

नेपाल सरकार
नेपाल कृषि अनुसन्धान परिषद्
पदपूर्ति समिति

**मुख्यवैज्ञानिक, एस-५, (Principal Scientist, S-5), सबै उपसमूहको आन्तरिक प्रतियोगितात्मक
लिखितपरीक्षाको लागि पाठ्यक्रम**

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ ।

प्रथम चरण: लिखित परीक्षा (Written Examination)

पूर्णाङ्क: २००

द्वितीय चरण: अन्तरवार्ता (Interview)

पूर्णाङ्क: ३०

१. प्रथम चरण (First Phase): लिखित परीक्षा (Written Examination)

पूर्णाङ्क: २००

Paper	Subject	Mark	Full Mark	Pass Mark	No. Questions (Q)xMark (M) = Total Marks	Time Allowed
I	Part I: Management	20	100	40	2Q x 10M = 20 (Long Answer)	3.00 Hours
	Part-II: Agriculture Research and development Issues	80			6Q x 10M = 60 (Short Answer) 1Q x 20M = 20 (Long Answer)	
II	Technical Subject		100	40	5Q x 10M = 50 (Critical Analysis) 2Q x 25M = 50 (Problem Solving)	3.00 Hours

२. द्वितीय चरण(Second Phase): Interview

पूर्णाङ्क: ३०

Subject	Full Marks	System
Interview	30	Oral

द्रष्टव्य:

- यो पाठ्यक्रम योजनालाई प्रथम चरणमा लिखित परीक्षा र द्वितीय चरणमा अन्तरवार्ता परीक्षा गरी दुई चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुबै हुन सक्ने छ ।
- समान पद/तहको प्रथम पत्र सबै उपसमूहको लागि पाठ्यक्रम एउटै भएको कारण एकिकृत परीक्षा सञ्चालन हुनेछ । तर द्वितीय पत्र Technical Subject को पाठ्यक्रम उपसमूह अनुरूप फरक फरक हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- प्रथम पत्रको Part-I र Part-II का लागि छुट्टाछुट्टै एक एक वटा उत्तर पुस्तिका हुनेछन् ।
- परीक्षामा कुनै प्रकारको विद्युतीय उपकरण तथा क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयबस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाइएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- पाठ्यक्रममा भएका यथासम्भव सबै पाठ्याशंहरूबाट प्रश्नहरू सोधिने छ । प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको अन्तरवार्तामा सम्मिलित गराइने छ ।
- प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारको प्राप्ताङ्क र द्वितीय चरणको अन्तरवार्तामा प्राप्त गरेको अंक जोडी योग्यताक्रम अनुसार सिफारिस गरिनेछ ।
- पाठ्यक्रम लागू मिति: २०७६।२।२०
- यस भन्दा अगाडि लागू भएको पाठ्यक्रम खारेज गरिएको छ ।

मुख्यवैज्ञानिक, एस-५, (Principal Scientist, S-5), सबै उपसमूहको आन्तरिक प्रतियोगितात्मक
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Paper: I

**Management and Agricultural Research and Development
(Common For all Sub-groups)**

Part-I: Management

A. Management:

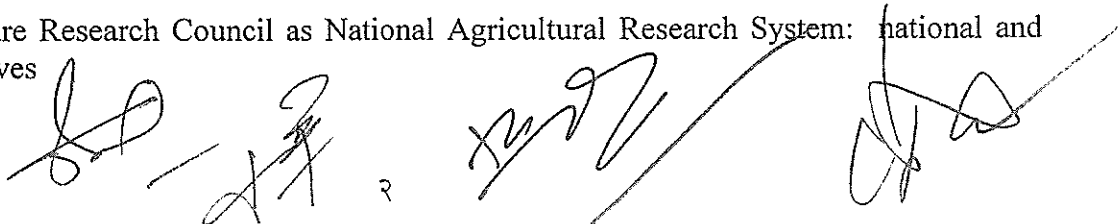
1. Concept, principles, functions, scope, challenge, leadership style
2. Participative Management: concept, opportunity, techniques of participation
3. Conflict management: concept, approaches to conflict, levels of conflict, causes of conflict and strategies for conflict management
4. Stress management: Concept, causes and sources of stress, techniques of stress management

B. Finance and Human Resource:

1. Human resources management: concepts, approaches and functions
2. Leadership: concept, opportunity and functions
3. Coordination: concept, need, types, techniques and approaches for effective coordination
4. Motivation: Concept, theories of motivation, reasons for low productivity, techniques of employ motivation
5. Decision making: importance, types, rational process of decision process
6. Financial management: concept, approaches, budget formulation, and implantation, auditing and reporting

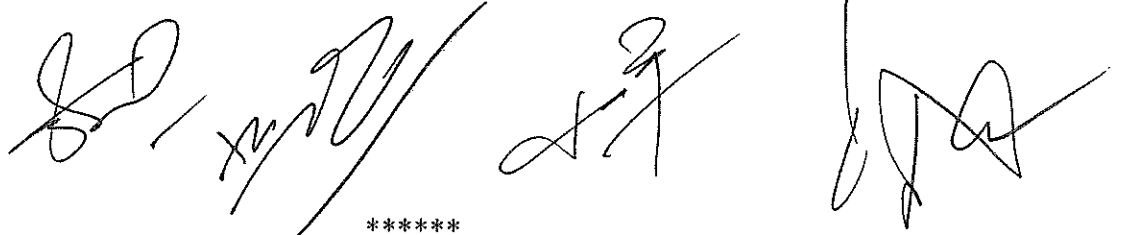
Part-II: Agriculture Research and Development Issues

1. Constitution of Nepal: Food, agriculture and natural resources related issues
2. Current national agricultural policies, strategies and plans: National Agriculture Policy, Agricultural Biodiversity Policy, Climate Change Policy, Agriculture Development Strategy (ADS), Seed Vision, Poultry Policy, Pasture Policy and Floriculture Promotion Policy and agriculture related issues in periodic plan
3. Nepal Agriculture Research Council as National Agricultural Research System: national and global perspectives



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4. International Agricultural Research Organizations: CGIAR and IARCS - CIAT, CIMMYT, CIP, ICRISAT, ICARDA, World Fish, ICRAP, IFPRI, IITA, ILRI, Bioversity international, IRRI, IWMI, AVRDC, ICIMOD, ICRAF, IFDC, IFAD and FAO
5. Agricultural Innovation System: concept, actors, relationship between actors and accountability to stakeholders
6. Agricultural research farm management
7. Agricultural research project management: Problem and objective tree analysis, logframe development, effect and impact assessment and its linkage with technology users
8. Public private partnership in agriculture research
9. Entrepreneurs and agri-business development through agricultural research
10. Approaches of agricultural research in the context of federalism



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मुख्य वैज्ञानिक, एस-५, (Principal Scientist, S-5), प्लाण्ट ब्रिडिङ एण्ड जेनेटिक्स उपसमूहको
आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि पाठ्यक्रम

Paper: II

Technical Subject
Sub Group: Plant Breeding and Genetics

1. Plant Genetic Resources and Ecosystems

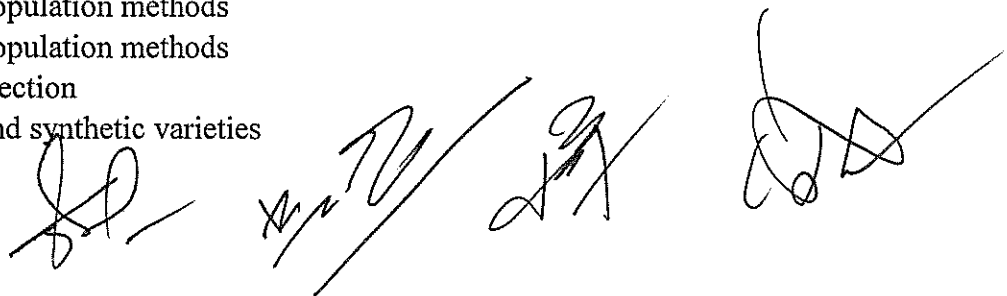
- 1.1 Plant distribution and their limiting factors
- 1.2 Origin of cultivated plants and the ecotype concept
- 1.3 Crop germplasm conservation, evaluation and their utilization
- 1.4 Crop ecosystem

2. Plant Genetics

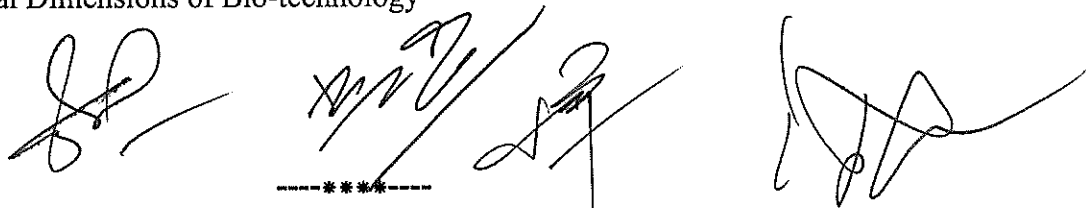
- 2.1 Reproductive systems:
 - 2.1.1 Sexual Reproduction
 - 2.1.2 Asexual Reproduction
- 2.2 Male sterility, self-incompatibility and techniques of hybridization
- 2.3 Genetic basis of plant breeding
 - 2.3.1 Variation
 - Environmental variations
 - Agro-ecotypic variations
 - 2.3.2 Ecotypes
 - 2.3.3 Heredity
 - Inheritance of qualitative characters
 - Inheritance of quantitative characters
 - 2.3.4 Methods of estimating genetic parameters
- 2.4 Heterosis
- 2.5 Selection
 - 2.5.1 Natural selection
 - 2.5.2 Directional selection
 - 2.5.3 Genetic advance under selection
- 2.6 Inter-specific and inter-generic hybridization

3. Methods of Plant Breeding

- 3.1 Pure line selection
- 3.2 Pedigree method
- 3.3 Bulk population method
- 3.4 Backcross method
- 3.5 Population improvement
 - 3.5.1 Intra-population methods
 - 3.5.2 Inter-population methods
- 3.6 Recurrent selection
- 3.7 Composite and synthetic varieties



- 3.8 Asexually propagated crops
- 3.9 Apomictic grasses
- 3.10 Maize hybrids
- 3.11 Hybrid varieties
- 3.12 Mutation Breeding
- 3.13 Polyploid Breeding
- 3.14 Disease resistance breeding
- 3.15 Insect resistance breeding
- 3.16 Abiotic stresses
- 3.17 breeding for specific traits
- 3.18 Plant tissue culture
 - 3.18.1 Micro-propagation
 - 3.18.2 Production of virus free plants.
 - 3.18.3 Embryo culture
 - 3.18.4 Anther culture
 - 3.18.5 Ovule culture
- 3.19 Genetic Engineering
 - 3.19.1 Gene cloning
 - 3.19.2 Gene transfers in plants
 - 3.19.3 Application and use of genetic engineering in plant breeding
 - 3.19.4 GMOs for crop improvement
- 4. **National Seed Production System**
 - 4.1 Plant variety release, National seed act and National Agricultural Extension System
 - 4.2 Plant varieties diffusion through private sector: current status and future scope
 - 4.3 Plant variety protection
 - 4.4 Hybrid seed production
- 5. **Others**
 - 5.1 Status of plant breeding activities in Nepal in cereals, grain-legumes, oilseeds, potato, vegetables, fruits, spices
 - 5.2 Collaboration with IARCs In crop improvement: their scope and limitations
 - 5.3 Bio-Technology Revolution: Implications for Agriculture
 - 5.4 Bio-Technology Policy: Public Perception, Participation and the Law
 - 5.5 International Dimensions of Bio-technology



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