

  
**KUVEMPU UNIVERSITY**  
Department of Studies & Research in Applied Botany  
Jnanasahyadri Shankaraghatta – 577 451 Shivamogga Dist. Karnataka. INDIA

Dr. Raja Naika  
Chairman

Date: 12-09-2024

**Ph.D. Entrance Examination in Applied Botany, September- 2024**

The Ph.D. Entrance examination for the candidates who have applied for Ph.D. in Applied Botany of this University in response to the Notification Dated: **27/06/2024** has been scheduled on **Monday the 30<sup>th</sup> September-2024**. You are requested to go through the following Regulations of Kuvempu University;


1. The entrance examination will be held in the **Department of Applied Botany, Kuvempu University, Jnanasahyadri campus, Shankaraghatta, Shivamogga Dist. on 30.09.2024.**
2. The examination will commence at **11.00 AM.**
3. The entrance test shall be conducted by the Department as per the following norms.
4. Duration of entrance test: **3.00 hrs.**
5. The candidates should report at **10.00 AM on 30-09-2024** along with **2 stamp sized photograph**. The **Admission Ticket** will be issued before the commencement of examination on the same day.
6. **No TA/DA or Accommodation** will be provided by the University for attending the entrance examination.
7. Candidates who have not enclosed the **P.G Degree Marks cards/Caste certificates/Migration etc. (SC, ST, Cat-I, IIA, IIB, IIIA, IIIB,)** along with their application, should bring a copy of the same while appearing for the entrance examination.
8. A copy of the Ph.D. entrance syllabus along with the model question paper is enclosed.

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Chairman

  
**KUVEMPU UNIVERSITY**

**Department of Applied Botany**  
**LIST OF THE STUDENTS APPLIED FOR**  
**Ph.D. PROGRAMME IN APPLIED BOTANY 2023-24**

| Sl No | NAME                       | Reg No     |
|-------|----------------------------|------------|
| 01    | Ravikeerthi S.H            | PhDBOT2401 |
| 02    | Rashmi D.C                 | PhDBOT2402 |
| 03    | Harshitha .C.R             | PhDBOT2403 |
| 04    | Pruthvi Rani M             | PhDBOT2404 |
| 05    | Apoorva. P                 | PhDBOT2405 |
| 06    | Swapna C                   | PhDBOT2406 |
| 07    | Vijayalakshmi C.M          | PhDBOT2407 |
| 08    | Jyoti Madar                | PhDBOT2408 |
| 09    | G. Sanjeev Naik            | PhDBOT2409 |
| 10    | Mamatha. K. R              | PhDBOT2410 |
| 11    | Deepthi Nayaka .S          | PhDBOT2411 |
| 12    | Vijayalakshmi. T           | PhDBOT2412 |
| 13    | Sachin Channagonda         | PhDBOT2413 |
| 14    | Manjunatha S               | PhDBOT2414 |
| 15    | Ashwini V                  | PhDBOT2415 |
| 16    | Shreeharsha K.S            | PhDBOT2416 |
| 17    | Srinivasa Nayaka G         | PhDBOT2417 |
| 18    | Pavithra D                 | PhDBOT2418 |
| 19    | Jeevan H R                 | PhDBOT2419 |
| 20    | A. Jasmin                  | PhDBOT2420 |
| 21    | Akshaya A.G                | PhDBOT2421 |
| 22    | Siddartha. N.S             | PhDBOT2422 |
| 23    | Sushma T.S                 | PhDBOT2423 |
| 24    | Narasimha T.B              | PhDBOT2424 |
| 25    | Suman Mallikarjun Salimath | PhDBOT2425 |
| 26    | Jayashree Shreekanta Hegde | PhDBOT2426 |
| 27    | Nowshiba P.M               | PhDBOT2427 |

  
**CHAIRMAN** 12/9/2024  
Dept. of P G Studies & Research  
in Applied Botany  
Kuvempu University  
Shankaraghatta - 577 431

  
 KUVEMPU UNIVERSITY

Department of Post Graduate Studies and Research in Applied Botany

Ph.D. Entrance Test – SYLLABUS

Research Methodology

1. **WHAT IS RESEARCH?** Definition of Research, Reflection, Basic and applied research, Qualities of Researcher, Components of Research Problem, Various Steps in Scientific Research.
2. **LITERATURE COLLECTION:** Need of review of literature, review process and bibliography. Sources of Data: Primary Data, Secondary Data, Working bibliography, index cards and reference cards, literature citation.
3. **RESEARCH DESIGN:** Selection and formulation of research problem. Contents of the plan (protocol), Choice of research topic, Synopsis, Research Design & Plan, Significance of research design, Meaning & process of design. Introduction to Research & plan Research methodology. Writing the plan (protocol).
4. **SAMPLING DESIGN-** Census and sample survey, steps in sampling, characteristics of good sampling design, types of sample designs, how to select a sample random design, complex random sample. Arithmetical Mean, mode, Standard deviation, T- test.
5. **TECHNIQUES IN BOTANY:** Microscopy, micrometry, centrifugation, pH and pH meter, chromatography, electrophoresis, colorimetric and spectrophotometer methods, PCR, Gel-doc, Elisa, handling microorganisms in laboratory, laboratory safety and disposal of Bio hazards, chemical hazards, fire hazards, electrical hazards, noise and radiation hazards.

Cognate subject : Applied Botany

1. General account on morphology and economic importance of Algae, Bryophytes, Pteridophytes and Gymnosperms. Angiosperm Taxonomy: Major systems of classification; Sexual systems and modern system of classification; Biodiversity profile in India and Karnataka; Hot spots; threat to Biodiversity; IUCN threat categories, Red Data Book; Conservation measures of Biodiversity.
2. **Environmental pollution and management:** Air, Water and Industrial pollution; Hazardous waste management: Hazardous substances and hazardous wastes and sources, composition, physical form, quantity and quality of hazardous wastes. Waste minimization (physical, chemical and biological disposal treatment technique); Remote sensing and GIS: Basic and fundamental concepts of remote sensing, fundamentals of satellite image interpretation. Biodegradation of pesticides. Environmental Impact Assessment.
3. **Post Harvest Technology:** Post harvest practices- processing, preservation transportation and marketing of agricultural crops (wheat, rice, maize, millets, cotton, sunflower oil seeds, soybean seeds, coconut); vegetables; fruits; medicinal plants; ornamental plants; Post harvest losses.
4. **Plant Physiology and Metabolism:** Recent developments in Photosynthesis, Respiration and Photorespiration - an overview; Signal transduction - receptors - phytochrome, ABA, G proteins and phosphate signaling cyclic nucleotides, Calcium, protein kinases. Senescence and programmed cell death.

5. **Cell and molecular biology:** Regulation of gene action in prokaryotes - transcriptional control mechanism negative and positive control, translational control, posttranslational control. Regulation of gene action in eukaryotes - kinds of regulations at different levels Re-combinant DNA and genetic engineering; isolation of nucleic acids, radioactive labeling of nucleic acids, restriction endonucleases, cloning vectors, vectors in molecular biology, DNA blotting, preparation of DNA complementary to RNA. Gene library.
6. **Plant Biotechnology:** Techniques of plant regeneration - Plant tissue culture, protoplast culture, somatic embryogenesis, anther and ovary culture and synthetic seeds: Different types of Secondary metabolites, production, factors, affecting yield, Biotransformation, different types with examples. Biosensor and biochips. Micro propagation - different stages of micropropagation, rooting and establishments in herbs & woody plants. Development of stress tolerant plants; Transgenics in crop improvement.
7. **Medicinal Plants and Phytochemistry:** Scope of medicinal plants, poisonous plants and plants of importance in pesticides and essential oil; Conservation of Endangered Medicinal and Aromatic plants with special reference to Karnataka; Intellectual property rights (patents, trade secrets, copyright, trademarks); IPR and plant genetic resources (PGR); GATT and TRIPs, patenting of biological material. Patenting transgenic organisms and isolated genes; patenting of genes and DNA sequence.
8. **Mycology:** Mutualistic symbiosis - Introduction and importance - Mycorrhizae kinds and biology of mycorrhizae; Lichens - mycobiont & phycobiont partners, morphological forms of lichens, reproduction, physiological relationships, Endosymbiosis; endophytes and their taxonomy, endophytic mutualism, genetic variation in plant pathogen populations.
9. **Microbiology:** Microbiology of Air, Water and Food; Reproduction in microbes: methods of reproduction in bacteria, fungi, and viruses and in algae; Microbial genetics; structure of bacterial genome, mutations in microbes, bacterial recombination, bacterial plasmids and their application in genetic engineering; Microbial metabolism - Utilization of hexoses- EMP, PP, ED and PK pathways, and TCA cycle. Bacterial respiration and fermentation.
10. **Plant Pathology:** Plant disease diagnosis - techniques for the detection of plant pathogenic fungi, viruses, viroids, bacteria, and nematodes - conventional and modern methods of diagnosis including seed health testing methods; Signaling in plant disease resistance mechanisms, RNA as a signal, coordination of cell death responses and interplay of down stream signaling pathways.

**Model Question Paper**  
**Ph.D. Entrance Examination Sept 2024**  
**Subject: Botany**

Max marks: 90  
(Part A-20+part B-70=90)

**Instructions to candidates**

1. Answer all the questions
2. Illustrate wherever necessary

**Part -A**

- I. All questions are compulsory in Part-A. Tick right answer for part-A

1×20=20

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
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- 20.

**Part-B**

- II. Answer any six of the following

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

- III. Answer any four of the following

- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

P.T.O