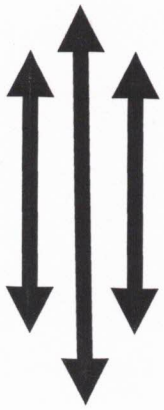
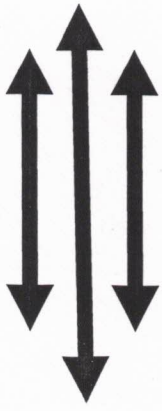
नेपाली सेना

श्री भर्ना छनौट निर्देशनालय, कार्यरथी विभाग,

जंगी अड्डा



प्रा.उ.से. सर्भे (आन्तरिक) पदको लिखित परीक्षाको पाठ्यक्रम



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नेपाली सेना

प्रा.उ.से. सर्भे (आन्तरिक) पदको लिखित परीक्षाको पाठ्यक्रम

समयः ४ घण्टा१५ मिनेट

पूर्णाङ्कः१५०
उत्तीर्णाङ्कः ६०

यो पाठयक्रम नेपाली सेनाको प्रा.उ.से. सर्भे (आन्तरिक) पदको उम्मेदवार छनौट परीक्षाको लागि निर्धारण गरिएको हो । लिखित परीक्षामा सरिक हुने उम्मेदवारहरुको पेशा सम्बन्धी विषयलाई आधार मानी प्रश्नहरु सोधिनेछ ।

(क) लिखित परीक्षाको माध्यम नेपाली/अंग्रेजी वा दुवै भाषा हुनेछ ।

(ख) लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र अर्को चरणको परीक्षामा सम्मिलित गराईनेछ ।

(ग) प्रश्न निर्माण गर्दा पाठ्क्रममा समावेश भएका सबै विषयहरुलाई यथासंभव समेटिनेछ ।

(घ) बस्तुगत र विषयगत संयुक्त रुपमा पूर्णाङ्क र उत्तीर्णाङ्क कायम गरिनेछ ।

(ङ) बस्तुगत र विषयगत परीक्षाको पाठयक्रम एउटै हुनेछ ।

(च) बस्तुगत र विषयगत विषयको लिखित परीक्षा एकैपटक वा छुट्टाछुट्टै गरी लिन सकिनेछ।

(छ) यो पाठयक्रम मिति २०७९/११ / १५ गतेबाट लागु हुनेछ ।

लिखित परीक्षाको योजना र पाठ्यक्रम

विषय	पूर्णाङ्क	उत्तिर्णाङ्क	परीक्षा प्रणाली		प्रश्न संख्या अङ्क	समय
पेशा सम्बन्धि	७५	६०	बस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	७५ प्रश्न x १ अङ्क =७५	१ घण्टा १५ मिनेट
	७५		विषयगत (Subjective)	छोटो उत्तर	७ प्रश्न x ५ अङ्क =३५	३ घण्टा
				लामो उत्तर	४ प्रश्न x १० अङ्क =४०	

नेपाली सेना

प्रा.उ.से. सर्भे (आन्तरिक) पदको पेशागत विषयको लिखित परीक्षाको पाठ्यक्रम

1. Fundamentals of Surveying

1.1 Introduction

- 1.1.1 Definition of Surveying & Mapping and Terms used in Survey
- 1.1.2 Objectives
- 1.1.3 Principles of Surveying
- 1.1.4 Classification
- 1.1.5 Linear and Angular Measurements
- 1.1.6 Survey computations: Bearing, Coordinates, Reduced Level, Area & Volume
- 1.1.7 Units, Standardization and Conversion
- 1.1.8 Application of Surveying
- 1.1.9 Role of Surveying and Mapping in development projects

1.2 Survey Management

- 1.2.1 Management of survey teams to dispatch in the field
- 1.2.2 Supervision in the field
- 1.2.3 Problems of field surveying in Nepal
- 1.2.4 Skill of a Surveyor
- 1.2.5 Professional Ethics, Code and Conduct of a Surveyor
- 1.2.6 Survey report preparation
- 1.2.7 Public relation during field surveying

1.3 Error and Adjustments

- 1.3.1 Introduction
- 1.3.2 Sources of Errors
- 1.3.3 Types of Errors
- 1.3.4 Accuracy and Precision

2. Cadastre

2.1 Cadastral Surveying

- 2.1.1 Concept of Cadastral Surveying
- 2.1.2 Parcel, Types of Parcel Boundaries
- 2.1.3 Cadastral Survey Methods
- 2.1.4 Principles of Cadastral survey
- 2.1.5 Cadastral System
- 2.1.6 Cadastral Surveys in Nepal

2.2 Land Registration

- 2.2.1 Land Rights and Land Records
- 2.2.2 Land Transfers
- 2.2.3 Registration of Deeds
- 2.2.4 Registration of Titles
- 2.2.5 Fragmentation and Consolidation

2.2.6 Land Record in Nepal
2.2.7 Land Registries
2.2.8 Challenges of Land Registration

2.3 Land Management
2.3.1 Concepts of Land Management
2.3.2 Land Use Planning: Concept, Principles, and Implementation in development Projects

2.4 Land Information System (LIS)
2.4.1 Need for LIS
2.4.2 Concept of LIS
2.4.3 Parcel based LIS: The Multipurpose Cadastre
2.4.4 The Economics of LIS

3. Geodesy

3.1 Introduction to Control Surveying
3.1.1 Horizontal Controls
3.1.2 Vertical Controls

3.2 Methods of Control Surveying
3.2.1 Leveling: Geodetic and Ordinary Leveling
3.2.2 Triangulation and Trilateration: Principle, Figure and Strength, Procedures, Computation
3.2.3 Traversing Principle, Procedures, Computation
3.2.4 Intersection and Resection: Importance and Procedures

3.3 Global Navigation Satellite System (GNSS)
3.3.1 Principle
3.3.2 Components
3.3.3 Signals
3.3.4 Method of Positioning

4. Photogrammetry and Remote Sensing

4.1 Introduction
4.1.1 Concept of Photogrammetry
4.1.2 Properties of Orthogonal and Perspective Projections
4.1.3 Components of Photogrammetry
4.1.4 Comparison of Aerial Photograph and Map
4.1.5 Overlap: Forward and Lateral
4.1.6 Drift and Crab
4.1.7 Stereoscopic Vision and Conditions for seeing stereoscopic vision
4.1.8 Parallax
4.1.9 Orientation of Pair of Photographs: Inner orientation, Exterior orientation (Relative and Absolute)
4.1.10 Photo Mosaic

4.2 Aerial Photography
4.2.1 Basic concepts and types of aerial camera

4.2.2 Types & Scale of Aerial Photograph
4.2.3 Relief Displacement
4.2.4 Tilt Displacement

4.3 Aerial Triangulation
4.3.1 Concepts & Purpose of Aerial Triangulation
4.3.2 Principle of Aerial Triangulation
4.3.3 Methods of Aerial Triangulation

4.4 Photo Interpretation
4.4.1 Steps in Photo Interpretation
4.4.2 Elements of Photo Interpretation

4.5 Photogrammetric Procedure
4.5.1 Process of Generating Digital Elevation Model (DEM)
4.5.2 Rectification: Ortho Rectification
4.5.3 Process of Orthophoto production
4.5.4 Differentiate Aerial and Orthophoto
4.5.5 Orthophoto Mosaic

4.6 Remote Sensing (RS)
4.6.1 Concept of Remote Sensing
4.6.2 Principle and types of remote sensing
4.6.3 Electromagnetic radiation, Electromagnetic Spectrum, EM Properties, Classification of EMS
4.6.4 Remote Sensing Sensor and its types
4.6.5 Image Resolution and its types: Spatial, Radiometric, Spectral, Temporal resolutions
4.6.6 Application of RS in various field of land resource mapping

5. Engineering Survey

5.1 Introduction
5.1.1 Control and Detail Surveys
5.1.2 Route Surveying-Plan and Profiles
5.1.3 Curves- Types, Geometry setting out and Application
5.1.4 Area and Volume

5.2 Construction Surveys
5.2.1 Buildings
5.2.2 Pipelines
5.2.3 Roads and Highways
5.2.4 Tunnels
5.2.5 Hydropower-Intake, Reservoir, Dam, Powerhouse
5.2.6 Bridges
5.2.7 Canals
5.2.8 Transmission Lines

6. Cartography

6.1 Introduction

6.1.1 Definition and scope of Cartography
6.1.2 Earth as a Cartographic Problem
6.1.3 Cartographic Concepts
6.1.4 Conventional and Digital Cartography
6.1.5 Elements of Map
6.1.6 Map Scale and Symbols
6.1.7 Grid and Graticules
6.1.8 Map projection: Definition, Classification, and Choice of Map Projection
6.1.9 Universal Transverse Mercator (UTM) Projection
6.1.10 Projection System used in Nepal
6.1.11 Sheet numbering for Cadastral and Topographical Base Maps
6.1.12 Topographical Base maps and Large-scale maps
6.1.13 Small Scale Mapping
6.1.14 Method of Relief Representation

6.2 Geo Information

6.2.1 Data (Geometric and Attribute)
6.2.2 Information & Information System
6.2.3 Geographical Information System (GIS)
6.2.4 Database (Basic Concepts, Principles, Application)

6.3 Data Acquisition, Processing, Analysis, Visualization and Presentation (Conventional and Digital Environments)

6.3.1 Data Acquisition:

6.3.1.1 Data Sources- Maps, Records (Tables, Texts), Digital Data, Ground Surveys, GNSS, Aerial Photography, Satellite Imagery, Documents
6.3.1.2 Toponomy
6.3.1.3 Digitization

6.3.2 Data Processing:

6.3.2.1 Geo-referencing
6.3.2.2 Map Projection (Introduction, Classification, Choice and Uses)
6.3.2.3 Data Integration
6.3.2.4 Editing, Spatial Relationship and Topology
6.3.2.5 Spatial Analysis (Merge, Buffer, Overly etc.)

6.3.3 Visualization and Presentation:

6.3.3.1 Spatial and Attribute data
6.3.3.3 Classification of Data
6.3.3.4 Measurement Level of Data (Nominal, Ordinal, Interval and Ratio)
6.3.3.5 Map design (Principles)
6.3.3.6 Mapping Methods -Symbols
6.3.3.7 Generalization – Conceptual and Graphical

6.3.3.8 Graphic Variables

6.4. Map Reproduction
6.4.1 Map Reproduction in Conventional Environment – Photography, Copying and Printing
6.4.2 Map Reproduction in Digital Environment

7. Spatial Information System (SIS) & Digital Terrain Model (DTM)

7.1 Data Structure, Spatial-Non Spatial Data Source
7.1.1 Vector Data and Raster Data
7.1.2 Resolution of Raster Image
7.1.3 Object oriented Vector Data
7.1.4 Topological Vector Data
7.1.5 Data Integration

7.2 Geographical Information System (GIS)
7.2.1 Introduction to GIS
7.2.2 Function and components of GIS
7.2.3 Data Model
7.2.4 GIS Operations and Spatial Analysis
7.2.5 GIS Applications & Users

7.3 National Spatial Database Infrastructure
7.3.1 Metadata
7.3.2 Data Sharing
7.3.3 Spatial Information Service

7.4 Digital Terrain Model (DTM)
7.4.1 Introduction
7.4.2 Data Collection and Processing
7.4.3 Method of creation of DTM
7.4.4 Application of DTM

8. Act, Rules, Regulations, Directives & Procedures

8.1 Land Acquisition Act, 2034
8.2 Forest Act, 2076
8.3 Forest Regulations, 2079
8.4 Environment Protection Act, 2076
8.5 Environment Protection Regulations, 2077
8.6 Procedures for Acquiring Government Land

माथि उल्लिखित पाठ्यक्रमका ईकाईहरुबाट सोधिने प्रश्नहरुको संख्या निम्नानुसार हुनेछ ।

एकाइ नं. (Unit No.)	अङ्कभार (Weightage)	बहूबैकल्पिक प्रश्न (MCQs) को संख्या	छोटो उत्तर प्रश्नको संख्या	लामो उत्तर प्रश्नको संख्या
1	30	10	-	2
2	25	10	3	-
3	15	10	1	-
4	15	10	1	-
5	25	10	1	1
6	20	10	-	1
7	15	10	1	-
8	5	5	-	-
Total	**150**	**75X1=75**	**7X5=35**	**4X10=40**

प्रयोगात्मक परीक्षाको पाठ्यक्रम

समयः १ घण्टा ३० मिनेट

पूर्णाङ्कः५०

उत्तिर्णाङ्कः२५

S.N	Topics	Marks	Time(min)
1	Instrument Handling	15	40
2	GIS and Remote Sensing	10	15
3	Cartography	5	10
4	Practical Knowledge in Subject Matter	10	10
5	Survey Field Work Management	5	5
6	Viva	5	10
Total		**50**	**90**