Syllabus of Research Methodology for RET in Agriculture

Unit 1: Concepts of research methodology

Importance and scope of research in agriculture. Types of research: Fundamental vs. Applied. Concept of researchable problem, Research prioritization, Selection of research problem. Approach to research, Research process.

Unit 2: Hypostheis Testing

Hypothesis- meaning- characteristics- types of hypotheses- Review of literature, Setting of course objectives and Hypothesis, Testing of hypothesis, z, t, chi-square and f-distribution

Unit 3: Data collection and descriptive analysis

Data- meaning, assessment of data needs, sources of data collection, collection of data in different fields of agriculture, Types of data, Classification, tabulation, and graphical representation of data, measures of central values, measures of dispersion, correlation and regression analysis.

Unit 4: Sampling

Sampling Theory and sampling design, methods of sampling; probability and non-probability sampling methods, Research design and techniques, Types of research design.

Unit 5: Probability

Theory of probability, Random experiment, Mathematical or classical definition of probability, Statistical definition of probability, conditional probability, Mathematical expectation.

Unit 6: Data analysis

Data coding, cleaning, transformation of data, Universal procedures for preparation of bibliography, writing of research articles, Project proposal, Introduction to ANOVA: One way and two-way, Introduction to SPSS

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Syllabus for Research Entrance Test (RET)

Genetics And Plant Breeding

Paper 2nd

Subject Content

Unit 1

Chapter 1st: History of cytology.

Chapter 2nd: Ultrastructure of plant cell – cell organelles and their function.

Chapter 3rd: Cell cycle and mitotic cell division.

Chapter 4th: Reductional cell division.

Chapter 5th: Importance of cell division.

Chapter 6th: Molecular basis of cell division.

Chapter 7th: Physical basis of heredity.

Unit 2

Chapter 1st: Role of crop physiology in crop improvement.

Chapter 2nd: Role of soil water relation in crop improvement.

Chapter 3rd: Role of photosynthesis to increase crop productivity.

Chapter 4th: Growth parameters and their measurers.

Chapter 5th: Role of growth hormones to increase crop productivity.

Chapter 6th: Role of physiological breeding to develop ideal plant type.

Chapter 7th: Crop ideotype breeding.

Unit 3

Chapter 1st: Mendelian principals of inheritance.

Chapter 2nd: Gene interaction and modifications of F_2 ratio.

Chapter 3rd: Linkage their types and phases.

Chapter 4th: Crossing over and their molecular basis.

Chapter 5th: Forms of chromosomes, chromosomal aberrations.

Chapter 6th: Gene Mapping.

Chapter 7th: Pleiotropism, Penetrance and expressivity.

Chapter 8th: Multiple alleles.

Chapter 9th: Multiple factor hypothesis.

Chapter 10th: Sex linked, sex influenced and sex-limited traits.

Chapter 11th: Sex determination in plants and animals.

Chapter 12th: Structure and function of Nucleic acid.

Chapter 13th: Replication of DNA.

Chapter 14th: Repair of DNA.

Chapter 15th: Extra chromosomal inheritance.

Chapter 16th: Maternal effects.

Chapter 17th: Genetic Code.

Chapter 18th: Protein synthesis.

Unit 4

Chapter 1st: Nature and scope of plant breeding.

Chapter 2nd: Objectives of plant breeding.

Chapter 3rd: Domestication and plant introduction.

Chapter 4th: Reproductive system in plants

Chapter 5th: Apomixis and development of vybrids.

Chapter 6th: Genetic basis of self-pollinated crops.

Chapter 7th: Breeding method of self-pollinated crops.

Chapter 8th: Genetic basis of cross-pollinated crops and hardy Weinberg law.

Chapter 9th: Role of distant hybridization in plant breeding.

Chapter 10th: Breeding methods for asexually propagated crops.

Chapter 11th: systems of mating.

Chapter 12th: Self incomfortability and their role in plant breeding, male sterility their role in plant breeding.

Chapter 13th: Mutation breeding and polyploidy.

Chapter 14th: Population improvement methods.

Chapter 15th: Multi line synthetic and composite varieties.

Chapter 16th: Classes of quality seeds their maintenance and multiplication.

Chapter 17th: Varietal deterioration and their control. Identification, release and notification of a variety

Chapter 18th: Biotechnology in crop improvement.