लोक सेवा आयोग
नेपाल इञ्जिनियरिङ्ग सेवा, मेटेरियोलोजी समूह, राजपत्रांकित 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	१घण्टा ३० मिनेट
		Part II: General Technical Subject					५०प्रश्न ×१ अङ्क	
द्वितीय	Technical Subject		१००	४०	विषयगत (Subjective)	छोटो उत्तर लामो उत्तर	४ प्रश्न × ५ अङ्क ८ प्रश्न ×१०अङ्क	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 :

१. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
२. प्रथमपत्र र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
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. बहुवैकल्पिक प्रश्नहरु हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
५. विषयगत प्रश्नहरुको हकमा तोकिएको अंकको 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 टिप्पणीहरु (Short notes) सोध्न सकिने छ ।
६. द्वितीय पत्रमा(विषयगत प्रश्न हुनेका हकमा) प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोहीखण्डको उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
७. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्क्रममा परेको सम्झनु पर्दछ ।
८. प्रथमचरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीयचरणको परीक्षामा सम्मिलित गराइनेछ ।
९. यस भन्दा अगाडि लागु भएका माथि उल्लेखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।
१०. पाठ्यक्रम लागू मिति : **२०८०/०७/२०**

लोक सेवा आयोग

नेपाल इञ्जिनियरिङ्ग सेवा, मेटेरियोलोजी समूह, राजपत्रांकित तृतीय श्रेणीका पदको खुला प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

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. Physical Meteorology (16%)

- 1.1 Introduction of the atmosphere
  - 1.1.1 Characteristics of the atmosphere
  - 1.1.2 Composition of the atmosphere
- 1.2 Radiation
  - 1.2.1 Energy sources and radiation principles
  - 1.2.2 Solar radiation
  - 1.2.3 Albedo
  - 1.2.4 Absorption of terrestrial radiation
  - 1.2.5 The effect of the line structure of the water vapour spectrum on the atmospheric emission and absorption
  - 1.2.6 Nocturnal radiation and the cooling of the surface layers
- 1.3 The principles of thermodynamics
  - 1.3.1 Work, heat
  - 1.3.2 The law of conservation of energy
  - 1.3.3 Internal energy and heat capacities of an ideal gas
  - 1.3.4 Adiabatic processes
  - 1.3.5 Entropy and second law of thermodynamics
  - 1.3.6 Summary of thermodynamic variables
- 1.4 Hydrostatic equilibrium
  - 1.4.1 The hydrostatic equation
  - 1.4.2 Height computation of upper air sounding
  - 1.4.3 The hydrostatics of special atmosphere
  - 1.4.5 Altimetry
  - 1.4.6 Reduction of pressure to sea level
- 1.5 Hydrostatic stability
  - 1.5.1 Stability criteria
  - 1.5.2 Absolute stability
  - 1.5.3 Absolute instability
  - 1.5.4 Conditional instability
  - 1.5.5 Parcel method
  - 1.5.6 Slice method
  - 1.5.7 Entrainment theory

2. Dynamic Meteorology (14%)

- 2.1 Coordinate system
- 2.2 Inertial versus non-inertial coordinate system
- 2.3 Dynamical equation in rotation coordinate system
- 2.4 Concept of gravity and gravitation
- 2.5 The pressure gradient force
- 2.6 Inertia motion
- 2.7 Individual versus local and convective derivatives
- 2.8 Equation of continuity
- 2.9 Complete set of equations governing the atmosphere
- 2.10 Horizontal motion under balanced forces
  - 2.10.1 Geostrophic flow
  - 2.10.2 Gradient flow

- 2.10.3 Cyclostrophic flow
- 2.10.4 The thermal wind

2.11 The mechanism and influence of pressure changes
- 2.11.1 The pressure tendency equation
- 2.11.2 The Bjerkenes-Holmboe theory
- 2.11.3 The isallobaric wind

2.12 Circulation and vorticity
- 2.12.1 The circulation theorem; Physical interpretation and application
- 2.12.2 Vorticity theorem
- 2.12.3 Divergence

2.13 Numerical weather prediction
- 2.13.1 Fundamentals of NWP

2.14 General Circulation of the Atmosphere
- 2.14.1 The mean circulation in the troposphere and lower stratosphere
- 2.14.2 Meridional circulation
- 2.14.3 Model of general circulation

3. Synoptic Meteorology (16%)

3.1 Air mass and front
- 3.1.1 Definition of air mass, source region
- 3.1.2 Classification and its symbols
- 3.1.3 Modification of air mass
- 3.1.4 General characteristics, classification of fronts
- 3.1.5 Weather associated with idealized fronts
- 3.1.6 Frontogenesis and frontolysis

3.2 Extra-tropical cyclone

3.3 Thunderstorms and tornadoes

3.4 Weather analysis and forecasting
- 3.4.1 The concept of synoptic analysis
- 3.4.2 Preparation of synoptic charts
- 3.4.3 Isobars on a level surface and contours of the isobaric surfaces and thickness of isobaric layers
- 3.4.4 Synoptic representation of the pressure field

3.5 Meteorological codes and symbols
- 3.5.1 SYNOP, TEMP
- 3.5.2 Meteorological symbols

4. Tropical Meteorology (14%)

4.1 The scope of tropical meteorology

4.2 The equatorial trough

4.3 Mean sea level circulation

4.4 The trade winds

4.5 Weather in tropics

4.6 Inter tropical convergence zone

4.7 Tropical disturbances and cyclones
- 4.7.1 Classification and definition of tropical disturbances
- 4.7.2 Global climatology of tropical cyclones
- 4.7.3 Tropical storms, their formation, movement and forecasting

4.8 Monsoon

4.8.1 Global monsoons
4.8.2 Differential heating
4.8.3 Heat low
4.8.4 Monsoon depressions
4.8.5 Monsoon climatology
4.9 Waves in the easterlies
4.10 El Nino, La Nina, Southern Oscillation

5. Climatology (10%)

5.1 Definition and scope of climatology
5.2 Solar radiation and terrestrial heat balance
5.3 Spatial and temporal variation of temperature
5.4 Spatial and temporal variation of winds and pressure
5.5 Climatic classification and description of climatic classification
5.6 Climates of Nepal
5.7 Climate change and its impact
5.8 Statistics in climatology

6. Applied Meteorology (10%)

6.1 Air pollution, pollutants and its dispersion
6.2 Agriculture meteorology
6.2.1 General physiology of plant growth
6.2.2 Role of soil and atmosphere
6.3 Weather and climate in relation to the plant growth and development of vegetation
6.3.1 Photosynthesis
6.3.2 Soil temperature
6.3.3 Wind profile near ground
6.3.4 Lysimeters
6.3.5 Frost and frost protection
6.4 Aviation meteorology
6.4.1 Visibility
6.4.2 Fog
6.4.3 Turbulence
6.4.4 Jet stream
6.4.5 Aircraft icing
6.4.6 Altimeter setting
6.4.7 Route forecast
6.4.8 Clouds
6.4.9 Meteorological Aviation Report (METAR), Terminal Aerodrom Forecast (TAF)

7. Instrumentation and method of observation (10%)

7.1 Precipitation
7.2 Surface wind
7.3 Pressure
7.4 Temperature
7.5 Humidity
7.6 Sunshine and Radiation

7.7 Evaporation
7.8 Upper air observation

8. Hydrometeorology (6%)

8.1 Hydrologic cycle and application of hydrology
8.2 Precipitation
8.3 Infiltration
8.4 Evapotranspiration
8.5 Runoff
8.6 Hydrographs
8.7 Ground water
8.8 Water balance

9. Satellite and radar Meteorology (4%)

9.1 Introduction
9.2 Satellite Sensors
9.3 Image Interpretation
9.4 Quantitative Information from Satellites
9.5 Fundamentals of Radar
9.6 Bright Bands