

लोक सेवा आयोग
नेपाल इन्जिनियरिङ्ग सेवा, मेट्रोलेजी समूह, राजपत्राकित तृतीय श्रेणीका पदको खुला 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 :- १०
	(ख) अन्तर्वार्ता (Interview)	पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

प्रथम चरण : लिखित परीक्षा(Written Examination)

पूर्णाङ्क :- २००

पत्र	विषय	खण्ड	पूर्णाङ्क	उर्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या × अङ्क	समय
प्रथम	General Subject	Part I: General Awareness & General Reasoning Test	१००	४०	वस्तुगत (Objective)	बहुवैकल्पिक प्रश्न (MCQs)	५० प्रश्न × १ अङ्क	१ घण्टा 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 छुट्टाछुट्टै 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 प्रश्नहरूको हकमा तोकिएको अंको 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) सोध्न सकिने छ ।
- द्वितीय पत्रमा(विषयगत प्रश्न हुनेका हकमा) प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोहीखण्डको 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 भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथमचरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीयचरणको परीक्षामा सम्मिलित गराइनेछ ।
- यस भन्दा अगाडि लागू भएका माथि उल्लेखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।
- पाठ्यक्रम लागू मिति : २०८०/०७/२०

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
2. **General Reasoning Test** (25 ×1 Mark = 25 Marks)
 - 2.1 **Logical Reasoning** (9×1 Mark = 9 Marks)
Verbal Ability, Alphanumeric Series, Reasoning Analogies, Classification, Coding-Decoding, Order & Ranking, Distance & Directions, Analytical and Logical Reasoning, Assertion and Reason, Statement and Conclusion, Input-Output, Venn- diagram
 - 2.2 **Numerical Reasoning** (8×1 Mark = 8 Marks)
Arithmetic Series, Analogy, Classification, Arithmetical Reasoning, Fraction, Percentage, Ratio, Average, Profit & Loss, Time & Work, Date & Calender, Data Sufficiency, Data Interpretation & Data Verification
 - 2.3 **Spatial Reasoning** (8×1 Mark = 8 Marks)
Figure Series, Figure Analogy, Figure Classification, Figure Matrix, Pattern Completion, Embedded Images, Image Formation & Analysis, Mirror and Water Images, Cubes and Dices, Paper Folding & Cutting

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

- 1. An introduction to metrology** **14 %**
 - 1.1 International System of Unit (SI Units) - Base Units (Kilogram, Meter, Second, Kelvin, Ampere, Candela, Mole); Supplementary Units- (Radian, Steradian) and Derived Units
 - 1.2 Traceability and Hierarchy of Standards
 - 1.3 General Metrological Terms: True Value; Conventional True Value; Measurand; Accuracy; Repeatability; Reproducibility; Error, Random Error, Systematic Error, Systematic Error; Uncertainty; Sensitivity; Resolution; Stability; Accuracy of Measuring Instruments; Calibration; Verification

- 2. Verification and Calibration** **20%**
 - 2.1 Commercial Balance and Bullion Weights; Working Standards; Secondary Standards; Primary Standards; Reference Standards
 - 2.2 Direct Weighing; Substitutional Weighing; Double Substitutional Weighing; Transpositional Weighing; Intercomparisons
 - 2.3 Mass Related Quantities i.e. Volume (Volume Standard, Verification of Volumetric Glassware) Standard Hydrometer & their Calibration, Venturimeter, manometer
 - 2.4 Types of Balances- Single Pan, Double Pan, Electronic Balance, Precision Balance
 - 2.5 Calibration of Precision Balance
 - 2.6 Verification of Commercial & Electronic Balances
 - 2.7 Verification of Platform, Dial Scale & Weighbridge

- 3. Verification and Calibration of Length Standards** **10%**
 - 3.1 Standard Meter Bar
 - 3.2 Gauge Block
 - 3.3 Micrometer
 - 3.4 Caliper
 - 3.5 Screw Gauge
 - 3.6 Straightness, Flatness, Parallism, Circulatory, Rotation

- 4. Thermometry (Measurement of Thermodynamic Temperature)** **10%**
 - 4.1 Types of Thermometers
 - 4.2 Verification of Thermometers (Liquid in Glass Type)
 - 4.3 General Concept of Thermocouple; Seebeck Effects; Platinum Resistance Thermometers; Pyrometer
 - 4.4 General concept of Hygrometer, Dew Point, Measurement of Humidity

- 5. Measurement of Current & Current Related Quantities (Ampere, Voltage and Resistance)** **10%**
 - 5.1 Ohms Law; Potentiometer; Wheatstone Bridge; Meter Bridge; Power Meter; Thermistors
 - 5.2 Verification and Calibration of Ammeter; Volta meter; Ohmmeter and Multimeter
 - 5.3 Galvanometer; Principle of Shunt
 - 5.4 Measurement of Current; Volt and Resister

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- 5.5 Measurement of Capacitance and Inductance
5.6 Colour Code of a Resistor
5.7 Home Appliance Electric Power Meter
- 6. Photometry and Time 6%**
6.1 Luminous Intensity; Luminous Flux; Lumen; Candela
6.2 Measurement of Intensity of Light using Integrating Sphere.
6.3 Nepal Standard Time Based on GPS; Tele Clock; Atomic Clock
- 7. Expression of Error in Measurement and Uncertainty in Calibration 4%**
7.1 Calculation of Error and Uncertainty in Measurements (Mass, length, Balance, Thermometer)
7.2 Factors considered calculating Uncertainty
- 8. Calibration and Measurement of 14%**
8.1 Pressure Gauge
8.2 Proving Ring
8.3 Universal Testing Machine
8.4 Atmospheric Pressure
8.5 Air Density
8.6 Dial Gauge
8.7 Verification of Taxi Meter
8.8 Verification of Dispensing Pumps
8.9 Use of Sensor and Gears in Measuring Instruments
8.10 Standard Rolling Machine
- 9. International Organizations Concerning Metrology 6%**
9.1 Formation, Duties and Responsibilities of
9.1.1 BIPM (Bureau International de Poids et Measures)
9.1.2 OIML (Organization International de Metrology Legal)
9.1.3 CGPM (Conference General de Poids et Measures)
9.1.4 IEC (International Electro-technical Commission)
9.1.5 APMP (Asia Pacific Metrology Programme)
9.2 Evolution of SI System of Units
- 10. Miscellaneous 6%**
10.1 Equilibrium of forces, Lami's Theorem
10.2 Elasticity, Hook's Law and Spring
10.3 Shear force & Bending moment, Deflection of beam, Lever
10.4 Ultrasonic Sound Wave and Radar
10.5 Laser Rays