

Section A- 30 Marks

- 1. Experimental Design** **10%**
 - 1.1 Concept and principles of experimental design
 - 1.2 Various designs used in forestry research – Complete Randomised Design (CRD), Randomized complete block designs (RCBD), Latin square design, Split plot design and design of factorial experiments
 - 1.3 Choice of various experimental designs both in laboratories and fields conditions

- 2. General Statistics** **10%**
 - 2.1 Concepts and principles of basic statistics
 - 2.2 Frequency distribution, diagrammatic presentation of data, measure of central tendency, coefficient of variation, standard error of mean, measure of skewness, continuous and discrete variables
 - 2.3 Probability distribution (Binomial and Normal distribution)

- 3. Statistical inferences, tests and analysis** **10%**
 - 3.1 Concept and types of estimation
 - 3.2 Hypothesis testing, level of significance, types of error, degrees of freedom
 - 3.3 Theory and practice of statistical methods used in forestry research – f-test, t-test, analysis of variance (one way and two way analysis of variance (ANOVA), covariance analysis, multiple comparison (LSD and Duncun's Multiple Range Test) and test of factorial experiments
 - 3.4 Correlation – Linear and Multiple correlation, Correlation Co-efficient
 - 3.5 Regression – Linear and Multiple regression, Regression Co-efficient
 - 3.6 Basic knowledge in the use of various computer based statistical packages such as Excel, Minitab, SPSS, SAS etc for data handling and analysis

Section B- 30 Marks

- 4. Forest Surveying** **20%**
 - 4.1 Concept and principles of forest sampling – sample size, sampling intensity, sampling unit
 - 4.2 Various types of sampling methods used in forest surveying - simple random sampling, stratified random sampling, systematic sampling, point sampling
 - 4.3 Principles of forest biometrics, tree and forest growth models and preparation of volume tables, yield table and biomass tables for fodder, fuelwood and timber products
 - 4.4 Theory and practice of National Forest Inventory
 - 4.5 Procedures used in planning, management, field data collection, data compilation and presentation in forest surveying
 - 4.6 Principles and practice of plain table survey, chain and compass survey and use of Global Positioning System (GPS) in forest surveying

- 6. Photo Interpretation and Mapping** **10%**
 - 6.1 Principles of aerial photo interpretation
 - 6.2 Stereoscopic viewing, elements and steps involved in aerial photo interpretation

- 6.3 Aerial photographs and their application in forest management
- 6.4 Use of various instruments and methods in photo interpretation and preparation of forest maps
- 6.5 Land use and land cover mapping and soil classification
- 6.6 Temporal and spatial change detection

Section C- 20 Marks

- 5. Remote Sensing and Geographic Information System (GIS) 10%**
 - 5.1 Fundamental concepts of remote sensing – the electro magnetic spectrum, energy source and radiation principles, electro magnetic resonance (EMR) interaction in the atmosphere and earth surface
 - 5.2 Principles, methods, tools and techniques used in Remote Sensing and GIS, remote sensing sensors and scanning systems, sensor systems characteristics
 - 5.3 Digital image processing – spectral pattern recognition, temporal spatial pattern recognition, image enhancement techniques
 - 5.4 Application of GIS for planning and decision making in natural resource management
- 8. Policy and Institutional Issues 10%**
 - 8.1 History of Forestry sector research and survey in Nepal.
 - 8.2 Forest statistics of Nepal
 - 8.3 Updates on forestry sector research policy, strategy and plans in Nepal
 - 8.4 Institutional issues in forestry sector research in Nepal
 - 8.5 Existing mechanisms on research-extension-farmer/user linkages
 - 8.6 Major researchable problems in forestry sector of Nepal and their prioritization
 - 8.7 Research needs in forestry sector in general – forest management and silviculture, biodiversity conservation, tree improvement and agroforestry, soil and water conservation, protected areas and wildlife management, NTFPs and other forestry related areas.

Section D- 20 Marks

- 7. Forestry Research and Survey in General 20%**
 - 7.1 Concept of technology generation, verification and demonstration in forestry
 - 7.2 Types of research (basic research, adaptive research, action research), and advantages/ disadvantages and their limitations Basics of Forestry research planning, design and field implementation
 - 7.3 Preparation of simple field experiment protocols, observations to be taken and data sheet.
 - 7.4 Recent advancements in forestry research applicable to Nepal
 - 7.5 Research methods for agroforestry tree species, selection of superior multipurpose trees, inventory/productivity assessment of fodder, fuelwood, fruit and other NTFPs.
 - 7.6 Theory and principles of tree improvement, progeny and provenance trial
 - 7.7 Theory and skills in review of literature, field data collection, analysis and report writing of forestry experiments

लोक सेवा आयोग
नेपाल वन सेवा, फरेष्ट रिसर्च समूहको राजपत्राङ्कित तृतीय श्रेणीका पदहरूको खुला र आन्तरिक प्रतियोगितात्मक
लिखित परीक्षाको पाठ्यक्रम
द्वितीय पत्रको एकाईहरूको प्रश्नसंख्या निम्नानुसार हुनेछ

द्वितीय पत्रका खण्ड	A			B		C		D
द्वितीय पत्रका एकाई	1	2	3	4	6	5	8	7
प्रश्न संख्या	1	1	1	2	1	1	1	2

विषयगत नमूना प्रश्नहरू (Sample questions)

1. You have been assigned to test the response of four doses of nitrogen fertilize (0, 10, 20, 30 percent) in four species of fodder trees (Nimaro, Rai khaniyo, Badahar and Dudhilo) in a species selection trial in hill slopes. Prepare an experimental design and field layout. Justify the choice of design you suggest and also suggest minimum number of plants required per species.
2. Write short note on:
 - a) coefficient of variation
 - b) standard error of mean
 - c) binomial distribution
3. What is the difference between correlation and regression? And in which of the condition do you choose one or other analysis in forestry research? Explain with example.
4. Discuss in brief various sampling methods used in forest surveying
5. What is the importance and use of Global Positioning System in forest surveying? Explain with example.
6. How does Geographic Information System contribute in planning and decision making in forest resource management? Explain with example from Nepal.
7. Describe in brief the essential steps in capturing aerial photographs? Photo interpretation and preparation of forest maps?
8. Prepare a simple field experimental protocol for conducting a fast growing fuelwood species elimination trial with 6 potential species for Nepal Terai. Justify choice of species, number of plants, duration of the experiment and observation to be taken.
9. Discuss in brief the current forestry sector research policy of Nepal, identify major researchable problems and suggest a cost effective approach to resolve them.
10. What is the existing linkage between research - extension - users in forestry sector in Nepal? Identify gaps and suggest strategy for further improvement.

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लिखित परीक्षाको पाठ्यक्रम
नेपाल आर्थिक योजना तथा तथ्याङ्क, इन्जिनियरिङ्ग, कृषि, वन, विविध र शिक्षा सेवाका सबै समूह/उपसमूह,
राजपत्राङ्कित तृतीय श्रेणी र एवं स्वास्थ्य सेवाको सातौं र आठौं तहका पदहरूमा
प्रथम चरणको लिखित परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र
लिइने सामूहिक परीक्षण (Group Test) को लागि

सामूहिक छलफल (Group Discussion)

यस प्रयोजनको लागि गरिने परीक्षण १० पूर्णाङ्क र ३० मिनेट अवधिको हुनेछ जुन नेताविहिन सामूहिक
छलफल (Leaderless Group Discussion) को रूपमा अवलम्बन गरिने छ। दिइएको प्रश्न वा Topic का
विषयमा पालैपालोसँग निर्दिष्ट समयभित्र समूहबीच छलफल गर्दै प्रत्येक उम्मेदवारले व्यक्तिगत प्रस्तुति
(Individual Presentation) गर्नु पर्नेछ। यस परीक्षणमा मूल्याङ्कनको लागि देहाय अनुसारको ३ जना भन्दा
बढीको समिति रहनेछ।

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

सामूहिक छलफलमा दिइने नमुना प्रश्न वा Topic

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