

प्रदेश लोक सेवा आयोग, बागमती प्रदेश  
कृषि सेवा, एगू. इन्जिनियरिङ्ग समूह, सातौँ तह, कृषि इन्जिनियर 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 Ability 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 द्वितीयपत्रको 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 क्यालकुलेटर (Calculator) लगायतका कुनै पनि विद्युतीय उपकरण प्रयोग गर्न पाइने छैन ।
- विषयगत प्रश्नहरूको 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 टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- द्वितीय पत्रमा (विषयगत प्रश्न हुनेको हकमा) प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डको 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 सम्झनु पर्दछ ।
- यथासम्भव प्रश्नहरू नेपाल र बागमती प्रदेशको सन्दर्भमा सोधिने छन् ।
- प्रथम चरणका परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- यस भन्दा अगाडि लागु भएका माथि उल्लेखित सेवा, समूहको पाठ्यक्रम खारेज गरिएको छ ।
- पाठ्यक्रम लागु मिति : - २०७९/८/११

प्रथम पत्र (Paper I): General Subject

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

1. **नेपालको संविधान तथा सान्दर्भिक कानूनहरू:** [10 ×1 Mark = 10 Marks]
  - 1.1 नेपालको संविधान
  - 1.2 कर्मचारी समायोजन ऐन, २०७५
  - 1.3 सार्वजनिक खरिद ऐन, २०६३
  - 1.4 सार्वजनिक खरिद नियमावली, २०६४
  - 1.5 प्रदेश सार्वजनिक खरिद नियमावली, २०७६
  - 1.6 भ्रष्टाचार निवारण ऐन, २०६४
  - 1.7 सम्पत्ती शूद्धिकरण ऐन, २०६४
  - 1.8 प्रदेश सूचनाको हक सम्बन्धी ऐन, २०७६
  - 1.9 प्रदेश सुशासन ऐन, २०७७
  - 1.10 संघ, प्रदेश तथा स्थानीय तहका निजामती सेवा सम्बन्धी कानूनहरू
2. **General Awareness and Contemporary Issues** [20 ×1 Mark = 20 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 and Bagamati Province
  - 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 Governance system and Government (Federal, Provincial and Local)
  - 1.9 Functional scope of public services
  - 1.10 Public Service Charter
  - 1.11 Concept, objective and importance of public policy
  - 1.12 Fundamentals of management: planning, organizing, directing, controlling, coordinating, decision making, motivation and leadership
  - 1.13 Government planning, budgeting and accounting system
3. **Major events and current affairs of national and international Importance** [4 X 1 Mark = 4 Marks]
4. **General Ability Test** [10×1 Mark = 10 Marks]
  - 4.1 **Verbal Ability Test**  
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
  - 4.2 **Numerical Ability Test**  
Series, Analogy, Classification, Coding, Arithmetical reasoning/ operation, Percentage, Ratio, Average, Loss & Profit, Time & Work, Data interpretation & Data verification
  - 4.3 **Non-verbal/Abstract Ability Test**  
Figure Series, Figure Analogy, Figure Classification, Figure Matrix, Pattern Completion/Finding, Analytical Reasoning Test, Figure Formation and

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Analysis, Rule Detection, Water images, Mirror images, Cubes and Dice  
& Venn-diagram

5. नेपाली र अङ्ग्रेजी भाषा:

[6 X 1 Mark = 6 Marks]

5.1 English: Knowledge on writing correct English sentences, letters, and reports according to  
English grammar based on the following syntactic functions: [3 X 1 Mark = 3 Marks]

- a. Parts of Speech:
- b. Noun
- c. Pronoun
- d. Adjective
- e. Determiner
- f. Verb
- g. Adverb
- h. Preposition
- i. Conjunction and
- j. Interjection
- k. Infinitives and gerunds, reported speech and tenses

5.2 नेपाली: नेपाली भाषामा स्तरीय शुद्ध शब्द, वाक्यांश र वाक्य लेखनको लागि आवश्यक पर्ने ह्रस्व दीर्घ, ब र  
व, तथा श, ष, स लगायतका व्याकरणगत शुद्ध लेखनशैलीमा केन्द्रित शुद्ध शब्द, वाक्यांश र वाक्य  
लेखनसहितको नेपाली भाषाको शुद्धाशुद्धिको ज्ञान [3 X 1 Mark = 3 Marks]

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

- 1. General Agriculture** **5**
  - 1.1 Principles of agronomy(cereals, cash crops , pulses and oilseed)
  - 1.2 Agro meteorological data recording, collection and analysis and introduction to sunshine recorder, max and min temperature, wind vane, rain gauges, soil temperature and evaporation pan etc)
  - 1.3 Introduction to sociology and rural development
  - 1.4 Elements of soil science(soil fertility, properties and classification)
  - 1.5 Introduction to plant protection(Emphasis on equipment)
  - 1.6 Elements of farm management
  - 1.7 Introduction to horticulture(fruits and vegetables)
  
- 2. General Engineering**
  - 2.1 Mechanical Engineering** **10**
    - 2.1.1 Work, power and energy
    - 2.1.2 Basic knowledge workshop technology and metallurgy
    - 2.1.3 Fluid Mechanics(compressible and incompressible fluids, viscosity, Bernoulli theorem, Archimedes' principle, buoyancy)
    - 2.1.4 Thermodynamics( laws of thermodynamics, Carnot engine, entropy, enthalpy, Kinetic theory of gases)
    - 2.1.5 Basic knowledge on thermal energy conversion, fossil fuels, refrigerants and psychrometry
    - 2.1.6 Introduction to theory of machines
    - 2.1.7 Design of machines(machines related to agriculture)
    - 2.1.8 Internal combustion engines(petrol and diesel engines)
    - 2.1.9 Engine terminologies
  
  - 2.2 Electrical Engineering** **5**
    - 2.2.1 Electrical circuits
    - 2.2.2 Fundamentals of electronics
    - 2.2.3 Introduction to computer software and hardware
    - 2.2.4 Basic knowledge on electric machines
    - 2.2.5 Electromagnetic devices and electric power measurements
  
  - 2.3 Civil Engineering** **10**
    - 2.3.1 Engineering hydrology(hydrological cycle, measurement and analysis of precipitation, measurement, estimation and analysis of runoff, hydrograph)
    - 2.3.2 Engineering materials (cement, brick, steel, timber, sand, stone, aggregate, paints etc.)
    - 2.3.3 Strength of material/ Mechanics ( torque, couple moments, moment of inertia, elasticity, , impulse, centripetal and centrifugal forces, gravitational lows)
    - 2.3.4 Design of structures (steel, concrete and timber)
    - 2.3.5 Soil engineering (soil physics, soil mechanics and foundation)
    - 2.3.6 Surveying (plane table, leveling with different types of equipments), topographical, contouring, job layout, etc.)
    - 2.3.7 Building construction technology( brick and stone masonry, carpentry, painting, plastering, concreting roofing, floorings, damp proof course

2.3.8 Estimating and costing of buildings, Irrigation and other agricultural structures.

2.3.9 Open channel hydraulics

**3. Agricultural Engineering**

**20**

- 3.1 Soil water; soil moisture tension, infiltration, permeability, wilting coefficient and conductivity
- 3.2 Weirs, parashal flumes, cut throat flumes, orifice and meter gates
- 3.3 Tracer method
- 3.4 Plant water relationship, evaporation, transpiration and consumptive use, evapotranspiration (ET) estimation methods
- 3.5 Water requirements, irrigation frequencies, Irrigation efficiencies
- 3.6 Furrow irrigation, border irrigation and check basin Irrigation
- 3.7 Sprinkler and drip/trickle Irrigation
- 3.8 Type of drainage system, Surface and sub surface drainage system
- 3.9 Ground water and aquifers, hydraulics of wells
- 3.10 Water erosion (rain drop erosion, sheet erosion , rill erosion, gully erosion, stream channel erosion)
- 3.11 Human, animal, electrical and mechanical powers
- 3.12 Solar and wind power, energy from agricultural residue and animals waste including biogas,
- 3.13 Scope of agricultural mechanization in Nepal
- 3.14 Tillage requirements and draft power requirement
- 3.15 Tillage implements(traditional animal drawn plough, mold board plough, disc plough, chisel plough, rotavator, harrows
- 3.16 Sowing methods of major crops
- 3.17 Seed drill, planters and their components
- 3.18 Power transmission system and devices (belt, chain, shaft, pulley etc.)
- 3.19 Grain drying theory
- 3.20 Grain pressure theory
- 3.21 Unit operation in seed processing

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द्वितीय पत्र (Paper II) : Technical Subject

Section A– 20 Marks

1. Soil and Water Engineering

1.1 Water Conveyance and Control

1.1.1 Design of open channels ,channel linings, drop structures and spillways, water control and division structures

1.1.2 Design of under ground pipe conveyance system

1.2 Land Development

1.2.1 Land leveling- grading design methods ,estimation of earthwork quantities, leveling and grading procedures, equipment for land grading and field layout

1.3 Ground Water , Irrigation Wells and Pumps

1.3.1 Design of wells

1.3.2 Wells construction procedures

1.3.3 Indigenous water lifting devices, positive displacement pumps, centrifugal pumps, vertical turbine pumps, submersible pumps, propeller and mixed flow pumps, selection of pumps and their performances, repaired and maintenance

1.4 Water erosion and control measures

1.4.1 Soil losses and its measurement

1.4.2 Erosion control measures (engineering and bioengineering methods)

1.4.3 Conservation structures, watershed management and water harvesting techniques

Section B– 30 Marks

2. Farm power and Machinery

2.1 Farm Tractor and its operation, repair and maintenance

2.1.1 Farm tractor types

2.1.2 Different parts and components of farm tractor

2.2 Tillage and tillage implements

2.2.1 Minimum and zero tillage implements

2.2.2 Testing and selection of tillage implements

2.2.3 Operation and maintenance of tillage implements

2.3 Seeding, harvesting and threshing machineries

2.3.1 Rice trans-planters ,vertical conveyor, reaper and its components, combine harvester, different type of threshers(rice thresher ,multi-crop thresher) and winnowing machine ) with their repair and maintenance

2.4 Mechanical weeding and chemical application equipment

2.4.1 Manual and power weeders, sprayers ( its types, components, nozzle types, application ), dusters, with their operation , maintenance and selections of mechanical weeding and chemical application equipment

**Section C– 20 Marks**

**3. Post Harvest Engineering**

**3.1 Grain Drying**

3.1.1 Grain drying needs, methods and theory

3.1.2 Mechanical dryers ( batch and continuous type ), grain pressure theory

**3.2 Processing of Rice, wheat, Maize, Sugarcane, Legume and Oilseeds**

3.2.1 Milling, hulling, expelling

3.2.1 Equipments for hulling, milling, and expelling

**3.3 Preservation of Horticultural and Livestock Commodities**

3.3.1 Principles of cold storage design

3.3.2 Refrigeration and air conditioning

3.3.3 Seed processing equipments

3.3.4 Dairy machinery(heaters and coolers , pasteurization, can washer, Cream separators, butter churns, steam boilers)

**Section D– 30 Marks**

**4. Farm Structure Development**

**20**

4.1 Planning of farmstead, farm residence, water supply and sanitation

4.2 Farm road, farm fencing, farm ponds, farm irrigation and drainage

**4.3 Animal Shelters**

4.3.1 Dairy barn(housing requirements, stanchion and loose housing barns with equipments and accessories, milking barn, pen barn)

4.3.2 Poultry housing (housing requirements, types of poultry house, brooder house, poultry equipments and accessories)

4.3.3 Sheep and goat housing (types, housing requirements, construction material, layout, equipment and accessories in goat and sheep housing etc.)

4.3.4 Swine housing ( types, housing requirements, construction materials, layout, equipment and accessories in swine housing )

4.3.5 Aqua cultural engineering.

**4.4 Storage Structures**

4.4.1 Fodder storage structure, feed storage structure, food grain storage structure (digenous storage structure, bag storage structure, grain bins, go downs), farm machinery storage structure and farm modern workshop

**4.5 Farm and Rural electrification**

4.5.1 Power transmission and distribution, house wiring and its components

4.5.2 AC motor (single phase and poly phase ) , starters, selection of electric motors, care and maintenance of electric equipments

4.5.3 Micro- hydro power plants

**5. Rural Engineering**

**10**

5.1 Green roads

5.2 Water supply

5.3 Sanitation

5.4 Bio engineering measures

5.5 Renewable energy

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प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र  
लिइने सामूहिक परीक्षण (**Group Test**) का 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**) को रूपमा अवलम्बन गरिने छ। दिइएको प्रश्न वा **Topic** का विषयमा पालैपालोसँग निर्दिष्ट समय भित्र समूह बीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति (**Individual Presentation**) गर्नु पर्नेछ। यस परीक्षणमा मूल्याङ्कनका लागि देहाय अनुसारका ३ जना भन्दा बढीको समिति रहनेछ।

आयोगका सदस्य	-	अध्यक्ष
आयोगका सदस्य	-	सदस्य
मनोविज्ञ	-	सदस्य
दक्ष/विज्ञ (१ जना)	-	सदस्य

सामूहिक छलफलमा दिइने नमूना प्रश्न वा **Topic**

उदाहरणका लागि - उर्जा संकट, गरीबी निवारण, स्वास्थ्य बीमा, खाद्य सुरक्षा, प्रतिभा पलायन जस्ता **Topics** मध्ये कुनै एक **Topic** मात्र दिइनेछ।