**Department of Botany**

**M.Sc. Botany**

| S.No. | Course Code | Course Name | Course Outcomes |
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| **SEMESTER- I** | | | |
| 1. | 23PBYC11 | CORE COURSE -I: PLANT DIVERSITY -I (ALGAE, FUNGI, LICHENS AND BRYOPHYTES) | **CO1[K2]:** relate the structural organizations of plant groups<br>**CO2[K3]:** estimate the diversity of basic life forms and their importance<br>**CO3[K4]:** compare the life cycle patterns in algae, fungi, lichens and Bryophytes<br>**CO4[K5]:** discuss the mode of reproduction in diverse groups of plant |
| 2. | 23PBYC12 | CORE COURSE -II: PLANT DIVERSITY -II: (PTERIDOPHYTES, GYMNOSPERMS AND PALEOBOTANY) | **CO1[K2]:** explain about classification of pteridophytes and gymnosperms<br>**CO2[K3]:** elucidate morphological and anatomical of plant groups<br>**CO3[K4]:** explain the economic importance of pteridophytes and gymnosperms<br>**CO4[K5]:** criticize evolutionary relationship of pteridophytes and gymnosperms<br>**CO5[K6]:** generalize fossil types and fossilization records of |

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| 3. | 23PBYC1P | PRACTICAL: PLANT DIVERSITY – I AND II | **CO1[K2]:** outline basic keys to identification of important algae and fungi<br>**CO2[K3]:** practice the skills for sectioning of pteridophytes and gymnosperms<br>**CO3[K4]:** identify the structural arrangements of plant groups<br>**CO4[K5]:** assess the structural diversity in the evolution of plant forms |
| 4. | 23PBYO11 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -I: MICROBIOLOGY, IMMUNOLOGY AND PLANT PATHOLOGY | **CO1[K1]:** recognize the general characteristics of microbes<br>**CO2[K2]:** explain the disease development and defense mechanisms in plants<br>**CO3[K3]:** estimate concepts of microbial interactions with plant and humans<br>**CO4[K4]:** analyze the harmful and beneficial microbes and immune |
| 5. | 23PBYO12 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -I: CONSERVATION OF NATURAL RESOURCES AND POLICIES | **CO1[K1]:** define the concept of different natural resources and their utilization<br>**CO2[K2]:** describe the utilization land, water, forest and energy resources<br>**CO3[K3]:** calculate the management strategies of different natural Resources<br>**CO4[K4]:** survey the different national and international efforts in resource management and their conservation<br>**CO5[K5]:** assess the various state environmental policy for conservation. |

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| 6. | 23PBYO13 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -I: MUSHROOM CULTIVATION | **CO1[K1]:** describe knowledge on identification of edible and toxic mushrooms<br>**CO2[K2]:** identify the nutraceutical properties of edible mushrooms<br>**CO3[K3]:** apply the knowledge on cultivation techniques of edible and medicinal mushrooms<br>**CO4[K4]:** categorize the harvest and post-harvest techniques of |
| 7. | 23PBYO14 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -I: PHYTOPHARMACOGNOSY | **CO1[K1]:** describe traditional knowledge and classification of plant derived drugs<br>**CO2[K2]:** examine on biosynthetic pathway of plant metabolites<br>**CO3[K3]:** explain the process of development of plant drus<br>**CO4[K4]:** analyze various aspects of pharmacological action of herbal drugs |
| 8. | 23PBYO15 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -II: ALGAL TECHNOLOGY | **CO1[K1]:** define the applied facet of botany and cultivation methods in algae<br>**CO2[K2]:** summarize the commercial potential of algal products<br>**CO3[K3]:** estimate emerging areas of algal biotechnology for identifying therapeutic importance of algal products and their uses<br>**CO4[K4]:** examine the note of Rdna technology in algae<br>**CO5[K5]:** evaluate various algal technologies for the benefit of the |

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| 9. | 23PBYO16 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -II: ETHNOBOTANY, NATUROPATHY AND TRADITIONAL HEALTHCARE | **CO1[K1]:** describe the concept of ethnobotany<br>**CO2[K2]:** explain the traditional practices of plants by Indian tribals<br>**CO3[K3]:** identify the role of non-timber forest products for livelihood of tribal people in India<br>**CO4[K4]:** analyze the ethnobotanical knowledge into value added products<br>**CO5[K5]:** evaluate methods to make ethnobotany biopraspecting and |
| 10. | 23PBYO17 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -II: HORTICULTURE | **CO1[K1]:** explain various horticultural plants and the conditions that affect their growth and productivity<br>**CO2[K2]:** describe various structure and growth process of horticultural plants<br>**CO3[K3]:** determine the propagation method, growth, and maintenance of plants in horticulture systems<br>**CO4[K4]:** analyze the soil characteristics and fertility for plant growth<br>**CO5[K5]:** determine the role plant tissue culture techniques in the production of quality planting stock in horticulture. |
| 11. | 23PBYO18 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -II: HERBAL TECHNOLOGY | **CO1[K1]:** recall the importance of herbal technology<br>**CO2[K2]:** examine crude drugs from various botanical sources<br>**CO3[K3]:** find out the application of secondary metabolites in modern medicine<br>**CO4[K4]:** evaluate new drug formulations using therapeutically valuable phytochemical compounds for the healthy life of society<br>**CO5[K5]:** justify the current trade status and role of medicinal plants in |

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| 12. | 23PBYS11 | SKILL ENHANCEMENT COURSE -I: NURSERY AND GARDENING | **CO1[K1]:** unerstand the process involved in growing and maintaining plants in nurseries<br>**CO2[K2]:** explain different methods of plant propagation and various gardening styles<br>**CO3[K3]:** apply techniques for effective hardening of plants and computer<br>applications for creative gardening |
| SEMESTER- II | | | |
| 13. | 23PBYC21 | CORE COURSE -IV: PLANT TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY | **CO1[K2]:** explain the basic concepts of morphology of leaves, flowers.<br>**CO2[K3]:** describe the taxonomic hierarchy, binomial nomenclature and construct key preparation<br>**CO3[K4]:** conclusion the various types of classification, construction of floral formula and floral diagram<br>**CO4[K5]:** defend the characteristic features, list out the economic importance of the families and field trip to local botanical garden<br>**CO5[K6]:** generalize and explain the characteristic features and list out the economic importance of the families |

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| 14. | 23PBYC22 | CORE COURSE -V: PLANT ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS | **CO1[K2]:** describe the structures, functions and roles of apical *vs* lateral meristems in monocot and dicot plant growth<br>**CO2[K3]:** determine the function and organization of woody stems derived from secondary growth in dicot and monocot plants<br>**CO3[K4]:** analyze on sectioning and dissection of plants to demonstrate various stages of plant development<br>**CO4[K5]:** conclude the various concepts of plant development and reproduction<br>**CO5[K6]:** generalize the process of reproduction in plants with a professional and entrepreneurial mindset |
| 15. | 23PBYC23 | CORE COURSE -VI: ECOLOGY, PHYTOGEOGRAPHY, CONSERVATION BIOLOGY AND INTELLECTUAL PROPERTY RIGHTS | **CO1[K2]:** summarize the scope and importance of population ecology, plant communities and ecosystem ecology<br>**CO2[K3]:** experiment the applied aspect of environmental botany<br>**CO3[K4]:** analyze the sources, pollution and seek remedies to mitigate and rectify them<br>**CO4[K5]:** identify threatened, endangered plant species and create awareness program in protection of biodiversity<br>**CO5[K6]:** design the vegetation types, species interaction and their importance and the factors influencing the environmental conditions |

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| 16. | 23PBYC2P | CORE COURSE -VII: PRACTICAL: TAXONOMY OF ANGIOSPERMS AND ECONOMIC BOTANY AND PLANT ANATOMY AND EMBRYOLOGY OF ANGIOSPERMS AND ECOLOGY, PHYTOGEOGRAPHY, CONSERVATION BIOLOGY AND INTELLECTUAL PROPERTY RIGHTS | **CO1[K2]:** explain the recent advances in morphological and floral characteristics<br>**CO2[K3]:** identify different floral characteristics and artificial key preparation for plant identification<br>**CO3[K4]:** analyze the advanced in relation with plant anatomy and embryology<br>**CO4[K5]:** assess their idea on sectioning and dissection of plants to demonstrate various stages of plant development<br>**CO5[K6]:** create about different vegetation sampling methods |
| 17. | 23PBYO21 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -III: MEDICINAL BOTANY | **CO1[K1]:** recognize plants and relate to their medicinal uses<br>**CO2[K2]:** explain about the phytochemistry, pharmacognosy and bioprospecting of medicinal plant extracts<br>**CO3[K3]:** apply techniques for conservation and propagation of drugs plants<br>**CO4[K4]:** analyze and decipher the significance of various methods of harvesting, drying and storage of medicinal herbs<br>**CO5[K5]:** assess new strategies to enhance growth and quality check of |

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| 18. | 23PBYO22 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -III: PHYTOCHEMISTRY | **CO1[K1]:** describe the role of plants in the survival of human beings<br>**CO2[K2]:** exploration of plant knowledge to alleviate common diseases and development of systems of medicine<br>**CO3[K3]:** build knowledge on different classes of phytochemicals present in higher and lower plants species<br>**CO4[K4]:** categorize the extraction and isolation of secondary metabolites<br>**CO5[K5]:** evaluate the methods of screening of secondary metabolites |
| 19. | 23PBYO23 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -III: RESEARCH METHODOLOGY, COMPUTER APPLICATIONS AND BIOINFORMATICS | **CO1[K1]:** recognize the need of centrifuges and chromatography<br>**CO2[K2]:** represent the principles and applications of electrophoresis<br>**CO3[K3]:** construct the phylogenetic trees for similar characteristic feature of plant genomes and *de novo* drug design through synthetic biology<br>**CO4[K4]:** comment the concept of pairwise alignment of DNA sequences<br>**CO5[K5]:** criticize the features of local and multiple alignments |
| 20. | 23PBYO24 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -III: BIOPESTICIDE TECHNOLOGY | **CO1[K1]:** define the issues in use of chemical pesticides and their harmful effects on life<br>**CO2[K2]:** outline the significance of biopesticides and their beneficial role in controlling insect pests, diseases, nematodes and weeds<br>**CO3[K3]:** find on identification of promising biopesticides and their mechanisms of action against insect pests, nematodes and weeds<br>**CO4[K4]:** analyze the mass production and technology of biopesticides<br>**CO5[K5]:** assess the importance of biopesticides product for commercialization |

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| 21. | 23PBYO25 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -IV: APPLIED BIOINFORMATICS | **CO1[K1]:** list of the tools for DNA sequence analysis<br>**CO2[K2]:** explain and application of bioinformatics<br>**CO3[K3]:** experiment aspects of protein-protein interaction, BLAST and PSI- BLAST<br>**CO4[K4]:** examine the features of local and multiple alignments<br>**CO5[K5]:** criticize the characteristics of phylogenetic methods and bioinformatics applications |
| 22. | 23PBYO26 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -IV: BIOSTATISTICS | **CO1[K1]:** identify and interpret visual representations of quantitative information, such as graphs or charts<br>**CO2[K2]:** explain the latest version using in statistical tools and application<br>**CO3[K3]:** solve problems quantitatively using appropriate arithmetical, algebraic, or statistical methods<br>**CO4[K4]:** examine their competence in hypothesis testing and |
| 23. | 23PBYO27 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -IV: INTELLECTUAL PROPERTY RIGHTS | **CO1[K1]:** recall the history and foundation of Intellectual Property<br>**CO2[K2]:** summarize the differences of property and assets and various categories of intellectual creativity<br>**CO3[K3]:** apply the methods to protect the intellectual property<br>**CO4[K4]:** differentiate if the Said Intangible property be protected under law or protected by strategy<br>**CO5[K5]:** document on the methods and procedures of protecting the said IP and search documents to substantiate them |

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| 24. | 23PBYO28 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -IV: NANOBIOTECHNOLOGY | **CO1[K1]:** recall the essential features of biology and nanotechnology that are converging to create the new area of bionanotechnology<br>**CO2[K2]:** discuss a procedures for the synthesis of nanoparticles which are of medical importance which could be used to treat specific diseases<br>**CO3[K3]:** estimate the various types of nano particle synthesis and advocate promotes the use of nano materials and anno composites<br>**CO4[K4]:** analyze and apply the important of nanoparticles in plant |
| 25. | 23PBYN21 | NON-MAJOR ELECTIVE COURSE -I: HOME GARDENING | **CO1[K1]:** illustrate the types and significance of gardening<br>**CO2[K2]:** explain garden tools and its applications<br>**CO3[K3]:** develop the vegetable crop cultivation<br>**CO4[K4]:** justify the importance of home garden and gardening techniques **CO5[K5]:** assess the steps involved in home garden |
| 26. | 23PBYS21 | SKILL ENHANCEMENT COURSE -II: AGRICULTURE AND FOOD MICROBIOLOGY | **CO1[K1]:** recognize the general characteristics of microbes and factors affecting its growth<br>**CO2[K2]:** explain the significance of microbes in increasing soil fertility<br>**CO3[K3]:** find the concepts of microbial interactions with plant and food<br>**CO4[K4]:** analyze the impact of harmful microbes in agriculture and food industry<br>**CO5[K5]:** conclude and appreciate the role of microbes in food |
| SEMESTER- III | | | |

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| 27. | 23PBYC31 | CORE COURSE -VIII: CELL AND MOLECULAR BIOLOGY | **CO1[K1]:** recall a plant cell structure and explain its function<br>**CO2[K2]:** illustrate and explain the structure of various cell organelles<br>**CO3[K3]:** explain the structure and functional significance of nucleic acid<br>**CO4[K4]:** compare and contrast the DNA replication<br>**CO5[K5]:** discuss skills for DNA manipulating and the enzymes |
| 28. | 23PBYC32 | CORE COURSE -IX: GENETICS, PLANT BREEDING AND BIOSTATISTICS | **CO1[K1]:** enumerate the Mendal's Law of inheritance and gene interactions<br>**CO2[K2]:** trace the factors determining heredity from one generation to another<br>**CO3[K3]:** explain Gene mapping methods**:** Linkage maps<br>**CO4[K4]:** compare the genetic basis of breeding self and cross pollinated crops<br>**CO5[K5]:** discuss the statistical analysis of biological problems. |
| 29. | 23PBYC33 | CORE COURSE -X: RECOMBINANT DNA TECHNOLOGY AND INDUSTRIAL APPLICATIONS | **CO1[K1]:** demonstrate and to recollect the production of vitamins<br>**CO2[K2]:** summarize the basics of recombinant DNA technology<br>**CO3[K3]:** compare and contrast the recombined organism and natural organisms<br>**CO4[K4]:** analyze the production of antibiotics<br>**CO5[K5]:** create skills for rDNA techniques and producing hybrids |

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| 30. | 23PBYC34 | CORE COURSE –XI: CORE INDUSTRY MODULE: INDUSTRIAL BOTANY | **CO1[K1]:** summarize the basics of algae in industrial applications<br>**CO2[K2]:** illustrate the uses in fungi in industries<br>**CO3[K3]:** explain bacterial role in industries<br>**CO4[K4]:** compare and contrast the use of plants in industries<br>**CO5[K5]:** discuss and develop skills for working in industries specializing in biomolecules. |
| 31. | 23PBYC3P | CORE COURSE –XII: PRACTICAL: CELL AND MOLECULAR BIOLOGY AND GENETICS, PLANT BREEDING AND BIOSTATISTICS & RECOMBINANT DNA TECHNOLOGY AND INDUSTRIAL APPLICATIONS | **CO1[K2]:** recall the various aspects of cell biology, and molecular biology<br>**CO2[K3]:** discuss the concepts of cell biology, genetics and plant breeding<br>**CO3[K4]:** compare the sequence of plant gDNA and bacterial plasmid DNA<br>**CO4[K5]:** explain the molecules isolated from cell<br>**CO5[K6]:** evaluate the theory and practical skills gained during the course. |

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| 32. | 23PBYO31 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -V: SECONDARY PLANT PRODUCTS AND FERMENTATION BIOTECHNOLOGY | **CO1[K1]:** compare the types of bioreactors and the fermentation process<br>**CO2[K2]:** describe the role of microorganisms in industry<br>**CO3[K3]:** list out and explain the types of bioreactors<br>**CO4[K4]:** categorize the significance of intrinsic and extrinsic factors on growth of microorganism<br>**CO5[K5]:** evaluate the concept of downstream processing. |
| 33. | 23PBYO32 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -V: ENTREPRENEURIAL OPPORTUNITIES IN BOTANY | **CO1[K1]:** recall the knowledge about organic farming and advantages<br>**CO2[K2]:** illustrate the horticultural techniques to students can develop self employment and economical improvement<br>**CO3[K3]:** construct the kitchen garden or terrace garden in their living area<br>**CO4[K4]:** analyze both the theoretical and practical knowledge in understanding various horticultural techniques<br>**CO5[K5]:** create and develop skills for mushroom cultivation. |

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| 34. | 23PBYO33 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -V: APPLIED PLANT CELL AND TISSUE CULTURE | **CO1[K1]:** recall the principles and culture techniques of callus, organs, pollen<br>**CO2[K2]:** discuss the techniques used in plant growth and regeneration horticultural techniques under *in vitro* conditions<br>**CO3[K3]:** examine the tissue culture media and culturing of organs or whole plant<br>**CO4[K4]:** analyze the conditions for direct and indirect plant regeneration<br>**CO5[K5]:** evaluate the skills obtained from internal and external assessment systems. |
| 35. | 23PBYO34 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -V: SILVICULTURE AND COMMERCIAL LANDSCAPING | **CO1[K1]:** demonstrate the art of floriculture and landscape gardening<br>**CO2[K2]:** generalise the importance and divisions of horticulture<br>**CO3[K3]:** explain plant propagation and fruit crop cultivation<br>**CO4[K4]:** compare and contrast the vegetable cultivation and kitchen gardening<br>**CO5[K5]:** discuss and develop skills for effective understanding on landscaping and components of gardens. |
| 36. | 23PBYN31 | NON-MAJOR ELECTIVE COURSE -II: MUSHROOM CULTIVATION TECHNOLOGY | **CO1[K1]:** detail the general characters mushroom<br>**CO2[K2]:** explain spawn preparation techniques<br>**CO3[K3]:** employ the mushroom cultivation techniques<br>**CO4[K4]:** examine the control measurement against diseases of mushroom<br>**CO5[K5]:** differentiate the edible and poisonous mushroom. |

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| 37. | 23PBYS31 | SKILL ENHANCEMENT COURSE -III: PLANT GENOMICS | **CO1[K1]:** illustrate the structure of the chloroplast genome<br>**CO2[K2]:** examine the different types of Plant genome database<br>**CO3[K3]:** write the difference between genetic and physical mapping<br>**CO4[K4]:** explain the tools which are involved in the Genome analysis<br>**CO5[K5]:** discuss the phylogenetic anlaysis using Genomic tools. |
| 38. | 23PBYJ31 | INTERNSHIP/INDUSTRIAL TRAINING | **CO1[K2]:** identify different career paths within the industry and gain insights<br>into potential future roles.<br>**CO2[K3]:** apply theoretical concepts and academic knowledge to real-world<br>situations and challenges encountered during the internship.<br>**CO3[K4]:** analyze problems, generate innovative solutions, and make informed decisions. |
| SEMESTER- IV | | | |
| 39. | 23PBYC41 | CORE COURSE –XIII: PLANT PHYSIOLOGY AND PLANT METABOLISM | **CO1[K1]:** relate understand properties and importance of water in biological<br>**CO2[K2]:** discuss the importance of light in plant growth and energy harvest<br>**CO3[K3]:** explain the energy requirement and nitrogen metabolism<br>**CO4[K4]:** compare the various growth regulators that influence plant |

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| 40. | 23PBYC42 | CORE COURSE –XIV: BIOCHEMISTRY & APPLIED BIOTECHNOLOGY | **CO1[K1]:** outline the fundamentals and significance of Plant Biochemistry<br>**CO2[K2]:** illustrate the structure and properties of plant biomolecules<br>**CO3[K3]:** explain the role of enzymes in plants<br>**CO4[K4]:** compare the metabolism and modify accordingly<br>**CO5[K5]:** discuss the skills for effective utilization of microbial/plant |
| 41. | 23PBYC4P | CORE COURSE -XIV: PRACTICAL: PLANT PHYSIOLOGY AND PLANT METABOLISM AND BIOCHEMISTRY AND APPLIED BIOTECHNOLOGY | **CO1[K2]:** indicate the presence of macro molecules in the plant cell<br>**CO2[K3]:** indicate the role of pigment in photosynthetic mechanism of plants<br>**CO3[K4]:** examine the fundamentals of water and its relation to plants<br>**CO4[K5]:** analyze the structure and properties of various enzymes<br>**CO5[K6]:** evaluate the theory and practical skills gained during the course. |
| 42. | 23PBYJ41 | CORE COURSE –XVI: PROJECT WITH VIVA-VOCE | **CO1[K1]:** identify the unexplored areas of research<br>**CO2[K2]:** outline the objectives in formulating a research paper<br>**CO3[K3]**: apply the latest rules of documentation to cite Print, Non-print and Web Publications in a research paper<br>**CO4[K4]:** analyze the stages in writing a thesis – collecting and evaluating Sources and drafting documentation<br>**CO5[K6]:** prepare a rightly documented research project with adequate discussion, interpretation and evaluation |

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| 43. | 23PBYO41 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -VI: ORGANIC FARMING | **CO1[K1]:** summarize the various aspects of organic farming<br>**CO2[K2]:** describe the relevance of organic farming, its advantages<br>**CO3[K3]:** explain the short comings against conventional high input agriculture<br>**CO4[K4]:** compare the packaging methods of harvest<br>**CO5[K5]:** discuss and develop skills for post harvest management. |
| 44. | 23PBYO42 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -VI: FORESTRY AND WOOD TECHNOLOGY | **CO1[K1]:** explain the various aspects of Forest Botany<br>**CO2[K2]:** describe the importance and of different forests<br>**CO3[K3]:** intrepret the ecological significance of forests<br>**CO4[K4]:** analyze the dynamics of the forest<br>**CO5[K5]:** discuss the various Indian forests laws and acts. |
| 45. | 23PBYO43 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -VI: GENE CLONING AND GENE THERAPY | **CO1[K1]:** recall the basic concepts of gene cloning<br>**CO2[K2]:** examine and to identify the selection of clones<br>**CO3[K3]:** compare and understand the concept of gene therapy<br>**CO4[K4]:** explain the transgenic plants<br>**CO5[K5]:** discuss and develop skills for hybrid seed production and molecular farming |
| 46. | 23PBYO44 | ELECTIVE COURSES GENERIC/ DISCIPLINE SPECIFIC -VI: FARM SCIENCES-GREEN WEALTH | **CO1[K1]:** list out the importance of agronomy and its scope<br>**CO2[K2]:** express the practical knowledge in weed management principles<br>**CO3[K3]:** explain the methods of herbicide and fertilizer application<br>**CO4[K4]:** compare and contrast the yield estimation and water management |

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| 47. | 23PBYS41 | SKILL ENHANCEMENT COURSE -IV: PROFESSIONAL COMPETENCY COURSE BOTANY FOR NET/UGC-CSIR/SET/TRB COMPETITIVE EXAMINATIONS | **CO1[K1]:** recall the structure of atoms, molecules, and chemical bonds<br>**CO2[K2]:** reunite the knowledge in cell biology and molecular biology<br>**CO3[K3]:** explain the methods of recombinant technology<br>**CO4[K4]:** compare and contrast the physiological functions and metabolism<br>**CO5[K5]:** discuss the skills for effective comprehension and communication. |
| 48. | 23PBYS42 | SKILL ENHANCEMENT COURSE -IV: PROFESSIONAL COMPETENCY COURSE BOTANY FOR ADVANCED STUDIES | **CO1[K1]:** illustrate the basic principles of systematic<br>**CO2[K2]:** summarize the basic functioning of plant growth and nutritive food value<br>**CO3[K3]:** understand the organization of nuclear genome<br>**CO4[K4]:** compare the apical *vs* lateral meristems in monocot and dicot plant |
| 49. | 23PBYS43 | SKILL ENHANCEMENT COURSE -IV: PROFESSIONAL COMPETENCY COURSE NAAN MUDHALVAN SCHEME | **CO1[K1]:** how to use computer Internet, e-mail, Web browser and Web server<br>**CO2[K2]:** generalize to create Documents, Tables and Spreadsheets<br>**CO3[K3]:** elucidate the creation and use of PowerPoint presentations and DBMS<br>**CO4[K4]:** compare and acquire knowledge about AI and ML<br>**CO5[K5]:** develop the knowledge in big data and data analytics. |