प्राविधिक प्रहरी नायव निरीक्षक (सिभिल समूह, स्यानेटरी उप-समूह) को खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम ।

पाठ्यक्रमको रुपरेखा:- यस पाठ्यक्रमको आधारमा निम्नानुसार दुई चरणमा परीक्षा लिईने छ :-

प्रथम चरण:-	लिखित परीक्षा (Written Examination)	**पूर्णाङ्क** :- १५०
द्वितीय चरण:-	अन्तरवार्ता (Interview)	**पूर्णाङ्क** :- २५

प्रथम चरण:- लिखित परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या अंकभार	समय
प्रथम	सम्बन्धित विषय सम्बन्धि	१००	४०	बस्तुगत बहुउत्तर (Multiple Choice)	५०X२ = १००	४५ मिनेट
द्वितीय	नेपाल प्रहरी सेवा सम्वन्धी	५०	२०	बस्तुगत बहुउत्तर	१०×१ = १०	१ घण्टा १० मिनेट
				विषयगत	लामो उत्तर १×१० = १० छोटो उत्तर ६×५ = ३०	

द्वितीय चरण

परीक्षाको किसीम	पूर्णाङ्क	परीक्षा प्रणाली
ब्यक्तिगत अन्तवार्ता	२५	मौखिक

पाठ्यक्रमका ईकाईबाट निम्नानुसारका प्रश्नहरु सोधिनेछ ।

ईकाई (Units)	१	२	३	४	५	६	७	८	९	१०	११	१२	१३
प्रश्न संख्या	१	५	५	३	३	५	५	५	२	२	५	५	३

१. बस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरुको उत्तर सही दिएमा प्रत्येक सही उत्तर बापत १ (एक) अङ्क प्रदान गरिनेछ भने गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अर्थात् ०.२ अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।

२. यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरु परीक्षाको मिति भन्दा ३ महिना अगाडि संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भनु पर्दछ ।

३. द्वितिय पत्र नेपाल प्रहरी सेवा सम्बन्धमा सोधिने प्रश्न संख्या द्वितिय पत्रको पाठ्यक्रममा उल्लेख गरिएको छ ।

४. लिखित परीक्षामा उत्तिर्ण परीक्षार्थीलाई मात्र अन्तरवार्तामा सहभागी गराईनेछ ।

५. अन्तर्वार्ताको अंकभार सम्बन्धमा प्रहरी सेवाको पदमा नियुक्ति र बढुवा गर्दा अपनाउनु पर्ने सामान्य सिद्धान्त, २०६९ को अनुसूची-१९ मा व्यवस्था भए बमोजिम हुनेछ ।

६. पाठ्यक्रम लागू हुने मिति :- २०७०

1. Surveying   (5%)

1.1 General
1.1.1 Classifications
1.1.2 Principle of surveying
1.1.3 Selection of suitable method
1.1.4 Scales, plans and maps
1.1.5 Entry into survey field books and level books
1.2 Levelling
1.2.1 Methods of levelling
1.2.2 Levelling instruments and accessories
1.2.3 Principles of levelling
1.3 Plane Tabling
1.3.1 Equipments required
1.3.2 Methods of palne tabling
1.3.3 Two and three point problems
1.4 Theodolite and Traverse surveying
1.4.1 Basic difference between different theodolites
1.4.2 Temporary adjustments of theodolites
1.4.3 Fundamental lines and desired relations
1.4.4 Tacheometry: stadia method
1.4.5 Trigonometrical levelling
1.4.6 Checks in closed traverse
1.5 Contouring
1.5.1 Characteristics of contour lines
1.5.2 Method of locating contours
1.5.3 Contour plotting
1.6 Setting Out
1.6.1 Small buildings
1.6.2 Simple curves

2. Construction Materials   (10%)

2.1 Stone
2.1.1 Formation and availability of stones in Nepal
2.1.2 Methods of laying and construction with various stones
2.2 Cement
2.2.1 Different cements: Ingredients, properties and
2.2.2 Storage and transport
2.2.3 Admixtures
2.3 Clay and Clay Products
2.3.1 Brick: type, manufacture, laying, bonds

2.4 Paints and Varnishes

2.4.1 Type and selection

2.4.2 Preparation techniques

2.4.3 Use

2.5 Bitumen

2.5.1 Type

2.5.2 Selection

2.5.3 Use

3. Mechanics of Materials and Structures (10%)

3.1 Mechanics of Materials

3.1.1 Internal effects of loading

3.1.2 Ultimate strength and working stress of materials

3.2 Mechanics of Beams

3.2.1 Relation between shear force and bending moment

3.2.2 Thrust, shear and bending moment diagrams for statically determinate beams under various types of loading

3.3 Simple Strut Theory

4. Hydraulics (5%)

4.1 General

4.1.1 Properties of fluid: mass, weight, specific weight, density, specific volume, specific gravity, viscosity

4.1.2 Pressure and Pascal's law

4.2 Hydro-Kinematics and Hydro-Dynamics

4.2.1 Energy of flowing liquid: elevation energy, Kinetic energy, potential energy, internal energy

4.3 Measurement of Discharge

4.3.1 Weirs and notches

4.3.2 Discharge formulas

4.4 Flows

4.4.1Characteristics of pipe flow and open channel flow

5. Soil Mechanics (5%)

5.1 General

5.1.1 Soil types and classification

5.1.2 Three phase system of soil

5.1.3 Unit Weight of soil mass: bulk density, saturated density, submerged density and dry density

5.1.4 Interrelationship between specific gravity, void ratio, porosity, degree of saturation, percentage of air voids air content and density index

5.2 Soil Water Relation

5.2.1 Terzaghi's principle of effective stress

5.2.2 Darcy's law

5.2.3 Factors affecting permeability

5.3 Compaction of soil

5.3.1 Factors affecting soil compaction

5.3.2 Optimum moisture content

5.3.3 Relation between dry density and moisture content

5.4 Shear Strength of Soils

5.4.1 Mohr-Coulomb failure theory

5.4.2 Cohesion and angle of internal friction

5.5 Earth Pressures

5.5.1 Active and passive earth pressures

5.5.2 Lateral earth pressure theory

5.5.3 Rankine's earth pressure theory

5.6 Foundation Engineering

5.6.1 Terzaghi's general bearing capacity formulas and their application

6. Structural Design   (10%)

6.1 R.C. Sections in Bending

6.1.1 Under reinforced, over reinforced and balanced sections

6.1.2 Analysis of single and double reinforced rectangular sections

6.2 Shear and Bond for R.C. Sections

6.2.1 Shear resistance of a R.C. section

6.2.2 Types of Shear reinforcement and their design

6.2.3 Determination of anchorage length

6.3 Axially Loaded R.C. Columns

6.3.1 Short and long columns

6.3.2 Design of a rectangular column section

6.4 Design and Drafting of R.C. Structures

6.4.1 Singly and doubly reinforced rectangular beams

6.4.2 Simple one-way and two-way slabs

6.4.3 Axially loaded short and long columns

7. Building Construction Technology   (10%)

7.1 Foundations

7.1.1 Subsoil exploration

7.1.2 Type and suitability of different foundations: Shallow, deep

7.1.3 Shoring and dewatering

7.1.4 Design of simple brick or stone masonry foundations

7.2 Walls

7.2.1 Type of walls and their functions

7.2.2 Choosing wall thickness, Height to length relation

7.2.3 Use of scaffolding

7.3 Damp Proofing

7.3.1 Source of Dampness

7.3.2 Remedial measures to pr-went dampness

7.4 Concrete Technology

7.4.1 Constituents of cement concrete
7.4.2 Grading of aggregates
7.4.3 Concrete mixes
7.4.4 Water cement ratio
7.4.5 Factors affecting strength of concrete
7.4.6 Form work
7.4.7 Curing
7.5 Wood work
7.5.1 Frame and shutters of door and window
7.5.2 Timber construction of upper floors
7.5.3 Design and construction of stairs
7.6 Flooring and Finishing
7.6.1 Floor finishes : brick, concrete, flagstone
7.6.2 Plastering

8. Water Supply and Sanitation Engineering   (10%)
8.1 General
8.1.1 Objectives of water supply system
8.1.2 Source of water and its selection: gravity and artisan springs, shallow and deep wells; infiltration galleries.
8.2 Gravity Water Supply System
8.2.1 Design period
8.2.2 Determination of daily water demand
8.2.3 Determination of storage tank capacity
8.2.4 Selection of pipe
8.2.5 Pipe line design and hydraulic grade line
8.3 Design of Sewer
8.3.1 Quantity of sanitary sewage
8.3.2 Maximum, Minimum and self cleaning velocity
8.4 Excreta Disposal and Unsewered Area
8.4.1 Pit latrine
8.4.2 Design of septic tank

9. Irrigation Engineering   (5%)
9.1 General
9.1.1 Advantages and Disadvantages of irrigation
9.2 Water Requirement
9.2.1 Crop season and principal crops
9.2.2 Base period
9.3 Flow irrigation Canals
9.3.1 Canal losses and their minimization
9.3.2 Maximum and minimum velocities
9.3.3 Design of irrigation canal section based on manning's formula
9.3.4 Need and location of spillways

9.3.5 Head works for small canals

10. Highway Engineering (5%)

10.1 General

10.1.1 Introduction to transportation systems

10.1.2 Historic development of roads

10.1.3 Classification of road in Nepal

10.1.4 Basic requirements of road alignment

10.2 Geometric Design

10.2.1 Basic design control and criteria for design

10.2.2 Elements of cross section, typical cross-section for all roads in filling and cutting

10.2.3 Camber

10.2.4 Determination of radius of horizontal curves

10.2.5 Superlevation

10.2.6 Sight distances

10.2.7 Gradient

10.2.8 Use of Nepal Road Standard,2027(First Revision 2045) and subsequent revision in road design

10.3 Drainage System

10.3.1 Importance of drainage system and requirements of a good drainage system

10.4 Road Pavement

10.4.1 Pavement structure and its components: subgrade, sub-base, base and surface courses

10.5 Road Machineries

10.5.1 Earth moving and compacting machines

10.6 Road Construction Technology

10.7 Bridge

10.7.1 T-beam bride

10.7.2 Timber bridges

10.8 Road Maintenance and Repair

10.8.1 Type of maintenance Works

10.9 Tracks and Trails

11. Estimating and Costing (10%)

11.1 General

11.1.1 Main items of work

11.1.2 Units of measurement and payment of various items of work and material

11.1.3 Standard estimate formats of government offices

11.2 Rate Analysis

11.2.1 Basic general knowledge on the use of rate analysis norms prepared by Ministry of Works and Transport and the district rates prescribed by district development committee

11.3 Specifications

11.3.1 Interpretation of specifications
11.4 Valuation
11.4.1 Methods of valuation
11.4.2 Basic general knowledge of standard formats used by commercial banks and NIDC for valuation

12. Construction Management (10%)
12.1 Organization
12.1.1 Need for organization
12.1.2 Responsibilities of a civil overseer
12.1.3 Relation between Owner, Contractor and Engineer
12.2 Site Management
12.2.1 Preparation of site plan
12.2.2 Organizing labor
12.2.3 Measures to improve labor efficiency
12.2.4 Accident prevention
12.3 Contract Procedure
12.3.1 Contracts
12.3.2 Departmental works and day-work
12.3.3 Types of contracts
12.3.4 Tender and tender notice
12.3.5 Earnest money and security deposit
12.3.6 Preparation before inviting tender
12.3.7 Agreement
12.3.8 Conditions of contract
12.3.9 Construction supervision
12.4 Accounts
12.4.1 Administrative approval and technical sanction
12.4.2 Familiarity with standard account keeping formats used in governmental organizations
12.4.3 Muster roll
12.4.4 Completion report
12.5 Planning and Control
12.5.1 Construction schedule
12.5.2 Equipment and materials schedule
12.5.3 Construction stages and operations
12.5.4 Bar chart

13. Airport Engineering (5%)
13.1 General
13.1.1 Introduction to Air Transport System
13.1.2 Historic development of Airports in Nepal
13.1.3 Classification of Airports
13.1.4 Airport terminologies

Model Questions

1. According to Nepal Road Standards, for a design speed of 60 km/h the stopping sight distance is
a) 105 in b) 85 m c) 75 m d) 95 m

2. TC prepare M15 concrete, the maximum amount of water which could be added per kilogramme of cement is:
a) 30 gm b) 640 gm c) 34 gm d) 550 gm

3. In open channel flow, the velocity of water is inversely proportional to
a) bed slope (b) discharge
c) Cross sectional area (d) length of the channel

4. The bearing of line AB is 152°20' and the angle ABC is 124°38' what is the bearing of B**C ?**
a) N 96°58'E b) 83°2'
c) S 83°2' **E** d) 6°58'

5. The observed reading on a levelling staff was 3695 mm. If the staff was 150 mm off the vertical through its bottom, What should be the correct reading?
a) 3692 mm b) 3545 mm
c) 3650 mm d) 3680 mm

-समाप्त-