

नेपाल नागरिक उड्डयन प्राधिकरण
प्राविधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसारका चरणमा परीक्षा लिइने छ :

प्रथम चरण :- लिखित परीक्षा

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	सामान्य ज्ञान, बौद्धिक परीक्षण, व्यवस्थापन र सेवा सम्बन्धी	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQ)	१०० प्रश्न x १ अङ्क	१ घण्टा ३० मिनेट
द्वितीय	सेवा सम्बन्धी	१००	४०	विषयगत	छोटो उत्तर लामो उत्तर	४ प्रश्न X ५ अङ्क ८ प्रश्न X १० अङ्क	३ घण्टा

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
व्यक्तिगत अन्तर्वार्ता	३०	मौखिक	-

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी दुवै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरू सोधिनेछ ।
- 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 ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै पनि प्रकारको क्याल्कुलेटर प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नमा प्रत्येकपत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतकापत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरू लाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- यस भन्दा अगाडि लागू भएका माथि उल्लिखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।
- पाठ्यक्रम लागू मिति :- २०७४/१०/२८

नेपाल नागरिक उड्डयन प्राधिकरण
प्राविधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

प्रथम र द्वितीय पत्र :- सामान्य ज्ञान, बौद्धिक परीक्षण, व्यवस्थापन र सेवा सम्बन्धी

भाग (अ) - सामान्य ज्ञान, बौद्धिक परीक्षण र व्यवस्थापन

1. सामान्य ज्ञान

(25 × 1 Mark = 25 Marks)

- 1.1 नेपालको भौगोलिक, ऐतिहासिक, सामाजिक, सांस्कृतिक, राजनैतिक, आर्थिक अवस्था बारे जानकारी
- 1.2 नेपालका प्रमुख प्राकृतिक स्रोतहरू सम्बन्धी जानकारी
- 1.3 नेपालमा पूर्वाधार विकासको वर्तमान अवस्था (यातायात, विद्युत, संचार र प्रविधि)
- 1.4 चालु आवधिक योजना बारे सामान्य जानकारी
- 1.5 संयुक्त राष्ट्रसंघ, सार्क, बिमस्टेक, आसियान र युरोपियन संघ
- 1.6 दिगो विकास, वातावरण, प्रदुषण, जनसंख्या, शहरीकरण, जलवायु परिवर्तन र जैविक विविधता
- 1.7 विज्ञान र प्रविधिका महत्वपूर्ण उपलब्धि र अन्तर्राष्ट्रिय महत्वका समसामयिक घटनाहरू
- 1.8 नेपालको वर्तमान संविधान सम्बन्धी जानकारी
- 1.9 नेपाल नागरिक उड्डयन प्राधिकरण एवं नेपालमा हवाई यातायात तथा पर्यटन क्षेत्रको विकास बारे जानकारी
- 1.10 अन्तर्राष्ट्रिय नागरिक उड्डयन संगठन (ICAO), अन्तर्राष्ट्रिय हवाई यातायात संघ (IATA) र अन्य उड्डयन सम्बन्धित क्षेत्रिय संगठन बारे जानकारी
- 1.11 नेपाल नागरिक उड्डयन प्राधिकरण ऐन, २०५३
- 1.12 नागरिक उड्डयन नियमावली, २०५८
- 1.13 नेपाल नागरिक उड्डयन प्राधिकरण कर्मचारीहरूको सेवाका शर्त र सुविधा सम्बन्धी नियमावली, २०५६
- 1.14 नेपाल नागरिक उड्डयन प्राधिकरण आर्थिक प्रशासन सम्बन्धी नियमावली, २०५७
- 1.15 नेपाल नागरिक उड्डयन प्राधिकरण विमानस्थल सेवा शुल्क नियमावली, २०६७
- 1.16 नागरिक उड्डयन सुरक्षा नियमावली, २०७३
- 1.17 विदेशी लगानी तथा प्रविधि हस्तान्तरण ऐन, २०४९
- 1.18 सार्वजनिक खरीद ऐन, २०६३
- 1.19 भ्रष्टाचार निवारण ऐन, २०५९

2. बौद्धिक परीक्षण (General Ability Test)

(10× 1 Mark = 10 Marks)

2.1 Verbal Reasoning Test:

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, Arithmetical Reasoning/Operation, Decimal, Fraction, Percentage, Ratio, Data interpretation, Data sufficiency, Data verification

2.2 Non-verbal/Abstract Reasoning Test:

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

नेपाल नागरिक उड्डयन प्राधिकरण
प्राबिधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

3. Management

(15× 1 Mark = 15 Marks)

- 3.1 Prevailing Governance System in Nepal
- 3.2 Measures to make governance better
- 3.3 Collaborative Governance (Public Private Partnership)
- 3.4 Policy Formulation, Implementation, Analysis, Monitoring and Evaluation
- 3.5 Citizen Involvement in Governance and Service Delivery
- 3.6 Human Resource Management, Human Resource Planning, Human Resource Development, Outsourcing of Human Resources, Performance Appraisal System, Management Audit, Total Quality Management, Quality Circle, Group Dynamics, Team Work, Performance Based Incentive System, Leadership, Motivation, Decision Making, Delegation of Authority, Change Management, Conflict Management, Stress Management, Grievance Handling, Communication, Coordination, Trade Union and Collective Bargaining
- 3.7 Project Management
- 3.8 Inclusive Development
- 3.9 Domestic Resource Mobilization and Foreign Aid Management
- 3.10 Federalism and Local self-Governance
- 3.11 Diversity Management

नेपाल नागरिक उड्डयन प्राधिकरण
प्राबिधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम
भाग (आ) – सेवा सम्बन्धी

खण्ड (क) - ५० %

1. Introduction

- a) History of Civil Aviation in the world and in Nepal
- b) Role and functions of Ministry of Culture, Tourism and Civil Aviation (MOCTCA) and CAAN
- c) Conventions of International Civil Aviation Organization (ICAO)
- d) International and Domestic Airports in Nepal

2. General

Definition: Aerodrome, Aerodrome Elevation, Aerodrome Reference Point, Aeroplane Reference Field Length, Aerodrome Reference Temperature, Apron, Landing Area, Maneuvering Area, Movement Area, Obstacle, Obstacle Free Zone, Obstacle Limitation Surface, Runway, Runway Strip, Runway turn Pad, Shoulder, Taxiway, Threshold, Touch Down Zone, Heliport, STOLPORT, Terminal Building, Hangar, Air Traffic Control Tower, Operation Building, Air Side and Land Side.

Determination of Aerodrome Reference Code as per International civil Aviation Organization (ICAO) Annex-14

3. Airport Planning

- a) The Elements of an Airport Planning Study (Inventory, Forecasts, Airport Capacity, Facility Requirements, Airport site, Factors influencing Airport size, Land use Planning, Environmental Assessment, Economic and Financial Feasibility, Continuous Planning Process)
- b) Airport Site Evaluation: Factors affecting airport location
- c) Airport Master Planning Airport layout, Runway orientation and runway, Configurations, Taxiway configuration, Movement area, Manouvering area. Obstacle Limitation Surfaces, Location of the control tower, Terminal area, Apron Aircraft Parking Apron
- d) Airport Airside Capacity and Delay: Runway capacity, Apron Gate Capacity, Taxiway Capacity
- e) Aerodrome Design Standards and Classification as per International Civil Aviation Organization (ICAO)
 - Geometric Design of the Aerodrome
 - Runway, Taxiway Apron and Holding Bays
 - Control Tower Visibility Requirements

4. Planning and Design of the Terminal Area

- a) The Passenger Terminal System
- b) Design Considerations
- c) Terminal Planning Process
- d) Apron-Gate System

5. Visual Aids for Navigation: Indicators and Signaling Devices, Markings, Lights, Signs, Markers

6. STOLPORT and Heliports:

STOLPORT - Physical Characteristics of STOLPORT,
Heliports - Physical Characteristics of Heliports, Obstacle, Limitation, Surfaces and Requirement

7. Structure Analysis and Design

- a) Stresses and strains; theory of torsion and flexure; moment of inertia
- b) Analysis of beams and frames: Bending moment, shear force and deflection of beams and frames; determinate structure - Energy methods, three hinged systems, indeterminate structures: slope deflection method and moment distribution method; use of influence line diagrams for simple beams, unit load method
- c) Reinforced concrete structures: Difference between working stress and limit state philosophy, analysis of RC beams and slabs in bending, shear, deflection, bond and end anchorage, Design of axially loaded columns, isolated and combined footings, introduction to pre-stressed concrete
- d) Steel and timber structures: Standard and built-up sections: Design of riveted, bolted and welded connections, design of simple elements such as ties, struts, axially loaded and eccentric columns, column bases, design principles on timber beams and columns

8. Airport Pavement

- a) Types of Airport Pavements (Rigid & Flexible Pavements)
- b) CBR Method of Design for Flexible Airport Pavements
- c) Design of Rigid Pavements
- d) Pavements Design Using Elastic Layer Theory
- e) Effect of Frost on Pavement Thickness and their consideration in pavement design
- f) The FAA Method of Design for Flexible and Rigid Airport Pavement
- g) Design of Overlay Pavements
- h) Aircraft and Airport Pavement Classification Systems (as per ICAO)

खण्ड (ख) - ५० %

9. Soil Mechanics and Foundation Engineering

Properties of soils, Identification and classification of soils, Permeability of soils, Shear strength of soils, Stress distribution in soils, Consolidation and settlements, Stability of slopes, Site investigation and soil exploration, Earth pressure and retaining structures, Bearing capacity of soils, Design of building foundation.

10. Airport Drainage

Purpose of Drainage, Design Storm for Surface Run-off, Intensity — Duration Pattern for the Design Storm, Amount of Run-off by the FAA Procedure, Amount of Run-off by the Corps of Engineers Procedure, Layout of Surface Drainage, Subsurface Drainage.

11. Engineering Survey

- a) Introduction and basic principles
- b) Linear measurements: techniques, chain, tape, 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
- c) Compass and plane table surveying: bearings, types of compass, problems and sources of errors of compass survey, principles and methods of plane tabling
- d) Leveling and contouring: Principle of leveling, temporary and permanent adjustment of level, bench marks, booking methods and their reductions, longitudinal and cross sectioning, reciprocal leveling, trigonometric leveling, contour interval and characteristics of contours, methods of contouring
- e) Theodolite traversing: need of traverse and its significance, computation of coordinates, adjustment of closed traverse, closing errors
- f) Uses of Total Station and Electronic Distance Measuring Instruments

नेपाल नागरिक उड्डयन प्राधिकरण
प्राविधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

12 Estimating and Costing Valuation and Specification

- a) Types of estimates and their specific uses
- b) Methods of calculating quantities
- c) Key components of estimating norms and rate analysis
- d) Preparation of bill of quantities
- e) Purpose, types and importance of specification
- f) Purpose, principles and methods of valuation

13 Construction Management

- a) Construction scheduling and planning: network techniques (CPM, PERT) and bar charts
- b) Contractual procedure and management: types of contract, tender and tender notice, preparation of bidding (tender) document, contractors pre-qualification, evaluation of tenders and selection of contractor, contract acceptance, condition of contract, quotation and direct order, classifications of contractors;dispute resolution, muster roll
- c) Material management: procurement procedures and materials handling
- d) Cost control and quality control
- e) Project maintenance
- f) Occupational health and safety
- g) Project monitoring and evaluation
- h) Quality assurance plan
- i) Variation, alteration and omissions

14 Aerodrome ConstructionTechnology

- a) Construction of Runway Strip: Top soil, Earthwork in excavation & filling, Subgrade preparation, compaction, moisture density relationship, field compaction control, soil stabilization, Construction of airport drainages system
- b) Construction of Pavement: Gravel/crushed aggregate base course without binding material, Cement treated base course, Asphalt concrete pavement layers including prime coat, tack coat, and seal coat, Plain cement concrete pavement
- c) Pavement construction Materials: Soils, Soil classification systems, Construction materials for pavement, Types of aggregate and tests on their gradation, strength, durability, bitumen, design of asphalt mix, Testing procedures
- d) Construction Equipment: Factors affecting the selection of construction equipment, Earth moving equipment, Rollers, Asphalt plant and paver, Concrete batching plants
- e) Building Materials and Construction:
 - i) Classification, specifications and testing of different materials such as Stone masonry: Brick masonry: Hollow Concrete Blocks: Sand: Lime: Mortar: Paintings etc. Water proofing, Roofing Systems, Different types of roofing system, Doors and windows, Walls, Pre-fabrication: Flooring, Plastering, Formworks
 - ii) Building Elements: Foundation, super structure, lintel, floors, roofs, sun control devices, parapet, staircase, emergency stairs, elevators and escalators
 - iii) Building services: water supply and sanitation, electrification, heating and ventilation and air-conditioning
 - iv) National Building Code, Hierarchy of building codes and its application, procedure for implementation of building code in Nepal,
 - v) Maintenance and repair of buildings,
 - vi) Current building norms for estimating and costing.

15 Maintenance Management

- a) Classification of maintenance activities for Airport pavement and facilities, inspection, prioritization and planning of maintenance operations, evaluation of pavement distress

नेपाल नागरिक उड्डयन प्राधिकरण
प्राविधिक सेवा, सिभिल इन्जिनियरिङ्ग समूह, सातौं तहको खुला/आन्तरिक प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

- and pavement condition, types and methods of pavement repair, types of overlay and strengthening of existing pavements.
- b) Pavement Management Systems
- c) Assessment of runway surface condition, Pavement surface friction and tests, different types of contaminants and its removal.
- D) Pavement evaluation and methods of conducting the test to verify the structural strength of the pavement

प्रथम पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरू सोधिने छ ।

प्रथम पत्र (वस्तुगत बहुवैकल्पिक)			
भाग	विषय	अङ्कभार	प्रश्न संख्या
(अ)	1. सामान्य ज्ञान	२५	२५ प्रश्न X १ अङ्क = २५
	2. बौद्धिक परीक्षण (General Ability Test)	१०	१० प्रश्न X १ अङ्क = १०
	3. व्यवस्थापन (Management)	१५	१५ प्रश्न X १ अङ्क = १५
(आ)	सेवा सम्बन्धी	खण्ड (क)	२५ प्रश्न X १ अङ्क = २५
		खण्ड (ख)	२५ प्रश्न X १ अङ्क = २५
जम्मा		१००	१०० प्रश्न X १ अङ्क = १००

द्वितीय पत्रको लागि यथासम्भव निम्नानुसार प्रश्नहरू सोधिने छ ।

द्वितीय पत्र (विषयगत)					
भाग	विषय	खण्ड	अङ्कभार	छोटो उत्तर	लामो उत्तर
(अ)	-	-	-	-	
(आ)	सेवा सम्बन्धी	(क)	५०	२ प्रश्न X ५ अङ्क = १०	४ प्रश्न X १० अङ्क = ४०
		(ख)	५०	२ प्रश्न X ५ अङ्क = १०	४ प्रश्न X १० अङ्क = ४०
जम्मा			१००	४ प्रश्न X ५ अङ्क = २०	८ प्रश्न X १० अङ्क = ८०