(Pages : 3) **S – 1311**

Reg. No. : .....

Name : .....

Ph.D. ENTRANCE EXAMINATION 2023

FACULTY OF ENGINEERING AND TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

Time : 3 Hours Max. Marks : 100

Instructions **:**

1) *Answer **any ten** questions each from* Section ***A*** *and* Section ***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. **Each** question carries **5** marks.

1. Briefly explain the different stages in a research process.

2. What is research problem? Define the main issues which should receive the attention of the researcher in formulating the research problem.

3. List the main objectives of research and explain them in detail.

4. Explain the nature and functions of a hypothesis in a research process.

5. Explain the steps involved in preparing a questionnaire to collect data for doing research.

6. Briefly explain the steps involved in writing a research report.

7. Why do we need tools of research? List any two tools used.

8. Describe the contents of a good research report.

9. What is scientific method of research? Explain its main characteristics.

10. Describe the statistical methods used for the analysis of data.

11. Explain the application of computers in scientific research.

12. Differentiate between qualitative and quantitative research.

13. Describe the concept and sources of literature review.

14. Explain the need for multidisciplinary and interdisciplinary research.

15. Define the term 'Sampling'. Differentiate between sample and population.

(10 × 5 = 50 Marks)

Section – B

Computer Science and Engineering

II. Answer any **ten** questions. Each question carries **5** marks.

1. Explain the ACID properties of transactions.

2. Describe the functions of network and transport layers TCP/IP protocol suite.

3. What are the essential features of real time and network operating systems?

4. What are the differences between the normal Forms 3NF and BCNF?

5. What is pigeonhole principle? Explain with an example.

6. Implement AND gate using NAND and NOR gates.

7. Explain the applications of data structures in operating systems.

8. Define a heap and show how it can be used to represent a priority queue.

9. Compare the memory management techniques - paging and segmentation.

10. What is context switching? Explain the actions taken by an operating system to context-switch between processes.

11. Explain the different stages in the instruction cycle.

12. Distinguish between front end and back end of a compiler.

13. Compare error correcting codes and error detection codes. Give examples for each.

14. What is a distributed system? Explain the features of distributed system.

15. Explain the role of data science in various fields.

(10 × 5 = 50 Marks)

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