

प्रदेश लोक सेवा आयोग, प्रदेश नं. २
 इन्जिनियरिङ सेवा, माइनिङ इन्जिनियरिङ समूह, अधिकृत सातौं तहको खुला तथा अन्तर सेवा प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :-	लिखित परीक्षा (Written Examination)	पूर्णाङ्क :- २००
द्वितीय चरण :-	(क) सामूहिक परीक्षण (Group Test)	पूर्णाङ्क :- ९०
	(ख) अन्तर्वार्ता (Interview)	पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

प्रथम चरण : लिखित परीक्षा (Written Examination) पूर्णाङ्क :- २००

पत्र	विषय	खण्ड	पूर्णाङ्क	उर्तीर्णाङ्क	परीक्षा प्रणाली	पश्नसंख्या × अङ्क	समय
प्रथम	General Subject	Part I: General Awareness & General Ability Test	१००	४०	वस्तुगत (Objective)	५० प्रश्न × १ अङ्क	१घण्टा ३० मिनेट
		Part II: General Technical Subject				५० प्रश्न × १ अङ्क	
द्वितीय	Technical Subject	१००	४०	विषयगत (Subjective)	छोटो उत्तर लामो उत्तर	४ प्रश्न × ५ अङ्क ८ प्रश्न × १० अङ्क	३ घण्टा

द्वितीय चरण : सामूहिक परीक्षण (Group Test) र अन्तर्वार्ता (Interview) पूर्णाङ्क :- ४०

पत्र / विषय	पूर्णाङ्क	उर्तीर्णाङ्क	परीक्षा प्रणाली	समय
सामूहिक परीक्षण (Group Test)	१०		सामूहिक छलफल (Group Discussion)	३० मिनेट
अन्तर्वार्ता (Interview)	३०		बोर्ड अन्तर्वार्ता (Board Interview)	-

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथमपत्र र द्वितीय पत्रको लिखित परीक्षा छुटाछ्नै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको 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 ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूका हकमा तोकिएको अंकका एउटा लामो प्रश्न वा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोधन सकिने छ ।
- द्वितीय पत्रमा (विषयगत प्रश्न हुनेका हकमा) प्रत्येक खण्डका लागि छुटाछ्नै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोहीखण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भइ हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथमचरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीयचरणका परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति : २०७८।०३।२८ गते देखि ।

प्रथम पत्र (Paper I): General Subject

Part (I) : - General Awareness & General Ability Test (50 Marks)

1. **General Awareness and Contemporary Issues (25 × 1 Mark = 25 Marks)**
 - 1.1 Physical, socio-cultural and economic geography and demography of Nepal
 - 1.2 Major natural resources of Nepal
 - 1.3 Geographical diversity, climatic conditions, and livelihood & lifestyle of people
 - 1.4 Notable events and personalities, social, cultural and economic conditions in modern history of Nepal
 - 1.5 Current periodical plan of Nepal
 - 1.6 Information on sustainable development, environment, pollution, climate change, biodiversity, science and technology
 - 1.7 Nepal's international affairs and general information on the UNO, SAARC & BIMSTEC
 - 1.8 The Constitution of Nepal (From Part 1 to 5 and Schedules)
 - 1.9 Governance system and Government (Federal, Provincial and Local)
 - 1.10 Provisions of civil service act and regulation relating to constitution of civil service, organisational structure, posts of service, fulfillment of vacancy and code of conduct
 - 1.11 Functional scope of public services
 - 1.12 Public Service Charter
 - 1.13 Concept, objective and importance of public policy
 - 1.14 Fundamentals of management : planning, organizing, directing, controlling, coordinating, decision making, motivation and leadership
 - 1.15 Government planning, budgeting and accounting system
 - 1.16 Major events and current affairs of national and international importance
 - 1.17 Province no.2, Province Civil Service Act, 2077
 - 1.18 Federal, Province and local level co-ordination and co-operation
 - 1.19 Conflict management
 - 1.20 Disaster management

2. **General Ability Test (25 × 1 Mark = 25 Marks)**
 - 2.1 **Verbal Ability Test (8×1 Mark = 8 Marks)**

Jumble words, Series, Analogy, Classification, Coding-Decoding, Matrix, Ranking Order Test, Direction and Distance Sense Test, Common Sense Test, Logical Reasoning, Assertion and Reason, Statement and Conclusions

 - 2.2 **Numerical Ability Test (9×1 Mark = 9Marks)**

Series, Analogy, Classification, Coding, Arithmetical reasoning/operation, Percentage, Ratio, Average, Loss & Profit, Time & Work, Data interpretation & Data verification

2.3 Non-verbal/Abstract Ability Test (8×1 Mark = 8 Marks)

Figure Series, Figure Analogy, Figure Classification, Figure Matrix, Pattern Completion/Finding, Analytical Reasoning Test, Figure Formation and Analysis, Rule Detection, Water images, Mirror images, Cubes and Dice & Venn-diagram

Part (II) : - General Technical Subject (50 Marks)

1.	Mining Geology	10 %
1.1	Mineral, Crystal, Rocks, Ore and Gangue	
1.2	Definition of geological terminology, Geological guides for prospecting of mineral deposits	
1.3	Mineral Exploration: Purpose and management; Exploration techniques; Exploration stages; Exploration decision criteria; Exploration drilling; Sample handling and preparation; Computer applications in exploration; Estimation of reserves and grade	
1.4	Mining and geological characteristics of deposits	
2.	Mine Surveying	10 %
2.1	Fundamental definitions and concepts – Principles of survey, units of measurements, scales, Linear Measurements	
2.2	Surveying methods: Chain surveying, Traverse Surveying, Leveling, Plane Table Surveying, Contouring and Topographic surveying, Tachometric surveying, Triangulation	
2.3	Surveying Instruments: Compass, Level, Theodolite, Electronic Theodolites and Tachometers, GPS, Aerial Photos and Satellite images	
2.4	Accuracy and errors in Survey	
2.5	Underground Mine Surveying and computer application in mining	
3.	Mine Development	10 %
3.1	Definition of mining terminology in exploration and exploitation	
3.2	Access to mineral deposits, selection of opening methods	
3.2.1	Surface Mining development, Physical Environment and effects, Specific Hazards and controls	
3.2.2	Underground Mine Development: Shaft sinking, Tunneling, Inclines, Drifting and Raising	
3.3	Mine Development tools, machineries and equipments	
3.4	Drilling and blasting operation in mine development	
3.5	Safety consideration in mine development	
4.	Mining Methods, Mining Machinery and Transportation	24 %
4.1	Selecting a mining methods / systems	
4.2	Open-cast mining methods: Placer / Alluvial mining, Open pit	
4.3	Underground mining methods: Room and Pillar methods, Long hole mining, Long wall mining systems, Hydraulic mining systems, Open stopes, Shrinkage stoping, Sublevel stoping, Minor stoping systems, Block caving, Sublevel caving, Cut and Fill stopes, Horizon mining and combined mining methods	
4.4	Stowing Practices	
4.5	Manual mining versus mechanized mining	
4.6	Mine planning and management	
4.7	Environment Management Plan	

4.8	Mining Machineries in surface and underground mine	
4.8.1	Excavation / face machineries	
4.8.2	Loading machines	
4.8.3	Transportation machineries: Face Transport, Haulage Surface and underground, Economic Analysis of Transportation System	
4.9	Mine Pumps	
4.10	Hoist and Hoisting systems: Mine Hoist types, Hoist selection by usage, Technical consideration in selecting hoisting system, Hoist accessories, Safety devices	
4.11	Safety and productivity	
5.	Drilling and blasting	6 %
5.1	Principles of drilling	
5.2	Drilling and blasting planning	
5.3	Drilling machines and accessories - surface, underground	
5.4	Drilling Patterns	
5.5	Drilling costs – surface and underground	
5.6	Explosive, Detonators and Accessories	
5.7	Transportation and storage of explosive	
5.8	Charging and blasting practice in surface and underground mining	
5.9	Ground and air vibrations from blasting	
5.10	Controlled blasting techniques	
5.11	Safety measures in drilling and blasting	
5.12	Chemical Fragmentation	
6.	Occupational Health & Safety	10 %
6.1	Mine atmospheres and gases	
6.2	Underground Environment and Mine Ventilation Planning/Survey	
6.3	Mine Lighting	
6.4	Mine Hazards: Mine fires, gas, explosions, inundation	
6.5	Rescue and recovery operations	
6.6	Miners' diseases – fires, gas, explosions, inundations	
6.7	Environmental Issues: Pollution and Land reclamation	
6.8	Environment Impact Assessment and Environment Management Plan	
7.	Rock Mechanics	10 %
7.1	Definitions – rock mechanics and rock	
7.2	Identification and Classification of Rocks	
7.3	Mechanical Properties and behavior of rock	
7.4	Strength and mechanics of fractures	
7.5	Stress in rock	
7.6	Design & stability of excavation – surface & subsurface roof & ground control	
7.7	Design and System of Mine Support	
7.8	Instrumentation and Monitoring Techniques	
8.	Mine Economics, Environment & Sustainable use of resource	6 %
8.1	Concept of Mine Economics	
8.2	Conservation in mining	
8.3	Mine Valuation	
8.4	Mining costs and controls	
8.5	Cost Benefit Analysis (Economic Analysis) tools	
8.6	Market Survey	
8.7	Sustainable use of Mineral Resources	

9.	Miscellaneous	10%
9.1	Mineral Processing	
9.1.1	Scope, Objectives and Limitations	
9.1.2	Techniques: Crushing, Grinding, Sizing, Classification, Concentration, Location, layout and equipment selection for processing plants	
9.2	Quality control in mining	
9.3	Site services in mining (workshop, colony etc.)	
10.	Geology of Nepal	4 %
10.1	General Geology of Nepal	
10.2	Mineral Prospect of Nepal	
10.3	Province no.2, Geology and mineral prospect .	

प्रदेश लोक सेवा आयोग, प्रदेश नं. २
इंजिनियरिङ सेवा, माइनिङ इंजिनियरिङ समूह, अधिकृत साताँ तहको खुला र अन्तर सेवा
प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम
द्वितीय पत्र (Paper II) : Technical Subject

Section A- 40 Marks

1.	Mineral Exploration and Mine Development Technique	20
1.1	Mineral Exploration and exploration techniques	
1.2	Surveying Methods and instruments	
1.3	Mine Development steps and the choice: surface and underground mine development	
1.4	Mine development machineries	
2.	Mineral Production Technique	20
2.1	Open cast and Underground mining methods	
2.2	Drilling and blasting in the mine operation	
2.3	Types of mining machineries	
2.4	Haulage system in mines	

Section B- 20 Marks

3.	Mine	20
3.1	Mine Designing, Planning and Management	
3.2	Mine Environment and Safety managements,	
3.3	Planning of lighting	
3.4	Drainage and ventilation	
3.5	Mine Hazards and Rescue Operations	
3.6	Miner's disease	
3.7	Environment Management Plan,	
3.8	Environment Impact Assessment	
3.9	After mining excavation forest restoration and forest succession & establishment	

Section C- 20 Marks

4.	Mineral Resources Promotion and Administration	20
4.1	General geology of Nepal	
4.2	Mine Economics concepts and tools	
4.3	Potential Mineral Resources and current status of Mining Industry in Nepal	
4.4	Role of Department of Mines and Geology (DMG) for mineral promotion and administration	
4.5	Sustainable development of Mine & Minerals	
4.6	Rehabilitation of Mines	
4.7	Province no.2, Mining Industry status and statistics	

Section D- 20 Marks

5.	एन, नियमहरु	20
5.1	निजामती सेवा एन	
5.2	निजामती सेवा नियमावली	
5.3	खानी तथा खनिज पर्दाथ एन, २०४२	
5.4	खानी तथा खनिज पर्दाथ नियमावली, २०५६	
5.5	वातावरण संरक्षण एन, २०७६	
5.6	वातावरण संरक्षण नियमावली, २०५४	
5.7	स्थानीय सरकार संचालन एन, २०७४	
5.8	प्रदेश निजामती सेवा एन, २०७७, प्रदेश नं. २	
5.7	प्रदेश नं. २, खानी तथा खनिज, वन र वातावरणसँग सम्बन्धित एन, नियम र निर्देशिका	

इंजिनियरिङ सेवाका विभिन्न समूह/उपसमूह, अधिकृत सातौं तहको पदमा प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र लिइने सामूहिक परीक्षण (**Group Test**) को लागि

सामूहिक छलफल (Group Discussion)

यस प्रयोजनका लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेता विहिन सामूहिक छलफल (Leaderless Group Discussion) का रूपमा अवलम्बन गरिने छ। दिइएका प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समय भित्र समूह वीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (Individual Presentation) गर्नु पर्नेछ। यस परीक्षणमा मूल्याङ्कनका लागि ३ जना भन्दा बढीको समिति रहनेछ।