लोक सेवा आयोग

नेपाल विविध सेवा, राजपत्र अनंकित प्रथम श्रेणी, सहायक कार्टोग्राफर वा सो सरह पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

एवं परीक्षा योजना

पाठ्यक्रमको रुपरेखा :– यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छ :

प्रथम चरण	लिखित परीक्षा	पूर्णाङ्क :– १००
द्वितीय चरण	अन्तर्वार्ता	पूर्णाङ्क :– २०

प्रथम चरण – लिखित परीक्षा योजना (Examination Scheme)

विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्न संख्या Xअङ्कभार	समय
सेवा सम्बन्धी	१००	४०	वस्तुगत बहुवैकल्पिक (Multiple Choice)	५० X २ = १००	४५ मिनेट

द्वितीय चरण

विषय	पूर्णाङ्क	परीक्षा प्रणाली
व्यक्तिगत अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।

२. पाठ्यक्रमको एकाइहरुबाट सोधिने प्रश्नसंख्या यथासम्भव निम्नानुसार हुनेछ ।

पाठ्यक्रमका एकाइ	1 Drawing	2 Cartography	3 Digital System & GIS Basis
प्रश्न संख्या	20	20	10

३. वस्तुगत बहुवैकल्पिक **(Multiple Choice)** प्रश्नहरुको 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 ।

४. यस पाठयक्रममा जेसुकै लेखिएको भएता पनि पाठ्यक्रममा परेका ऐन, नियमहरु परीक्षाको मिति भन्दा ३ (तीन) महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा रहेको सम्झनु पर्दछ ।

५. लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र अन्तर्वार्तामा सम्मिलित गराइनेछ ।

६. पाठ्यक्रम लागू मिति - **२०७१/०१/२६ गते देखि**

लोक सेवा आयोग

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विषय :- सेवा सम्बन्धी

1. **Drawing**
   - **1.1. Introduction:** Definition of Drawing; 2D and 3D Drawing, Engineering and Survey Drawing; Perspectives: Types, Perspective drawings, principle; Isometric view; Orthographic Projection; Projections of points, lines, planes and solids; Uses of Drawing; Map, Plan, Profile, Sections, Diagrams, Graphs and Charts, Histograms
   - **1.2. Equipments and Materials :** Different types of (Manual) Drawing Equipments and Materials (Media); Uses of Drawing Equipments and Materials; Maintenance and Care of Drawing Equipments; Quality of Drawing Materials and Ink; Paper sizes; Choice of Appropriate Drawing Equipments and Materials
   - **1.3. Geometrical Drawings :** Geometrical forms, Plane Figures (Regular and Irregular), Solids
   - **1.4. Freehand Sketching:** Sketching Materials; Proportion; Estimation of Distance and Direction; Panorama, Use of Sketching
   - **1.5. Drawing Techniques:** Types and Sizes of Letters; Devnagari and Roman Letters; Mechanical Lettering: Lettering Sets; Different Types of Lines; Scribing, Format of Grid Sheet and Margin; Scales: Types, Construction and Use; Enlargement and Reduction of Scale; Conventional Signs and Symbols; Bar Diagram & Pie Diagram, Isographs, Isopleths, Choropleths
   - **1.6. Engineering Drawing:** Introduction to Engineering Drawing, Section views and Dimensioning; Intersections
   - **1.7. Profile:** Ground profiles; Longitudinal-section and Cross-sections; L-section and X-section drawings;
   - **1.8. Copying:** Tracing, Ammonia Printing, Photographic techniques

2. **Cartography**
   - **2.1. Measurement concepts**
     - 2.1.1. Units and dimensions: Linear, Angular, Areal, Volumetric, Positional (location and attributes)
   - **2.2. Cartography and Map**
     - 2.2.1. History of cartography
     - 2.2.2. **Map:** Definition; Elements of map Mathematical basis, Cartographic image, Marginal information; Basic characteristics of maps
     - 2.2.3. **Cartographic concepts:** Geometric focus and accuracy; Technological focus and map producing technology; Presentation focus and map design; Artistic focus and perceptual effect; Communication focus and map effectiveness
     - 2.2.4. **Mathematical basis of maps:**
       - 2.2.4.1. Shape and size of the earth (Geoid, Ellipsoid, Geodetic Reference system)
       - 2.2.4.2. Map Scale and Scale factor
       - 2.2.4.3. **Coordinate Systems:** Geographical (Parallels and Latitude, Meridians and Longitude); Rectangular (Universal Transverse Mercator System, Eastings and Northings)
       - 2.2.4.4. **Map Projections:** Graticules and Grids, Developable surface, Classification of map projections (Cylindrical, Conical, Azimuthal), Attributes of Projections, UTM projection and Modified UTM system used in Nepal, MUTM Grids, Choice of projection
       - 2.2.4.5. **Series maps:** Sheet layout and Sheet numbering; Sheet numbering systems used in Nepal for Topographical maps and Cadastral maps

2.2.4.6. **Statistical concepts:** Spatial data - Absolute and derived, Qualitative and Quantitative; Frequency, Ratio, Proportion, Percentage, Densities, Mean, Median, Mode, Standard deviation

2.2.5. **Classification of maps:** Scale based (Large scale, Small scale, Medium scale); Function based (General, Thematic); Object based (Cadastral, Geological, Educational)

2.2.6. **Presentation and visualization:** Geographic data types (Point, Line, Area, Volumetric); Cartographic symbol (Point, Line, Area); Scaling Geographical variables (Nominal, Ordinal, Interval, Ratio); Lettering and Name Placement; Colour (Concept of Spectrum, Wavelengths of visible and invisible bands, Primary and Secondary Colours, Colour Triangle); Visual variables (Position, Size, Value, Texture, Hue, Orientation, Shape); Symbolization; Generalization; Representation of Relief (Spot height, Hill shading, Contouring, Hachuring); Sheet design

3. Digital systems and GIS Basics

3.1. Computer Aided Design/ Drafting (CAD)

3.1.1. Introduction and Computer Basics
3.1.2. Drawing objects - lines, polygons, circles, points and multi-lines.
3.1.3. Object Selection- Picking, selection sets, options and settings
3.1.4. Modifying objects - Detailed description of all modify commands
3.1.5. Units and Scale- Drawing scales units and unit control
3.1.6. Drawing Aids- Use of various function keys (F1 to F10)
3.1.7. Object Properties - layers, colors and line types
3.1.8. Object snaps
3.1.9. Dimensioning
3.1.10. Hatching as per scale
3.1.11. Text and its use in Auto CAD

3.2. Database Management System: Introduction to Database Management System; Logical Data concept and Relationships ; **Data** models and DBMS applications**;** Spatial Data Models **(**Vector Data Model; Raster data Model; TIN Data Models)

3.3. Introductions to GIS: Definition of GIS; Component of GIS: different stages of GIS workflow (Data Acquisition, Data storage & Management, Data Analysis, and Visualization), Definition of the terms: spatial and non-spatial data, features, attribute tables; GIS applications & Users

3.4. Spatial Data Acquisition and Preparation

3.4.1. Sources of Spatial Data
3.4.2. Primary Data Sources
3.4.2.1. (Ground surveying, GPS and DGPS, Photogrammetry, Remote sensing)
3.4.2.2. Secondary Data Sources
3.4.2.3. Data Entry and Data Preparation
3.4.2.4. Digitizing, Scanning, On-screen drawings
3.4.2.5. Geo-referencing

3.5. GIS Operations and Map composition: Querying Databases, Overlay Operation and Geo-processing; Map composition

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Sample Questions

1. Which of the following method is more accurate to copy a map?
A. Using Pantograph
B. Photo Copying
C. Using Photographic Technique
D. Tracing

2. The term 'Scale base' is used in
A. construction of scale
B. statement of scale
C. natural scale
D. all types of map scale

3. Which of the following set of colours represents the Primary colours?
A. Blue, Yellow, Red
B. Blue, Red, Green
C. Red, Green, Yellow
D. Blue, Green Yellow

4. A contour map is
A. geological map
B. geographical map
C. isopleth map
D. choropleth map

5. The commands that tell the basic function of autoCAD is
A. MS-DOS commands
B. Utility commands
C. Draw Entity commands
D. Text commands

6. Which of the following is not a geographical Variable?
A. Nominal
B. Interval
C. Ratio
D. Proportion

7. Which of the following is the oldest data model type which was developed by IBM?
A. Hierarchical Database model
B. Network Database Model
C. Rational Database Model
D. Object Oriented Model

8. Which GIS component takes into account the 'Application development for GIS as a means to provide service?
A. Data component
B. Technology component
C. Application component
D. People component