

1. Fundamentals of horticulture
  - 1.1 Horticulture; principle, opportunities and potentialities according to the agro-ecological zonation of the country
  - 1.2 Constraints and possible remedies for horticulture development in Nepal
2. Production practices
  - 2.1 Major intervening technical issues related with major fruit crops for productivity enhancement
  - 2.2 Major intervening technical issues related with major vegetable crops for import substitution and export promotion
  - 2.3 Major intervening technical issues related with major spices crops (saffron, ginger, cardamom, turmeric and cumin) for export market
  - 2.4 Major intervening technical issues related with tea and coffee for market penetration and retention in world markets
  - 2.5 Major intervening technical issues related with cut flowers for export promotion
3. Seed and saplings production
  - 3.1 Principles of seed and sapling production
  - 3.2 Pollination, fertilization, seed development, flowering, maturation, dormancy and germination
  - 3.3 Germplasm collection, conservation and maintenance
  - 3.4 Seed standard, seed processing, seed testing, certification and field inspection
  - 3.5 Existing vegetable seed production zones and potential areas of the country.
  - 3.7 Principles, practices and methods of propagation
  - 3.8 Pre-basic seed, true potato seed and seed plot techniques of potato.
  - 3.9 High density planting
  - 3.11 Economics of vegetable seed production.
4. Modern Technology of horticultural crop production
  - 4.1 Tissue culture and biotechnology
  - 4.2 Drip and other micro irrigation
  - 4.3 Forced cultivation
  - 4.4 Micro nutrient, multi-nutrient, liquid fertilizers and bio-fertilizers.
  - 4.5 Latest recommended superior hybrid and superior open pollinated cultivars.
  - 4.6 Integrated Crop Management (ICM) and Integrated Disease Management (IDM).
  - 4.7 Integrated soil and plant nutrient management.
  - 4.8 Post harvest technologies on major fruits, vegetables, spices and ornamentals.
  - 4.9 Organic production and kitchen gardening
  - 4.10 Off-season vegetable production
  - 4.11 Hydroponics/aeroponics
  - 4.12 Importance of Agro-forestry with special reference to Horticultural crops.
  - 4.13 Non-timber Forest Products (NTFPs) and Horticulture
  - 4.14 Determination of irrigation need and types of irrigation suitable in Nepal

5. Indigenous knowledge and technology in horticulture
  - 5.1 Local and wild edible fruits, vegetables and spices
  - 5.2 Indigenous practices of cultivation.
  - 5.3 Indigenous methods of disease and pest control and preventive measure.
  - 5.4 Indigenous methods of soil fertility improvement and management.
  - 5.5 Indigenous methods and management of water conservation and utilization.
6. Plant Genetics and Improvement
  - 6.1 Genotypes and phenotype
  - 6.2 Breeding methods: self-pollinated species, cross-pollinated species,
  - 6.3 Concept of heterosis and development of hybrid variety.
  - 6.4 Mutation breeding
  - 6.5 Genetic erosion and transformation.
  - 6.7 Maintenance of genotype and their multiplication
  - 6.8 Use of biotechnology for crop improvement
7. Crop Physiology
  - 7.1 Solar radiation, photosynthesis and respiration
  - 7.2 Transpiration and translocation
  - 7.3 Photoperiodism, light intensity and quality.
  - 7.4 Stress physiology - temperature stresses, moisture stresses & nutrient stresses.
  - 7.5 Plant growth regulators and their use in horticulture.
  - 7.6 Ripening and senescence
8. Post-harvest
  - 8.1 Post harvest physiology-respiration, transpiration and ethylene production.
  - 8.2 Maturity indices
  - 8.3 Method of harvesting, cleaning, grading, and packaging.
  - 8.4 Post harvest handling, transportation, marketing and value addition.
  - 8.5 Storage (cellar storage, zero energy storage, cold storage, rustic storage, diffused light storage)
  - 8.6 Harvesting for local and distant markets.
  - 8.7 Causes of deterioration in harvested vegetables.
  - 8.8 Consumer's acceptability and quality evaluation of vegetables.
  - 8.9 Processing and preservation of different horticultural crops.
  - 8.10 Concept of collection centers and market structures.
9. Research Methods and Management
  - 9.1 Research and development area identification, project prioritization and project proposal preparation
  - 9.2 Basic statistics: Sampling theory, test of hypothesis, and confidence interval, T-test, F-test and Chi-square test
  - 9.3 General methodology of RRA, PRA, action research, adoptive research, exploratory research, academic research, multi-disciplinary research, multi-location research, Outreach research, farmers' participatory research, socio-economic and market research, collaborative research and multi-partnership research.
  - 9.4 Data base preparation, analysis, technical report writing and presentation
  - 9.5 Estimate of error and control error

**लोक सेवा आयोग**  
नेपाल कृषि सेवा, हर्टिकल्चर समुह, राजपत्राङ्कित प्रथम श्रेणी, खुला र आन्तरिक प्रतियोगितात्मक लिखित  
परीक्षाको पाठ्यक्रम

- 9.6 Experimental designs (CRD, RCBD, Latin Square Design, Incomplete block design, two or more factorial experiment-randomization, layout, analysis of variance and interaction, split plot design, strip-plot design)
- 9.7 Mean comparison using common methods.
- 9.8 Regression and correlation (simple linear regression and correction, multiple-linear regression and correction, simple non-linear regression and correction, multiple nonlinear regression).
- 9.9 Co-variance, bi-variate and multi-variate analysis.
- 9.10 Presentation of research results
- 9.11 Non-parametric tests and qualitative data analysis.

## 10. Planning

- 10.1. Human resource planning for horticulture development
- 10.2. Principle and practices of disaster and stress management of horticultural crops (drought, flood, water excess, soil acidity, pollution and temperature fluctuations)
- 10.3 Bio-diversity and environment of horticulture
- 10.4 Formulation of policies, strategies and plans for horticulture development in Nepal
- 10.5 Risk in horticultural business management

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**नमूना प्रश्नहरू (Model Questions)**

विश्लेषणात्मक समिक्षा (Analytical Review)	४ प्रश्न × १५ अंक = ६० अंक
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1. The use of imported F<sub>1</sub> hybrid cultivars seed in vegetable crops has been increasing sharply in recent years and resulted into the draining of high amount of money from the country. Examine and analyse these situations and provide suitable options. 15
2. High value vegetable seed production once was a very viable enterprise for small farmers of hills and mountains. However, in recent years, it is no more attractive to the farmers and also to the seed marketers i.e. seed companies /Agro-vet. Analyze this scenario and suggest for improvement to make it a viable business 15
3. Large quantities of apple, mango, onion etc. which are worth of millions of rupees are imported regularly mainly from India and China. Is it possible to substitute these imports and how will it be accomplished? 15
4. More flowers mean more production. Describe the two latest technologies that enhance profuse flowering and heavy fruiting in mango, apple, litchi, and tomato. 15

विश्लेषणात्मक र समाधान मुलक उत्तर (Analytical and problem solving)	२ प्रश्न × २० अंक = ४० अंक
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5. A ginger farmer came to you and told that his ginger production and productivity are decreasing sharply in recent years. Examine the statement critically and provide realistic practical model including the Government policy to improve productivity and cash income of farmers. 20
6. Vegetable and fruit growers now state that vegetable and fruit farming are no more profitable business. They further claimed that Agro-vet and wholesale marketers are the main beneficiaries. They further added that producers and consumers are the losers. How do you address these problems so that both farmers as producers and consumers are benefited? 20