लोक सेवा आयोग

नेपाल इञ्जिनियरिङ्ग सेवा, जियोलोजी समूह, इञ्जिनियरिङ्ग जियोलोजी उपसमूह, राजपत्राङ्कित द्वितीय श्रेणी, खुला तथा आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

द्वितीय पत्र :- प्राविधिक विषय

1. General
   - 1.1 Theory of Plate Tectonic: Plates and Plate Boundaries
   - 1.2 Geology of Nepal; Litho Tectonic Divisions and Structures
   - 1.3 Engineering Geological Maps and Profiles, and their uses.
   - 1.4 Remote Sensing in Nepal and its application in Engineering.
   - 1.5 Surface and Ground Water Hydrology
   - 1.6 Natural Hazards; types and mitigations
   - 1.7 Hydropower Potential and capabilities of Nepal
2. Introduction
   - 2.1 Scope and Objectives of Engineering Geology
   - 2.2 Importance of Engineering Geological Studies
   - 2.3 Rock types
   - 2.4 Surface (Quarternary) deposits
   - 2.5 Specific Engineering Properties of Rocks and Soils of Nepal
3. Geological Data Collection and Survey
   - 3.1 Geological Survey
   - 3.2 Geophysical Exploration
   - 3.3 Exploratory Drilling and Subsurface Exploration
   - 3.4 Core Logging , Water Pressure Tests and Insitu/ Laboratory tests
   - 3.5 Exploratory adit and shafts and Caverns
   - 3.6 Remote Sensing and GIS in Engineering Geology
4. Soil Mechanics
   - 4.1 Soil Classification and Index Properties and ASTM procedures
   - 4.2 Soil deformations: Uniaxial and Triaxial
   - 4.3 Soil deformation environment: Undrained and Drained
   - 4.4 Soil foundation: types, tests and construction practices
5. Rock Mechanics
   - 5.1 Classification of Rock Mass ; rating methods
   - 5.2 Strength of Rock mass; Investigation methods and tests
   - 5.3 Surface and Underground excavations and mine-working
   - 5.4 Support of Excavated Surface and Caverns
   - 5.5 Terzaghi's Rock Load Classification
   - 5.6 Deere's Rock Quality Designation (RQD)
   - 5.7 CSIR Classification and Rock Masses Rating (RMR)
   - 5.8 NGI Tunneling Quality Index (Q System)
6. Phases and Stages of Engineering Geological studies
   - 6.1 Preconstruction
     - 6.1.1 Reconnaissance
     - 6.1.2 Pre-Feasibility
     - 6.1.3 Feasibility
     - 6.1.4 Detailed Design
   - 6.2 Construction
   - 6.3 Operation and Maintenance

7. Engineering structures
   - 7.1 Dams
     - 7.1.1 Foundation Excavation
     - 7.1.2 Foundation Treatment
   - 7.2 Tunnels and Caverns
     - 7.2.1 Tunnel Geometry and Design
     - 7.2.2 Excavation Methods
   - 7.3 Roads
     - 7.3.1 Road Slope Stability Analysis
     - 7.3.2 Retaining Structures and Bio-engineering
   - 7.4 Bridges and Buildings
     - 7.4.1 Foundation Types and Design
     - 7.4.2 Bearing Capacity and Tests
     - 7.4.3 Construction and Soil-treatments
   - 7.5 Irrigation and River Training Works
     - 7.5.1 Intake Facilities: weir and barrages
     - 7.5.2 Distribution Facilities: Canals and Regulator
     - 7.5.3 River Training Works: embankments, spurs and diversions

8 Slope Stability
   - 8.1 Types of Mass Movement: Varnes' classification and factors affecting slope stability
   - 8.2 Hazards and Risk: Hazard Mapping
   - 8.3 Prevention and Slope Stabilization Measures in Rock and Soil Slopes
   - 8.4 Retaining Structures: Types, Safety factors and Construction

9 Engineering Seismology
   - 9.1 Earthquake: generation and classification
   - 9.2 Seismic Hazards, Seismic zonation maps
   - 9.3 Aseismic Design

10 Construction Materials
   - 10.1 Types of Exploration for Construction Material
   - 10.2 In-situ and Laboratory Tests for Index Properties
   - 10.3 Reserve Estimation
   - 10.4 Environmental Assessments
