

Nepal Airlines Corporation
Syllabus for Civil Overseer Grade -V
Open Competition

A. Stages and Procedure of Examination System

चरण	विषय	अंकभार	परीक्षा प्रणाली	प्रश्न संख्या X अङ्क	समय
प्रथम ८०%	सेवा सम्बन्धी	पुर्णाङ्क	Multiple Choice Questions (वस्तुगत)	३५ X २ = ७०	१ घण्टा २० मिनेट
		१००			
		उत्तिर्णाङ्क	Subjective Questions (विषयगत)	६ X ५ = ३०	
		४०			
द्वितीय २०%	अन्तरर्वाता	२०	मौखिक		

B. Material Contents

1. Historic Development of Airports in Nepal (1 objective question each of 2 Marks)

2. Airport Engineering (2 objective questions each of 2 Marks)

a. General:

- Introduction to Air Transport System;
- Development of Airports in Nepal;
- Classification of Airports: Airport terminologies

b. Planning and Design of Airports:

- Planning of Airport and its elements;
- Basic design control and Criteria for design;
- Geometric design, Structural Design idea

c. Components of Airports (General Idea):

- Terminal Building and Control Tower
- Hangars
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d. Airport Maintenance:

- Types, Schedule and method of maintenance

3. Surveying (4 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

a. General

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

b. Leveling

- Methods of Leveling
- Leveling Instruments and Accessories
- Principles of Leveling

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
- Trigonometrically Leveling
- Checks in Closed Traverse

e. Contouring

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

f. Setting Out

- Small Buildings
- Simple Curves
- Offsets

4. Construction Materials

(6 objective questions each of 2 Marks)

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. Lying. Bonds

d. Paints and Varnishes

- Type and Selection
- Preparation Techniques
- Application

e. Bitumen

- Type
- Selection
- Application

f. Metals

- Steel
- Alloys

5. Soil Mechanics (5 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

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

- Inter-relationship Between Specific gravity, Void Ratio, Porosity. Degree of Saturation and Density Index

b. Soil Water Relation

- Tarzaghi'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 (3 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

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 (5 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

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

(2 objective questions each of 2 Marks)

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
- Excreta disposal, Pit latrine, Septic Tank and Soak Pit

9. Estimating and costing (2 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

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 (4 objective questions each of 2 Marks and 1 subjective question each of 5 Marks)

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, Material and Machines (including equipment and material schedule) at site
- Safety and environmental protection at site
- Site register and minute
- 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

e. Progress Monitoring

- Monitoring schedule and reporting
- Bar chart
- Technical Auditing

- Progress reporting

11. Basic Computer Knowledge (1 objective question of 2 Marks)

- a. MS Word
- b. MS Excel
- c. Auto CAD
