

**VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM**

**(Deemed to be University under Section 3 of the UGC Act, 1956)**

**Pre – Ph.D. Written Examination – January – 2023**

**Computer Science**

**Paper I: Research Methodology**

Time: 2 Hours

Marks: 50

**PART – A**

**(5\*2M= 10M)**

**Write Brief notes about the following**

Answer all questions

All questions carry equal marks

1. Explain how to formulate objectives in the light of Research Problem.
2. What are the steps of dynamic programming?
3. Differentiate verification from validation.
4. What are the applications of correlation and regression?
5. Write a note on predatory publishers and journals.

**PART – B**

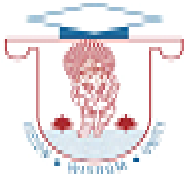
**(5\*4M=20M)**

**Write Short answers to the following**

Answer all questions choosing either a or b

All questions carry equal marks

1. a. Distinguish between primary, secondary and tertiary data sources as used in Research work.  
**Or**  
b. Discuss the steps involved in research process.
2. a. How do you find the optimal binary search tree?  
**Or**  
b. Compare Divide & Conquer and Dynamic Programming.
3. a. Explain the concept of coupling and cohesion. Explain how two components are coupled.  
**Or**  
b. Differentiate functional and non-functional requirements.



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4. a. Explain correlation coefficient by the method of least square.

**Or**

b. Why Mean Square Error (MSE) is used in Machine Learning.

5. a. What is COPE? What are its core practices?

**Or**

b. How does the mis-representation of data affect the results and conclusion of research?

**PART – C**

**(2\*10M=20M)**

Answer any two essay type questions

All questions carry equal marks

1. Write in detail about the essential components of good research proposal and what are the factors affecting the research design?
2. Design Branch and Bound algorithm to solve the Travelling Salesman problem.
3. Discuss on various software testing tools.
4. How to solve Linear Regression using Linear Algebra?
5. Describe the methods of complaints and appeals against publication misconduct.

