



Gyanveer University

Sagar (M.P.)



Ph.D Entrance Test Syllabus Session: 2024-25 Botany

Part A : Research Methodology

Part B : Botany

Part-A Research Methodology

Unit – I Gain an understanding of varied researches, research designs, formulation of research and criteria for good research.

Unit – II Meaning, nature, significance and types of research, synopsis, hypothesis, data collection, literature survey, sampling, interviewing, questionnaire, data processing, interpretation, report writing, bibliography, Article, research paper, seminar, conference, symposium, workshop etc.

Unit – III Acquire ability to review literature and documenting, and presenting data in a format suitable for publication in peer-reviewed journals.

Unit – IV Knowledge of intellectual property rights (IPR) including patents, copy rights, design registration and their filing, publishing and granting agencies.
Role of governing bodies/research organizations like UGC, CSIR, ICAR, ICSSR, ICPR, ISRO, DRDO etc. in research and development.

Unit – V Basic Statistics for Research-Basic of Stats with Mean, Median, Mode, Standard Deviation & Variance. Their applications in research. Basic concept of Permutation, Combination & Probability.



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Part-B

Botany

Unit – I Microbiology- General characteristics, ultrastructure, reproduction and economic importance of Eubacteria, Archaeobacteria, Phytoplasmata, Plant viruses and Fungi.

Unit – II Biology of Lower Plants- Life cycle patterns among algae, bryophytes and pteridophytes, alternation of generations and its significance; diversity in plant organization, sporophytic diversity among bryophytes and pteridophytes; economic importance of algae, bryophytes and pteridophytes.

Unit – III Gymnosperms-General characters of gymnosperms; their distribution in India; structure and reproduction in Cycadales, Ginkgoales, Ephedrales, Welwitschiales and Gnetales, concept of progymnosperms; economic importance of gymnosperms. Taxonomy of Angiosperms- Concept of artificial, natural and phylogenetic system of classifications. Taxonomic hierarchies. Taxonomic tools. Basic knowledge of ICBN. Endemism viz a viz hotspots with respect to Indian flora.

Unit – IV Cell Biology-Cell and its Organelles, Protein translation and modification in the ER, Intracellular traffic, Vesicular traffic in secretory pathway, Protein sorting. Organization of cytoskeleton, Intermediate filaments, Microtubules, Actin filaments, Cilia and centrioles, Cell cycle. Cell division. Cell signalling. Cell-cell adhesion and communication, Cell matrix adhesion, Collagen, Fibrous protein of the matrix, Non-collagen component of the extracellular matrix, Neurons and Muscles, Cell separation and cell culture.

Unit – V Developmental Biology- Basic concepts of development: Potency, commitment. specification, induction, competence, determination and differentiation morphogenetic gradients; cell fate and cell lineages; stem cells; genomic equivalence and the cytoplasmic determinants; imprinting: mutants and transgenics in analysis of development.