

प्रदेश लोक सेवा आयोग, कर्णाली प्रदेश
प्रदेश निजामती सेवा र स्थानीय सेवाको कृषि सेवा (कृषि प्रसार, बाली विकास, बाली संरक्षण, एगू. इको. एण्ड मार्केटिङ्ग, बागवानी र माटो विज्ञान समूह) अधिकृतस्तर सातौं तहको खुला, अन्तर तह र आन्तरिक अन्तर सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम र परीक्षा योजना

पाठ्यक्रमको रूपरेखा:- संयुक्त र एकीकृत परीक्षा प्रणाली (Integrated and Unified Examination System) को आधारमा सबै समूह र उपसमूहका लागि निम्नानुसारको विभाजन गरिएको छ।

परीक्षाको चरण	परीक्षाको किसिम	पूर्णाङ्क
प्रथम	लिखित परीक्षा	२००
अन्तिम	सामुहिक परीक्षण र अन्तर्वार्ता	४०

१. प्रथम चरण: लिखित परीक्षा (Written Examination)

पत्र	विषय	खण्ड	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्याXअङ्क	समय
प्रथम	General Subject	Part I: General Knowledge and General Ability Test	१००	४०	वस्तुगत (Objective): बहुवैकल्पिक प्रश्न (Multiple Choice Questions)	५०X१=५०	१ घण्टा ३० मिनेट
		Part II: General Technical Subject				५०X१=५०	
द्वितीय	Technical Subject		१००	४०	विषयगत (Subjective): छोटो उत्तर लामो उत्तर	८X५=४० ६X१०=६०	३ घण्टा

२. अन्तिम चरण: सामुहिक परीक्षण र अन्तर्वार्ता (Group Test & Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली	समय
सामुहिक परीक्षण (Group Test)	१०	समूहमा व्यक्तिगत प्रस्तुति (Individual Presentation in Group)	३० मिनेट
व्यक्तिगत अन्तर्वार्ता (Individual Interview)	३०	मौखिक (Oral)	

द्रष्टव्य:

१. यस पाठ्यक्रमलाई प्रथम चरण र अन्तिम चरणमा विभाजन गरिएको छ।
२. खुला र समावेशी समूहको एउटै प्रश्नपत्रबाट परीक्षा सञ्चालन हुनेछ।
३. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ।

४. 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।
५. बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा क्याल्कुलेटर प्रयोग गर्न पाइने छैन।
६. विषयगत प्रश्नहरूको हकमा तोकिएको अङ्कमा 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 सकिनेछ।
७. परीक्षा हलमा मोबाइल फोन, स्मार्ट वाच, हेड फोन वा यस्तै प्रकारका विद्युतीय उपकरण, पुस्तक, नोटबुक, झोला लगायतका वस्तुहरू लैजान पाइने छैन।
८. परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा दिईए अनुसार हुनेछ।
९. विषयगत प्रश्न हुने पत्र/विषयका प्रत्येक भाग/खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन्। परीक्षार्थीले प्रत्येक भाग/खण्डका प्रश्नहरूको उत्तर सोही भाग/खण्डको उत्तरपुस्तिकामा लेख्नुपर्नेछ।
१०. यस पाठ्यक्रम अनुसारका पत्र/विषयका विषयवस्तुमा जुनसुकै कुरा लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगावै संशोधन भई कायम रहेका विषयवस्तुलाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ।
११. प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र अन्तिम चरणको परीक्षामा सम्मिलित गराइनेछ।
१२. लिखित परीक्षा र अन्तिम चरणको सामूहिक परीक्षण र अन्तर्वार्ताको कुल प्राप्ताङ्कको आधारमा अन्तिम परीक्षाफल प्रकाशित गरिनेछ।
१३. पाठ्यक्रम अध्यावधिक भई लागू हुने मिति: २०८१।०८।१४

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एण्ड मार्केटिङ्ग, बागवानी र माटो विज्ञान समूह) अधिकृतस्तर सातौं तहको खुला, अन्तर तह र आन्तरिक
अन्तर सेवा प्रतियोगितात्मक लिखित 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 with special focus on Karnali Province
 - 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 periodic plan of Karnali Province and 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 FAO, SAARC & WTO
 - 1.8 The Constitution of Nepal
 - 1.9 Governance system and Government (Federal, Provincial and Local)
 - 1.10 Provisions of civil service act [(Karnali Province Civil Service Act, 2080 and Regulations, 2080], {Local Services (Formulation and Operation) Act, 2081} and regulation relating to organizational 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, staffing, 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 Public service delivery system and its barriers in Nepal
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 = 9 Marks)

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):

Subject: General Technical Subject

(50 Marks)

1. History and Current Status of Agriculture Sector in Nepal (5 marks)
 - 1.1. History of agricultural research, education and development in Nepal
 - 1.2. Overview of Nepalese agriculture: Current status and scope
 - 1.3. Institutional arrangement of agricultural research, extension and education in Nepal
 - 1.4. Agriculture related policy, plans, programmes and projects in Karnali Province
2. Agriculture Research, Extension and Education (5 marks)
 - 2.1. Role of agriculture research in contemporary agriculture
 - 2.2. Nepal Agricultural Research Council (NARC)
 - 2.3. Agricultural education systems in Nepal
 - 2.4. Academic institutions such as AFU, PU, TU, MU
 - 2.5. Non-academic institutions (CTEVT and its allied institutions)
 - 2.6. Major functions, linkage and coordination of agriculture research, extension and education in Nepal
 - 2.7. Public, private, NGOs, CBOs, agricultural co-operatives and farmer groups involvement in research, extension and education
 - 2.8. Participatory technology development, participatory planning, monitoring, evaluation and feedback
 - 2.9. Reasons for distorting effective linkages and coordination among agriculture research, extension and education in Nepal
3. Natural Resource, Environment Conservation, Climate Change and Disaster-Risk Management (10 marks)
 - 3.1. Importance of natural resources conservation, utilization and management with respect to food and nutrition security, employment generation and livelihood improvement in Nepal
 - 3.2. Agro-biodiversity: Conservation and utilization for sustainable agriculture development
 - 3.3. Use of chemical fertilizers and pesticides in agriculture and their implications to environment
 - 3.4. Integrated pest, crop, and plant nutrient management systems (IPM, ICM, IPNM) and Good Agricultural Practices (GAP)
 - 3.5. Environmental issues and sustainability of Nepalese agriculture
 - 3.6. Organic agriculture, organic products and its certification for export promotion and food safety
 - 3.7. General Geo-climatic conditions of Nepal
 - 3.8. Impact of Climate change in agriculture sector, adaptation and mitigation strategies in Nepal
 - 3.9. Disaster (landslide, drought, flood, snow fall, heavy rainfall, frost, earthquake, pest and disease outbreak) management specially preparedness and mitigation mechanism in agriculture sector
 - 3.10. Rapid urbanization and change in land use pattern and their consequences in food security, environment conservation, employment generation and youth migration
 - 3.11. Crop insurance in Nepal: Current policies, status, prospects and challenges
4. Legislations, Plan, Policies, Strategies, and Global Trade in Agriculture (10 marks)
 - 4.1. Agriculture sector in current constitution
 - 4.2. Planning, implementation, monitoring and evaluation of agricultural projects
 - 4.3. Provincial and Local government and their role in agricultural development

- 4.4. National Agriculture Policy, 2061, Agro-biodiversity Promotion Policy, 2063, Agribusiness Promotion Policy, 2063
- 4.5. Agriculture Development Strategy (ADS), 2015-2035 AD: vision, mission, target, components and its salient features, implementation status, supporting projects and institutional arrangement
- 4.6. National Seed Vision (2013-2025)
- 4.7. Seed Act, 2045 and Seed Regulation, 2081
- 4.8. Plant Protection Act, 2064 and Plant Protection Regulation, 2066
- 4.9. Karnali Province Organic Agriculture Act, 2076, Karnali Province Agribusiness Promotion Act, 2079 and Regulation, 2080
- 4.10. Pesticides Management Act, 2076 and Regulation, 2081
- 4.11. Food Right and Food Sovereignty Act, 2075
- 4.12. World Trade Organization (WTO): Its implication and impact in Nepalese agriculture
- 4.13. Comparative and competitive advantage, agriculture commercialization and trading of Nepalese agricultural products.
5. Agricultural Technology and Management (20 marks)
 - 5.1. Importance of technology generation, verification and dissemination in crop production and management
 - 5.2. Seed quality assurance: Seed production, laboratory testing, processing, handling, marketing and storage
 - 5.3. Variety release, registration and certification system in Nepal
 - 5.4. Importance of pests and pesticides management
 - 5.5. Roles of pollinators in crop production
 - 5.6. Importance of microbial agents (fungus, bacteria, nematodes and virus) in plant protection
 - 5.7. Importance of crop diversification and commercialization in Nepal.
 - 5.8. Precision and protected agriculture: Concepts & technologies with its opportunities and threats
 - 5.9. Agricultural crops for agro-forestry and environmental protection
 - 5.10. Strategies for commercialization of high value low volume commodities
 - 5.11. Concept of soil fertility, productivity and its sustainable management
 - 5.12. Essential plant nutrients and their sources (manures and fertilizers)
 - 5.13. Soil reaction (pH) and soil reaction improvement
 - 5.14. Contemporary agricultural extension practices in Nepal (plant clinic, mobile service, training and demonstration farm, farmer to farmer extension and pluralistic extension)
 - 5.15. Role of information and communication technology (ICT), Farmer's Call Center and agriculture development
 - 5.16. Agricultural markets and marketing in Nepal, Agriculture price & market information system and minimum support price (MSP) provision
 - 5.17. Agriculture statistics
 - 5.18. Linkage of agro-industries with agriculture production and marketing
 - 5.19. Role of cooperatives in agriculture development in Nepal
 - 5.20. Research methodology in agriculture (basic concepts, common designs and their application)
 - 5.21. Value chain development: concepts and practices in agriculture
 - 5.22. Postharvest management of agricultural commodities
 - 5.23. Farming system and sustainable agriculture development
 - 5.24. Gender Equity and Social Inclusion (GESI) and women's role in Nepalese agriculture
 - 5.25. Conservation agriculture: concept, principles and practice
 - 5.26. Conservation and utilization of native crops in Karnali Province

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मार्केटिङ्ग, बागवानी र माटो विज्ञान समूह) अधिकृतस्तर सातौं तहको खुला, अन्तर तह र आन्तरिक अन्तर
सेवा प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम
द्वितीयपत्र (Paper II): Technical Subject
Section (A) - 30 Marks

1. Agricultural Extension

1.1. Extension Education, Training and Leadership Development

- 1.1.1. Concepts, definition, principles, philosophy and objectives of extension education
- 1.1.2. Role and scope of extension education in Nepalese agricultural development
- 1.1.3. History of agricultural extension and various extension approaches adopted in Nepal
- 1.1.4. New direction of agricultural extension (subject matter specialist, privatization, pluralistic, collaborative, gender mainstreaming in agriculture, pocket package strategy, public private partnership)
- 1.1.5. Extension teaching methods and factors to be considered for selection of methods
- 1.1.6. Training needs assessment, designing training module and training management
- 1.1.7. Leadership development and role of leader farmers in Agricultural Extension

1.2. Communication, Innovation, Diffusion and Technology Transfer

- 1.2.1. Role of communication in agricultural extension
- 1.2.2. Communication models and Communication channels (mass media, inter personal)
- 1.2.3. Information and Communication technologies (ICTs) and Agricultural Extension
- 1.2.4. Designing effective communication process
- 1.2.5. Barriers of effective communication
- 1.2.6. Innovation diffusion process
- 1.2.7. Adopter's categories and factors affecting rate of adoption
- 1.2.8. Development and transfer of technology and selection of appropriate technology
- 1.2.9. Models of transfer of technology (e.g. Conventional, Feedback Model, Farming System Research and Extension, Farmers' Field School, and Contemporary models)

1.3. Agricultural Extension System & Extension Program Planning

- 1.3.1. Agriculture extension Systems of Nepal in changing context
- 1.3.2. Role, responsibility and coordination among stakeholders involved in agricultural extension in Nepal
- 1.3.3. Effective extension program planning: Principles, importance and process in Nepalese context
- 1.3.4. Factors to be considered in executing extension program

2. Agricultural Economics

2.1. Principles of Economics

- 2.1.1. Basic concepts on demand and supply
- 2.1.2. Price and income elasticity of demand, cross elasticity of demand
- 2.1.3. Consumer's preference and indifference curve
- 2.1.4. Market classification and price determination under different market condition
- 2.1.5. Principles of production (production function, the law of diminishing return)
- 2.1.6. Cost of production (explicit and implicit costs, total, average, marginal, variable and fixed costs, economies of size and scale)
- 2.1.7. Comparative and competitive advantages and profit maximizing technique

- 2.2. Farm Management
 - 2.2.1. Scope and importance of farm management
 - 2.2.2. Farm budgets (total and partial budgeting).
 - 2.2.3. Cost and return analysis (Major food grains, cash crops and horticultural crops)
 - 2.2.4. Farm plan (Resources, constraints and optimization).
 - 2.2.5. Efficiency measures; farm inventory management and valuation
 - 2.2.6. Time value of money, compounding and discounting techniques
 - 2.2.7. Income and net-worth statement
- 2.3. Agricultural Marketing and Agri-business
 - 2.3.1. Concept, scope and role
 - 2.3.2. Characteristics of agricultural market, price spread and problems of agriculture marketing in Nepal
 - 2.3.3. Grading, standardization, quality control and related problems of agricultural commodities
 - 2.3.4. Value chain development in agriculture
 - 2.3.5. Concept of Business plan preparation and farm incubation
 - 2.3.6. Global and regional context of agricultural marketing and trade (WTO, SAFTA)
- 2.4. Agricultural Program Planning, Monitoring, Evaluation and Data Management
 - 2.4.1. Concepts of agricultural planning, preparation of programs/projects, budgeting and project cycle
 - 2.4.2. Feasibility studies of agricultural projects and use of B/C Ratio, IRR, Net Present Value, Payback period
 - 2.4.3. Risk and uncertainty and its mitigation measures
 - 2.4.4. Monitoring and evaluation of agricultural programs/ projects
 - 2.4.5. Logical framework in project planning and monitoring
 - 2.4.6. Statistics and Survey Techniques
 - 2.4.6.1. Frequency distribution and measures of central tendency, bar and pie charts
 - 2.4.6.2. Computation of mean and standard deviation from grouped and ungrouped sets of data
 - 2.4.6.3. Hypothesis testing and confidence interval
 - 2.4.6.4. Regression and correlation analysis
 - 2.4.6.5. Agriculture Census: Sample survey and its advantage over census survey
 - 2.4.6.6. Source of sampling and non-sampling error and measures to minimize such errors. Sample design for collecting current agricultural statistics in Nepal
 - 2.4.6.7. Rapid and Participatory Rural Appraisal (RRA and PRA) and crop cutting surveys

Section (B) - 30 Marks

3. Soil Science
 - 3.1. General Introduction
 - 3.1.1. Physical, Chemical and Biological properties of soils
 - 3.1.2. Role of soil micro-organisms
 - 3.1.3. Soil organic matter and carbon nitrogen ratio
 - 3.2. Soil Fertility and Plant Nutrition
 - 3.2.1. Plant Nutrition
 - 3.2.1.1. Visual symptoms of nutrient deficiencies and nutrient disorders
 - 3.2.1.2. Nutrient requirements, uptake mechanism
 - 3.2.1.3. General soil fertility status of Nepal and major causes of declining soil fertility

- 3.2.1.4. Soil sampling and testing
 - 3.2.1.5. Integrated Plant Nutrient Systems and its significance in sustainable soil management in the Nepalese context
 - 3.2.2. Manures and Fertilizers
 - 3.2.2.1. Different types of chemical fertilizers and their application
 - 3.2.2.2. Sources and types of organic manures
 - 3.2.2.3. Bio-fertilizers, inoculants and their use in Nepalese agriculture
- 3.3. Soil survey and Water conservation
 - 3.3.1. Soil Survey
 - 3.3.1.1. Importance of soil survey and types
 - 3.3.1.2. General soil classification
 - 3.3.1.3. Soil fertility mapping and tools used
 - 3.3.2. Soil, Water and Plant Relationship
 - 3.3.2.1. Hydrological cycle
 - 3.3.2.2. Water infiltration and percolation
 - 3.3.2.3. Soil permeability and Hydraulic conductivity
 - 3.3.2.4. Saturation percentage, permanent wilting point, field capacity and plant available soil water
 - 3.3.2.5. Soil moisture retention curve
 - 3.3.2.6. Crop water requirements, evapo-transpiration and irrigation requirements, water balance
 - 3.3.2.7. Soil water management, water stress (drought, water logging)
 - 3.3.2.8. Soil Erosion, Slopping Agriculture Land Technology (SALT) and terracing
- 4. Agronomy
 - 4.1. Basics of crop production
 - 4.1.1. Farming system and farming system research
 - 4.1.1.1. Introduction, system approach in agriculture, component/determinants of farming system in Karnali Province
 - 4.1.1.2. Farming System Research Methodology (FSR)
 - 4.1.2. Resource conservation technologies (RCT) in crop production
 - 4.1.3. Tillage
 - 4.1.3.1. Zero tillage, minimum tillage and optimum tillage
 - 4.1.3.2. Condition of soil suitable for cultivation
 - 4.1.4. Seed Technology
 - 4.1.4.1. Seed formation, development and physiology of seed
 - 4.1.4.2. Seed quality and seed classes
 - 4.1.4.3. Principles and practices of seed production
 - 4.1.4.4. Seed processing, handling and storage
 - 4.1.4.5. Seed testing principles
 - 4.1.4.6. Seed certification procedures and seed standards of major crops in Nepal
 - 4.1.4.7. Importance of Varietal Replacement and Seed Replacement Rate
 - 4.1.4.8. Seed self-sufficiency and seed production programs in Nepal
 - 4.2. Crop production technology
 - 4.2.1. Production practices of rice, maize, wheat, finger millet, lentil, soybean, chick pea, mung bean, rapeseed, sunflower, groundnut, sugarcane with respect to:
 - 4.2.1.1. Morphology and growth stages
 - 4.2.1.2. Recommended varieties and seed rate
 - 4.2.1.3. Climate and soil
 - 4.2.1.4. Cultural practices and post-harvest technology
 - 4.2.2. Underutilized crops and their importance in food and nutritional security

- 4.3. Plant breeding and research design
 - 4.3.1. Definition, importance and achievement of plant breeding
 - 4.3.2. Methods of crop improvement and breeding methods in field crops
 - 4.3.3. Classification of crops according to mode of pollination
 - 4.3.4. Germplasm collection, characterization, evaluation and utilization
 - 4.3.5. Variety development procedure in Nepal
 - 4.3.6. Maintenance breeding of varieties/germplasms and importance of gene bank
 - 4.3.7. Hybrid variety development and hybrid seed production.
 - 4.3.8. Use of biotechnology in plant breeding
 - 4.3.9. Research design and application

Section (C) - 20 Marks

5. Horticulture

- 5.1 Cultivation practices of major horticultural crops
 - 5.1.1 Fruits: Citrus, Mango, Litchi, Banana, Apple, Pear, Kiwi, Dragon fruit and Guava
 - 5.1.2 Vegetables: Potato, tomato, chili, cucumber, cauliflower, radish, beans, onion, Pea, broad leaf mustard and Cabbage.
 - 5.1.3 Spice crops: Ginger, Turmeric and Cardamom
 - 5.1.4 Flower: Rose, carnation, gladiolus, Gerbera and Marigold
 - 5.1.5 Plantation crops: Coffee
- 5.2 Vegetable Seed production technology
 - 5.2.1 Vegetable seed production zones of Nepal
 - 5.2.2 Classification and types of seeds
 - 5.2.3 Hybrid seed production of tomato in Nepal and seed production of open pollinated crops (cauliflower, radish, cucumber, and onion)
- 5.3 Postharvest management of horticultural crops
 - 5.3.1 Post harvest physiology: transpiration, respiration and ripening of fruit and vegetables
 - 5.3.2 Causes of postharvest loss and their management
 - 5.3.3 Storage of potato and fruits: principles, importance and different storage structures
 - 5.3.4 Preservation of fruits and vegetables
- 5.4 Nursery management in fruits and vegetables
 - 5.4.1 Sexual and asexual propagation techniques of horticultural crops
 - 5.4.2 Nursery types and its use in horticultural crop production including hi-tech nurseries
 - 5.4.3 Use of rootstocks in horticulture
 - 5.4.4 Care and management of plants in nursery
- 5.5 Modern technologies in horticulture
 - 5.5.1 Organic farming, soilless farming, tissue culture technology for tuber and sapling production, high density planting, modern irrigation technologies, use of machineries in horticulture
 - 5.5.2 Precision and protected horticultural technology
 - 5.5.3 Urban farming technologies (roof top, vertical farming and home garden)
 - 5.5.4 Use of plant growth regulators and hormones in horticulture
- 5.6 Plant growth and development
 - 5.6.1 Seed germination: mechanism and controlling factors
 - 5.6.2 Flowering, pollination, fruit set, fruit drop and fruit maturity
 - 5.6.3 Fruit ripening and senescence: mechanism and controlling factors
 - 5.6.4 Tuber and bulb formation: mechanism and controlling factors

Section (D) - 20 Marks

6. Plant Protection

6.1 General Plant protection

- 6.1.1 Importance of crop pests & disease
- 6.1.2 Climate change and its implication on crop pest & disease
- 6.1.3 Plant protection principle and approaches
- 6.1.4 Importance, issues, challenges and role of plant quarantine in Nepalese agriculture
- 6.1.5 Importance of pest survey and surveillance in disease/pest forecasting and early warning
- 6.1.6 Calibration and dose calculation of pesticides
- 6.1.7 Biological control of pests and diseases
- 6.1.8 Tools used for pest monitoring
- 6.1.9 Beneficial insects (predators and parasitoids)
- 6.1.10 Bio- pesticides (*Metarhizium anisopliae*, *Beuveria bassiana*, *Verticillium lecanii*, NPV, *Bacillus thuringiensis*, *Trichoderma spp.*) in pest & disease control
- 6.1.11 Type of Pesticide formulation
- 6.1.12 WHO classification of pesticide by hazard
- 6.1.13 Banned pesticides in Nepal
- 6.1.14 Safe use of pesticides and Plant clinic in Nepal
- 6.1.15 Status of pesticide use in Nepal
- 6.1.16 Symptoms and treatment of pesticide poisoning
- 6.1.17 Different methods of pesticide residue monitoring
- 6.1.18 Pesticide and its impact in environment
- 6.1.19 Weed management
- 6.1.20 Rodents and their management

6.2 Entomology

- 6.2.1 Industrial Entomology
 - 6.2.1.1 Importance of industrial entomology
 - 6.2.1.2 Biology of honey bee
- 6.2.2 Agricultural Insect Pests of National Importance and their Management
 - 6.2.2.1 Cereals: Stem borers, Green leaf hopper, Brown plant hopper, Gundhi bug, White grubs, Fall Armyworm
 - 6.2.2.2 Vegetables: Cutworm, Pumpkin fruit fly, Aphids, Aphis fabae, Red ants, Shoot and fruit borer, Large white butterfly, Fruit borer, Tobacco caterpillar, Potato tuber moth, Diamondback moth, White fly, South American leaf miner.
 - 6.2.2.3 Cash Crops
 - 6.2.2.3.1 White stem borer of coffee
 - 6.2.2.3.2 Sugarcane plassey borer
 - 6.2.2.3.3 Pink bollworms
 - 6.2.2.4 Fruits
 - 6.2.2.4.1 Sub- tropical fruits: Citrus fruit fly, Scale insects, Citrus green stinkbug
 - 6.2.2.4.2 Tropical fruits: Mango hoppers, Banana stem weevil, Banana rhizome weevil, Litchi leaf curl mite
 - 6.2.2.4.3 Temperate fruits: Apple wooly aphid, San Jose scale
 - 6.2.2.4.4 Ornamental plants and Flowers: Red Spider Mite

6.3 Plant Pathology:

- 6.3.1 Introduction and importance of plant diseases
- 6.3.2 Mechanism of infection by plant pathogen, Host Plant Resistance

- 6.3.3 Defense mechanisms of host plants
- 6.3.4 Genetics and disease resistance in plants
- 6.3.5 Plant disease epidemiology and forecasting
- 6.3.6 Agricultural Crop Diseases of National Importance and Their Management
 - 6.3.6.1 Cereals: Rice blast, Bacterial blight, Stalk rot, Leaf blight, Rusts, Loose smut
 - 6.3.6.2 Vegetables and spices: Late blight, Bacterial wilt, Alternaria leaf spots, Damping off of seedlings, Club root, Root knot, Anthracnose, Tomato yellow leaf curl virus; Rhizomes rot of ginger and cardamom
 - 6.3.6.3 Fruits and others: Foot and root rot, Citrus greening, Pink disease, Scab, Powdery mildew, Panama wilt of banana, Coffee rust, Septoria blight of marigold
- 6.4 Mushroom cultivation
 - 6.4.1 Cultivated species and techniques of mushroom in Nepal
- 6.5 Laboratory Techniques & production
 - 6.5.1 Isolation
 - 6.5.2 Culture and preservation
 - 6.5.3 Mounting & culturing
 - 6.5.4 Sterilization
 - 6.5.5 Different media used
 - 6.5.6 Production technique of *Metarhizium anisopliae*, *Beauveria bassiana* & *Trichoderma harzianum* T. *viridae*

द्वितीयपत्रको प्रश्न तालिका

द्वितीयपत्रको एकाईहरुबाट यथासम्भव निम्नानुसार प्रश्नहरु सोधिनेछ ।

Section	A		B		C	D
Unit	1	2	3	4	5	6
Short Questions	1	1	1	1	2	2
Long Questions	1	1	1	1	1	1

सामूहिक परीक्षण

सामूहिक परीक्षण व्यक्तित्व परीक्षणको एक अंश हो । प्रदेश निजामती सेवा र स्थानीय सेवाको क्षेत्र विस्तार तथा कार्य पद्धति परिवर्तन समेत भैरहेको सन्दर्भमा नेपाल सरकारका नीति, योजना, कार्यक्रम लगायत शासन व्यवस्था सम्बन्धी समसामयिक विषयमाथि विचार-विमर्श, छलफल गरी तिनको अझै बढी प्रभावकारी तथा कार्यान्वयन योग्य समाधान पहिल्याउने सम्बन्धमा उम्मेदवारहरूको क्षमता पहिचान गर्नु यस परीक्षणको मूलमर्म हो । यसको लागि छलफल, विचार-विमर्श गरी परिस्थिति बुझ्न सक्ने, निर्णय दिने, जनतालाई क्रियाशील बनाउने, चित्त बुझाउने, निर्धारित लक्ष्य अनुसार काम गर्ने/गराउने, जस्ता कामका लागि लेखन क्षमताका साथसाथै समस्यालाई यथार्थपरक ढंगले पहिचान गर्नसक्ने, वाकपटुता, शिष्टता, तर्कशक्तिको पनि आवश्यकता पर्दछ ।

त्यसैले यस परीक्षणमा उम्मेदवारहरूको बौद्धिक क्षमता, संचार सीप, समूह गतिशीलता, व्यवहार, व्यक्तित्व, मनोवृत्ति, क्रियाशीलता, निर्णयशक्ति, समस्या समाधान क्षमता, नेतृत्व क्षमता, समय व्यवस्थापन तथा व्यक्तित्वमा भएका अन्य गुणहरूको आँकलन अर्थात् परीक्षण र मूल्याङ्कन गर्नको लागि उम्मेदवारहरूलाई कुनै समसामयिक विषय/सवाल/समस्यामा सामूहिक छलफल गरीसमस्या समाधान केन्द्रीत प्रभावकारी र कार्यान्वयन योग्य समाधान निकाल्न दिइन्छ ।

सामूहिक छलफल

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक छलफलको रूपमा अवलम्बन गरिनेछ । दिइएको प्रश्न वा Topic का विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति गर्नुपर्नेछ । यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको ३ जना भन्दा बढीको समिति रहनेछ ।

आयोगका अध्यक्ष वा अध्यक्षले तोकेको सदस्य	– अध्यक्ष
आयोगका सदस्य	– सदस्य
मनोविज्ञानवेत्ता	– सदस्य
दक्ष/विज्ञ (१ जना)	– सदस्य