

नेपाल नागरिक उड्डयन प्राधिकरण
प्राबिधिक सेवा, सिभिल ईन्जिनियरिङ्ग समूह,
बरिष्ठ सहायक (सिभिल), पाँचौ तहको खुला तथा आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

लिखित परीक्षा

परीक्षाको विषय	परीक्षा प्रणाली	प्रश्न संख्या	अंक भार	समय
प्रशासन तथा व्यवस्थापन र सेवा सम्बन्धी	वस्तुगत बहुउत्तर	२५ X २	५०	३० मिनेट
	छोटो छोटो उत्तर	८ X ५	४०	१ घण्टा
	लामो उत्तर	१ X १०	१०	

अन्तर्वार्ता

- क) अन्तर्वार्ताको अंक भार - २०
 ख) शैक्षिक योग्यताको अंकभार - ३

शैक्षिक योग्यता वापतको अंक : न्यूनतम शैक्षिक योग्यता वापत प्रथम श्रेणीलाई ३, द्वितीय श्रेणीलाई २ र तृतीय श्रेणीलाई १ अंक प्रदान गरिनेछ । तर आन्तरिक प्रतियोगितात्मक परीक्षामा शैक्षिक योग्यताको अंक गणना गरिने छैन ।

क) प्रशासन तथा व्यवस्थापन

१. नेपालको आर्थिक, भौगोलिक, ऐतिहासिक, सामाजिक, सांस्कृतिक, राजनैतिक अवस्था वारे जानकारी
२. नेपालको अन्तरिम संविधान, २०६३ सम्बन्धी सामान्य जानकारी
३. सार्वजनिक प्रशासनको परिचय
४. कार्यालय कार्य विधि, दर्ता चलानी, पत्र व्यवहार, टिप्पणी र जनसम्पर्क
५. कर्मचारी प्रशासनमा मनोबल, संगठनात्मक व्यवहार र जनशक्ति योजना
६. प्रशासनमा संचारको महत्व, जनसम्पर्क र समन्वय सम्बन्धी सामान्य जानकारी ।
७. नेपाल नागरिक उड्डयन प्राधिकरण ऐन, २०५३
८. नेपाल नागरिक उड्डयन प्राधिकरण कर्मचारीहरुको सेवाका शर्त र सुविधा सम्बन्धी नियमावली, २०५६
९. नेपाल नागरिक उड्डयन प्राधिकरण आर्थिक प्रशासन सम्बन्धी नियमावली, २०५७
१०. भ्रष्टाचार निवारण ऐन, २०५९
११. नेपाल सरकारको राष्ट्रिय हवाई नीति
१२. नेपाल नागरिक उड्डयन प्राधिकरण सम्बन्धी जानकारी

ख) सेवा सम्बन्धी

1. Historic Development of Airports in Nepal

2. Aerodrome Design and Construction

a. Definition

- Aerodrome
- Aerodrome Elevation
- Aerodrome Reference Point
- Aeroplane Reference Field Length
- Aerodrome Reference Temperature
- Apron
- Heliport
- Landing Area
- Manoeuvring Area
- Movement Area
- Obstacle
- Obstacle Free Zone
- Runway
- Runway Strip
- Runway Turn Pad
- Shoulder
- Taxiway
- Threshold
- Touch Down Zone
- Terminal Building
- Hangar
- Air Traffic Control Tower
- Operation Building

b. Aerodrome Reference Code as per International Civil Aviation Organization (ICAO) Standards

c. Runway Length

- Correction for Elevation
- Correction for Temperature
- Correction for Gradient (slope)

d. Airport Pavement Types, its Structural Components and Construction Technology

- Flexible and Rigid Pavements
- Subgrade Preparation
- Sub-base and Base
- Asphalt concrete Pavement
- Plain Cement Concrete Pavement
- Plants and Equipment for Airport Construction

3. Surveying

a. General

- Classifications
- Principle of Surveying
- Selection of Suitable method
- Scales, Plans and Maps
- Entry into Survey Field Books and Level Books

b. Levelling

- Methods of Levelling
- Levelling Instruments and Accessories
- Principles of Levelling

c. Plane Tabling

- Equipment Required
- Methods of Plane Tabling
- Two and Three Point Problems

d. Theodolite and Travers Surveying

- Basic Difference Between Different Theodolites
- Temporary Adjustments of Theodolites
- Fundamental Lines and Desired Relations
- Tacheometry: Stadia Method
- Trigonometrical Levelling
- Checks in Closed Traverse

e. Contouring

- Characteristics of contour Lines
- Method of Locating Contours
- Contour Plotting

f. Setting Out

- Small Buildings
- Simple Curves

4. Construction Materials

a. Stone

- Formation and Availability of Stones in Nepal
- Methods of Laying and construction with Various Stones

b. Cement

- Different Cements : Ingredients, Properties and Manufacture
- Storage and Transport
- Admixtures

c. Clay and Clay Products

- Brick Type, Manufacture. Laying. Bonds

d. Paints and Varnishes

- Type and Selection
- Preparation Techniques
- Application

e. Bitumen

- Type
- Selection
- Application

f. Metals

- Steel
- Alloys

5. Soil Mechanics

a. General

- Soil Types and Classification
- Three Phase System of Soil
- Unit Weight of Soil Mass: Bulk Density, Saturated Density, Submerged Density and Dry Density
- Interrelationship Between Specific gravity, Void Ratio, Porosity. Degree of Saturation and Density Index

b. Soil Water Relation

- Terzaghi's Principle of Effective Stress
- Darcy's Law
- Factors Affecting Permeability

c. Compaction of Soil

- Factors Affecting Soil Compaction
- Optimum Moisture Content
- Relation between Dry Density and Moisture Content

d. Shear Strength of Soils

- Mohr-Coulomb Failure Theory
- Cohesion and Angle of Internal Friction

e. Earth Pressures

- Active and Passive Earth Pressures
- Lateral Earth Pressure Theory
- Rankine's Earth Pressure Theory

f. Foundation Engineering

- Terzaghi's General Bearing Capacity Formulas and Their Application

6. Structural Design

a. R. C. Sections in Bending

- Under reinforced, Over Reinforced and Balanced Sections
- Analysis of Single and Double Reinforced Rectangular Sections

b. Shear and Bond for R. C. Sections

- Shear Resistance of a R.C. Section
- Types of Shear Reinforcement and Their Design
- Determination of Anchorage Length

c. Axially Loaded R. C. Columns

- Short and Long Columns
- Design of a Rectangular Column Section

d. Design and Drafting of R. C. Structures

- Singly and Doubly Reinforced Rectangular Beams
- Simple One Way and Two Way Slabs
- Axially Loaded Short and Long Columns

7. Building Construction Technology

a. Foundations

- Subsoil Exploration
- Type and Suitability of Different Foundations Shallow, Deep
- Shoring and Dewatering
- Design of Simple Brick or Stone Masonry Foundations

b. Walls

- Types of Walls and Their functions
- Choosing Wall Thickness, height to Length Relation
- Use of Scaffolding

c. Damp Proofing

- Source of Dampness
- Remedial Measures to Prevent Dampness

d. Concrete Technology

- Constituents of Cement Concrete
- Grading of Aggregates
- Concrete Mixes
- Water Cement Ratio
- Factors Affecting Strength of Concrete
- Form Work
- Curing

e. Wood Work

- Frame and Shutters of Door and Window
- Timber Construction of Upper Floors
- Design and Construction of Stairs

f. Flooring and Finishing

- Floor finishes: Brick, Concrete, Flag Stone
- Plastering

8. Water Supply and Sanitation

a. General

- Objectives of Water Supply System
- Source of Water and Its Selection: Gravity and Artisan Springs. Shallow and Deep Wells Infiltration Galleries

b. Gravity Water Supply System

- Design Period
- Determination of Daily Water Demand
- Determination of Storage Tank Capacity
- Selection of Pipe
- Pipe Line Design and Hydraulic Gradient

c. Design of Sewer

- Quantity of Sanitary Sewage
- Maximum, Minimum and Self Cleaning Velocity
- Septic Tank and Soak Pit

9. Estimating and Costing

a. General

- Main Items of Work
- Units of Measurement and Payment of Various Items of Work and Material
- Standard Estimate formats government Offices

b. Rate Analysis

- Preparation of Rate Analysis Using Norms Prepared by The Ministry of Physical Planning and Works and the District Rates

c. Specifications

- Interpretation of Specifications

10. Construction Management

a. Organization

- Need for Organization
- Responsibilities of a Civil Overseer
- Relation Between Owner, Contractor and Engineer

b. Site management

- Preparation of Site Plan
- Organizing Labour
- Measures to Improve Labour Efficiency
- Accident Prevention

c. Contract Procedure

- Contracts
- Departmental Works and Day-Works
- Types of Contracts

- Tender and Tender Notice
- Earnest Money and Security deposit
- Preparation Before Inviting Tender
- Agreement
- Conditions of Contract
- Construction Supervision

d. Planning and Control

- Construction Schedule
- Equipment and Materials Schedule
- Construction Stages and Operations
- Bar Chart

11. Basic Computer Knowledge

- a. MS Word
- b. MS Excel

References

- i. Planning and Design of Airports—Robert Horonjeff, Francis X Mc. Kelvey.
- ii. Air Transportation Planning and Design - Virendra Kumar. Satish Chandra.
- iii. Surveying - Vol. 1 and Vol. 2 - Dr. B. C. Punmia
- iv. Estimating and Costing -. B. N. Dutta
- v. Managing Construction Projects : A guide to Process and Procedures - Edited by A. D. Austen and R. H Hoale
- vi. Text Book of Water Supply and Sanitary Engineering - S. K. Hussain
- vii. Engineering Materials - Surendra Singh
- viii. Building Construction — Sushil Kumar
- ix. Reinforced Concrete (Limit State Design) - Ashok K. Jain
- x. Reinforced Concrete Design - S. Unnikrishna Pillai, Devdas Menon
- xi. Civil Engineers' Handbook.
- xii. ICAO Annexes 14 and 9.
- xiii. ICAO Manuals:
 - o Aerodrome Design Manuals - Part 1. 2. 3, 4.
 - o Airport Planning Manuals
 - o Heliport Manual
 - o STOLPORT Manual
- xiv. Civil Aviation Reports.

Model Questions

A) Objective Question

1. The first authentic flight by man in a power driven machine achieved :

a) on 17 Dec. 1903

b) on 1 Jan 1901

c) on 7 Dec. 1900

d) on 15 Jan 1901

B) Short Answer Question

1. What is an aerodrome ?

C) Long Answer Question

1. Design of simply supported beam with uniformly distributed load of 500 kg/m.

