure
- 12.9. Mandatory Rule of Thumb in building design
- 12.10. Non-engineered earthquake resistant building design

13. Housing and Urban Planning

- 13.1. Hierarchy of urban settlements
- 13.2. Types of urban settlements in Nepal
- 13.3. Base Maps
- 13.4. Hierarchy of plans
- 13.5. Principles of land use planning
- 13.6. Building by-laws
- 13.7. Periodic plans for local authorities
- 13.8. Planning legislation of Nepal
- 13.9. Environmental issues in urban development
- 13.10. Institutions involved in urban planning and development in Nepal
- 13.11. Types of urban development programmers in Nepal
- 13.12. Conservation of heritage sites
- 13.13. Settlement planning for disaster mitigation
- 13.14. Municipalities of Nepal and their role in urban development
- 13.15. Town Development Committees and their role in urban development
- 13.16. Different types of housing
- 13.17. Principles of housing design
- 13.18. Different models of land development
- 13.19. Squatter and slums
- 13.20. Private housing development
- 13.21. Rural housing, housing development programmers in Nepal
- 13.22. Prospects of apartments and group housing in Nepal

14. Architecture

- 14.1. History of architecture
- 14.2. Contemporary world architecture
- 14.3. Contemporary Nepalese architecture
- 14.4. Traditional architecture of Nepal
- 14.5. Architecture of Kathmandu Valley
- 14.6. Principles of architectural design.
- 14.7. Factors to be considered while designing buildings.
- 14.8. Standards to be followed while designing buildings in Nepal
- 14.9. Contemporary world architects and their works
- 14.10. Architectural landmarks in Nepal
- 14.11. Conservation of historic buildings.
- 14.12. Ethics of architects in professional practice.

खण्ड “ग” (Section-C)

15. सामान्य ज्ञान तथा नेपाल प्रहरी सेवा सम्बन्धी

- क. नेपालको भूगोल सम्बन्धी सामान्य जानकारी (भौगोलिक अवस्था, स्वरूप, किसिम र विशेषताहरू, हावापानी किसिम र विशेषता, जल सम्पदा: स्थिति र महत्व, वन सम्पदा: अवस्था र महत्व, संरक्षण क्षेत्रहरू तथा वन विनाशका कारण र संरक्षणका उपायहरू, नेपालका प्रमुख हिमशिखरहरू, तालतलैया, झरना, भञ्ज्याङ ।
- ख. इतिहास र संस्कृति सम्बन्धी सामान्य जानकारी (आधुनिक नेपालको इतिहास (पृथ्वीनारायण शाह देखी हालसम्म), नेपालको सांस्कृतिक, धार्मिक एवं मौलिक परम्परा, जातजाति, भाषाभाषी, कला र साहित्य सम्बन्धी सामान्य जानकारी ।
- ग. नेपालको वर्तमान संविधान २०७२ (भाग १, ३, ४, ५, २८ र अनुसूचीहरू)
- घ. जनसंख्या र वातावरण सम्बन्धी सामान्य जानकारी (जनसंख्या, शहरीकरण, बसोवास (बँसाईसराई), जैविक विविधता, जलवायु परिवर्तन, वातावरण तथा प्रदूषण)
- ङ. समसामयिक घटना तथा नविनतम् विषयवस्तुहरू: (राष्ट्रिय तथा अन्तर्राष्ट्रिय महत्वका राजनैतिक, सामाजिक, आर्थिक, वैज्ञानिक, सांस्कृतिक, खेलकूद, पुरस्कार, कला, साहित्य, संगीत सम्बन्धी)
- च. नेपाल प्रहरीको पृष्ठभूमि (वि.स. २००७ साल देखि हालसम्म) र वर्तमान अवस्था
- छ. प्रहरी ऐन, २०१२ र प्रहरी नियमावली, २०७१ (संशोधन सहित) का मुख्य-मुख्य व्यवस्थाहरू (संगठनात्मक स्वरूप, सेवाको प्रकार, दर्ज्यानी चिन्ह, पद तथा श्रेणी सेवा, शर्त र सुविधा, प्रहरी आचरण, नियुक्ति र अवकाश, प्रहरी कर्मचारीको काम-कर्तव्य अधिकार, नेपाल प्रहरीमा प्राविधिक प्रहरी कर्मचारीको महत्व र आवश्यकता, नेपाल प्रहरी कार्यालयको स्थापना र कार्यालय प्रमुख सम्बन्धी व्यवस्था)
- ज. विविध:- सुरक्षा समिति (केन्द्र, प्रदेश र जिल्ला), नेपाल प्रहरी र अन्य सुरक्षा निकायहरू (नेपाली सेना, सशस्त्र प्रहरी बलनेपाल र राष्ट्रिय अनुसन्धान विभाग) संगको सम्बन्ध, अपराध परिचय, महत्व र प्रविधिको प्रयोग, विपद व्यवस्थापनमा नेपाल प्रहरी, सार्क, संयुक्त राष्ट्रसंघ, इन्टरपोल सम्बन्धी जानकारी ।

लिखित परीक्षाको नमूना प्रश्नपत्र

वस्तुगत बहुवैकल्पिक प्रश्न (Multiple Choice Question)

1. The resulting strength and durability of concrete could be reduced when the temperature of fresh concrete exceeds
 - a) 70 to 75°F
 - b) 75 to 80°F
 - c) 80 to 85°F
 - d) 85 to 90°F
2. The defect which has been only identified after the issue of the final certificate by the architect is known as
 - a) Intermittent defect
 - b) Post defect
 - c) Latent defect-
 - d) Patent defect
3. The survey where curvature of earth cannot be neglected is called ____ surveying.
 - a) Geodetic
 - b) Geologic
 - c) Geodesic
 - d) Geographic
4. The object of ____ is to strengthen and consolidate decayed masonry which is weakened by fractures and voids.
 - a) Pulverising
 - b) Punelling
 - c) Radiography
 - d) Grouting
5. A Geological stratum that stores and transports ground water is called
 - a) Plenum
 - b) Water Strater
 - c) Aquifer
 - d) Transifier

छोटो प्रश्न (Short Question)

1. Describe the designing principles of Frank Lloyd Wright.
2. What do you understand by Vernacular architecture?

लामो प्रश्न (Long Question)

1. What do you understand by the term "land use planning"? Write the importance of land use planning in urban development. Which agencies are involved for urban development in Nepal?
2. What are the pre-fabrication materials commonly used now for walls and roofing's of different buildings and explain briefly. Explain why prefab materials in building construction has been popular after earthquake, 2072?

-समाप्त-