

लोक सेवा आयोग  
नेपाल इन्जिनियरिङ सेवा, सर्भे समूह, राजपत्राङ्कित प्रथम श्रेणी, सहसचिव वा सो सरहपदको खुला र  
आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम  
द्वितीय पत्र - **Surveying and Mapping**

**1. Land Surveying**

**1.1 Fundamental of Surveying**

- 1.1.1 Historical background
- 1.1.2 Modern Surveying
- 1.1.3 Standardization
- 1.1.4 Surveying and Digital Environment
- 1.1.5 Role of Surveying and Mapping in Public Services

**1.2 Surveying and Mapping for Development Projects**

- 1.2.1 Infrastructure,
- 1.2.2 Rural/Urban Development,
- 1.2.3 Public constructions,
- 1.2.4 Land Acquisition and Land Development Plan

**2. Cartography and Map Production**

- 2.1 Nature and Scope of cartography and earth as a cartographic Problem
- 2.2 Map projections
- 2.3 Cartographic Techniques and methods of Map production
- 2.4 Conceptual and cartographic generalization
- 2.5 Semiology
- 2.6 Map design and layout
- 2.7 Map Reproduction
- 2.8 Topographic cartography: large scale and base maps
- 2.9 Thematic cartography
- 2.10 Automation in cartography
- 2.11 Desktop Publishing

**3. Spatial Information Systems and Digital Terrain Model**

- 3.1 Computer Hardware, Software, Networks
- 3.2 Data hierarchy and Geo-referencing
- 3.3 Geometric Transformations
- 3.4 Spatial Information System, International Terrestrial Reference Frame
- 3.5 Data Structure, Spatial/Non spatial Data sources and applications
- 3.6 Database; Management, Design and Maintenance
- 3.7 Data; Quality, Security and Protection
- 3.8 Spatial Information System and Decision Making
- 3.9 GIS Components
- 3.10 Spatial Analysis Function
- 3.11 Geographic Information Infrastructure, GSDI, NGII
- 3.12 DTM: Method, HW & SW for collection, storage and display of digital mapping data.
- 3.13 Display and analysis of gridded and irregularly spaced data
- 3.14 ICT Applications

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**4. Geodesy**

- 4.1 Transformation of co-ordinates
- 4.2 Astronomical Positioning
- 4.3 Geodetic Datum and Reference ellipsoids
- 4.4 Space Geodesy and Global Positioning System Applications
- 4.5 Physical Geodesy
- 4.6 Theory of Measurement errors and Least Square Adjustments

**5. Cadastre**

- 5.1 Land Registration: Land Rights and Land records; Land Transfer; Registration of Deeds; Registration of Titles; Fragmentation and consolidation; Horizontal Subdivision; Systematic Adjudication; Land tenure; Land Record in Nepal; Land Registries
- 5.2 Cadastral Surveying: Principles of Cadastral Surveying; Boundaries; Parcel; Cadastral Survey Methods; Cadastral Systems; Cadastral Interface; Maintenance of Cadastre; Land Law
- 5.3 Land Management: Principles of Management; Cadastral Organization; Land Development; Planning; Financial Matters; Land use; Land Management; Land Information System, Land Administration

**6. Photogrammetry, Remote Sensing and Digital Image Processing:**

- 6.1 Principle of Photogrammetry
- 6.2 Aerial Camera
- 6.3 Aerial Photography
- 6.4 Photogrammetry; Analogue & Analytical /Workstation.
- 6.5 Principle of Satellite Remote Sensing
- 6.6 Multispectral, Thermal and Hyperspectral Sensing
- 6.7 Weather Satellite Sensors
- 6.8 Earth Resource Satellite Sensors
- 6.9 Radiometric and Geometric Corrections
- 6.10 Image classification
- 6.11 Ground truthing
- 6.12 Application of Photogrammetry and Remote Sensing

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