

# **Syllabus for the Qualifying Exam for the Ph.D. Programme in Natural Resources**

## **Syllabus for VERT**

### **Section I : Research Methodology**

#### **Unit 1: Fundamentals of Research**

Aims and objectives of research, Types of research – basic, novel and applied research. Tools for searching research topic – books, journals, internet, discussions etc. Research hypothesis, Steps in research design. Problems encountered by researchers. Review of literature, concept of bibliography and reference, software of literature search, types of report.

#### **Unit 2: Research Aptitude**

Qualities of a researcher, Logical reasoning, Test for intelligence, Basic mathematics. Ethics in research – plagiarism Need for Research Design, Features of a Good Design, Important Concepts Relating to Research Design, Different Research Designs, Basic Principles of Experimental Designs: Randomized block, Complete randomized block, Latin square and split plot designs. Sampling Design, Implications of a Sample Design, Criteria of Selecting a Sampling Procedure, Different Types of Sample Designs

#### **Unit 3 : Data Collection, Processing And Analysis:**

Types of data, Various methods of data collection- Observation, Schedule and Questionnaires, Survey, Case study, Data sources. Measurement, scaling and surveying techniques. Processing and analysis of data. Determination of the sample size, sampling and non-sampling tests.

#### **Unit 4 : Hypothesis**

Introduction to Hypothesis, Procedure for Hypothesis testing, Parametric and nonparametric Hypothesis test, Testing of hypothesis using various tests like Analysis of Variance and Covariance (ANOVA and ANOCOVA), Chi square test, Multivariate analysis.

#### **Unit 5 : Interpretation And Report Writing**

Scientific communication- Basics of communication skills, Writing- research reports, research papers, research proposals and review articles. Importance of research proposal and research papers. Methods of research presentations. Communication with editors. Handling referee's comments, Galley proof. Citation & Acknowledgements.

Department of Rural Technology & Social Development  
Guru Ghasidas Vishwavidyalaya, Koni-Bilaspur (CG)  
Syllabus for Ph.D. Entrance Test

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Pre Ph.D.
Course : Ph. D Entrance Test
Course Title: Rural Technology

822 (B)

Rural Technology: Definition, concept and scope of rural technology in present scenario, Appropriate Technology, characteristics of technology, characteristics of innovation, concept and factor related to the technology transfer.

Medicinal Plants: cultivation techniques of medicinal plant, useful part of medicinal plant, factors influencing variability of drugs. Study of indigenous traditional drugs, plant in alternative system of medicine, industrial importance of medicinal plant, resins & combinations. Tannins & tanning containing drugs, terpenoid drugs, alkaloids. Methods of extraction and distillation principles of various natural products.

Non timber forest products, Essential oils- grass, wood, leaf, root and flower oils. Dyes- wood, bark, flower and fruit, root dyes. Wild edible roots, spices. Bee and their races. Social organization, communication in honey bees. scope of apiculture, physical and chemical properties of honey, Utilization of honey and wax in different commercial products.

Description of lac insects, life cycle, lac glands, lac cultivation technology and processing technique of lac. Properties and uses of lac. Edible Mushrooms, Nutritional value of Mushrooms, Features of poisonous mushrooms. Spawn production, mushroom production. Sericulture: Introduction to mulberry and non-mulberry silk worm.

Sources of energy, classification of energy, energy requirements in rural and urban sector, future energy challenges and energy demands, renewable energy sources. Concepts & fundamentals of Remote Sensing, photogrammetry, Stereophotogrammetry, digital image processing, satellite remote sensing. Raster & vector formats. Remote Sensing and its application in natural resource management. GPS and its Applications.

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