

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 (Quaternary) 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 Insitu and Laboratory Tests for Index Properties
- 10.3 Reserve Estimation
- 10.4 Environmental Assessments