(Pages : 3) **S – 1298**

Reg. No. : .....

Name : .....

Ph.D. ENTRANCE EXAMINATION 2023

FACULTY OF SCIENCE

BIOCHEMISTRY

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.*

Part – A

Research Methodology

Answer any **ten** questions. **Each** question carries **five** marks.

1. Define the term ‘‘Research’’. Enumerate the characteristics of Research.

2. What do you understand by the Research Proposal? Give the structure of Research Proposal.

3. Explain the need and functions of review of literature.

4. Enumerate the significance of a hypothesis in scientific research.

5. Differentiate between research methodology and research design with suitable examples.

6. What do you mean by survey method of research? Mention the use of survey method of research in education.

7. What is historical research? Explain its importance in education.

8. Describe the need and scope of the philosophy of education.

9. Describe the procedure for patent application.

10. Write a note on Impact factor and H-index of journals.

11. Describe the different tests of statistical significance.

12. Describe the basic principles of experimental designs. Mention the basic type of errors of experiment.

13. What are the different steps used in designing a questionnaire? Indicate its advantages and limitations.

14. How will you check plagiarism in publication? Explain the legal implications of plagiarism and research fabrication.

15. Write an account on ‘‘Animal experiments’’ in scientific research.

(10 × 5 = 50 Marks)

Part – B

Biochemistry

Answer any **ten** questions. **Each** question carries **five** marks.

1. Explain the tertiary and quaternary structure of proteins.

2. Discuss the principle of affinity chromatography.

3. Enumerate the applications of radioisotopes in biology.

4. Outline the mechanisms that regulate enzyme activity.

5. Elucidate the metabolism of phospholipids.

6. Write a note on the metabolism of pyrimidines.

7. Outline the process of Ketogenesis.

8. Enumerate the differences between Kwashiorkor and Marasmus.

9. Give a brief explanation of thyroid function tests.

10. Give a brief account of the importance of DNA microarrays in analyzing gene expression.

11. Give an account of agents that cause cancer.

12. Give an account of the various biological data bases.

13. Write an account on heavy metal pollutants.

14. Write a short note on infection and immunity.

15. What are the new emerging viral infections?

——————— **(10 × 5 = 50 Marks)**