

Reg. No. :

Name :

Ph.D. ENTRANCE EXAMINATION, NOVEMBER 2022

FACULTY OF SCIENCE

BOTANY

Time : 3 Hours

Max. Marks : 100

Instructions :

- 1) Answer **any ten** questions each from Section **A** and **B**.
- 2) Each question carries **5** marks.
- 3) No additional Answer sheets will be provided.
- 4) Candidates should clearly indicate the section, Question number in the answer booklet.

SECTION – A

Research Methodology

- I. Answer **any ten** questions. All questions carry equal marks
 1. Explain different immunological techniques used to identify plant pathogens.
 2. Explain different sampling techniques used in scientific research.
 3. What are GLP and GMP?
 4. What are the consequences of plagiarism in scientific research?
 5. Describe the latest trends in microscopy utilized in scientific research .
 6. What is the principle of spectrophotometry? Explain the latest spectrophotometric techniques used in protein research.

7. What is a microarray? How is it used for gene quantification?
8. what is a hypothesis? How is it relevant in biological research?
9. Explain important statistical tools used in scientific research?
10. What is database? Explain different types of databases.
11. Explain different types of conservation methods with special reference to endangered species.
12. Explain the importance of bioinformatic tools used in molecular biology research.
13. What are scientific citations? Explain its importance in scientific research.
14. Explain the importance of herbariums and gene banks in scientific research.
15. The molecular weight of a chemical compound A is 392.4. Calculate the quantity required to prepare a 0.5M solution of the same in 150ml. Calculate the volume required to prepare 0.25mM of the solution in 200ml.

(10 × 5 = 50 Marks)

SECTION – B

Botany

- II. Answer **any ten** questions. All questions carry equal marks
1. What are secondary metabolites? Explain the methods for large-scale production of plant secondary metabolites.
2. Explain the methods used for the quantitative and qualitative assessment of DNA.
3. Explain cryopreservation. What are its advantages and disadvantages.
4. Explain different methods used to prepare an oligonucleotide probe.
5. Explain somaclonal variation. Explain different methods by which it can be induced.
6. What are mutations? Explain different types of mutations.

7. What are PR proteins? Explain their role in plant productivity.
8. Explain soil erosion and discuss various strategies used in preventing soil erosion.
9. Explain different types of banding techniques used in nucleic acid research.
10. What is kranz anatomy? Explain its significance.
11. Explain the theories explaining root-shoot transition.
12. What is the alternation of generations? Explain with suitable examples.
13. Explain the Angiosperm Phylogeny Group (APG) system of classification.
14. Explain energy flow and mineral cycling in an ecosystem.
15. Explain cell cycle and its control mechanisms.

(10 × 5 = 50 Marks)
