

नेपाल सरकार
गृह मन्त्रालय
प्रहरी प्रधान कार्यालय नक्साल, काठमाण्डौं
(मानव श्रोत विकास विभाग, भर्ना तथा छनौट शाखा)

प्राविधिक प्रहरी नायव निरीक्षक (स्यानेटरी) को खुल्ला प्रतियोगिताको लिखित परिक्षाको पाठ्यक्रमको रूपरेखा यो पाठ्यक्रमको योजना दुई चरणमा विभाजन गरिएको छ ।
सिभिल समूह, स्यानेटरी उप-समुह राजपत्र अनंकित प्रथम श्रेणी

यस पाठ्यक्रमलाई दुई भागमा विभाजन गरिएको छ ।

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 सम्बन्धी	५०	२०	बस्तुगत विषयगत	१५X२ = ३० ४X५ = २०	१ घण्टा

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२५	मौखिक

पाठ्यक्रमका ईकाईबाट निम्नानुसारका प्रश्नहरू 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

- बस्तुगत बहुउत्तर (Multiple Choice) प्रश्नहरूको 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 ।
- यस पाठ्यक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरू परीक्षाको मिति भन्दा ३ महिना अगाडि संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- द्वितीय पत्र नेपाल प्रहरी सेवा सम्बन्धमा सोधिने प्रश्न संख्या द्वितीय पत्रको पाठ्यक्रममा उल्लेख गरिएको छ ।
- लिखित परीक्षामा उत्तिर्ण परीक्षार्थीलाई मात्र अन्तरवार्तामा सहभागी गराईनेछ ।
- अन्तर्वार्ताको अंकभार सम्बन्धमा प्रहरी सेवाको पदमा नियुक्ति र बढुवा गर्दा अपनाउनु पर्ने सामान्य सिद्धान्त, २०६९ को अनुसूची-१९ मा व्यवस्था भए बमोजिम हुनेछ ।
- पाठ्यक्रम लागू हुने मिति :-

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प्राविधिक प्रहरी नायव निरीक्षक (स्यानेटरी) को खुल्ला प्रतियोगिताको लिखित परिक्षाको पाठ्यक्रमको रूपरेखा

समय :- ४५ मिनेट प्रश्न संख्या :- ५० पूर्णाङ्क :- १००

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 plane 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

4.4.1 Characteristics 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 prevent 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

13.2 Design

13.2.1 Basic design control and criteria for design

13.2.2 General items contained in ANNEX 14 (ICAO Publication)

13.2.3 Planning of Airport and its elements

13.2.4 Terminal Building and Control Tower

13.2.5 Drainage System

13.2.6 Geometric design, pavement structure and its component

13.2.7 Basic knowledge of Heliport and Hangers

13.3 Airport Maintenance

13.3.1 Types of maintenance

13.3.2 Methods of maintenance

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(मानव श्रोत विकास विभाग, भर्ना तथा छनौट शाखा)
प्राविधिक प्रहरी नायव निरीक्षक (स्यानेटरी) को खुल्ला प्रतियोगिताको लिखित परिक्षाको

Model Questions

1. According to Nepal Road Standards, for a design speed of 60 km/h the stopping sight distance is
a) 105 m b) 85 m c) 75 m d) 95 m
2. To 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 $152^{\circ}20'$ and the angle ABC is $124^{\circ}38'$ what is the bearing of BC ?
a) N $96^{\circ}58'E$ b) $83^{\circ}2'$
c) S $83^{\circ}2' E$ d) $6^{\circ}58'$
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

