



VINAYAKA MISSION'S RESEARCH FOUNDATION, SALEM

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

Pre – Ph.D. Written Examination – August – 2024

Microbiology

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. What are the essential basic principles of experimental design?
2. What is a fold-scope? Who created it?
3. What is MIS and how do they differ from conventional systems?
4. What is ANOVA and when is it used?
5. How can the predatory publishers be identified?

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. What are the major parts of an experimental research report?
Or
b. Outline the steps followed to define a research problem.
2. a. With suitable diagram brief the structure of Fluorescent Microscope.
Or
b. What is MALDItoF? Give its uses.
3. a. What is the difference between preparative and analytical centrifugation?
Or
b. Explain the principle behind the molecular separation of proteins using SDS-PAGE.



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4. a. Explain measures of central tendency with examples.
Or
b. Explain measures of dispersion with examples.
5. a. List at least four misconducts of publications.
Or
b. How does salami slicing influence a young researcher's career?

PART – C

(2*10M=20M)

Answer any two essay type questions
All questions carry equal marks

1. What is a research design? Write about its characteristics.
2. Provide the principle, working procedure and applications of a pH meter.
3. Explain the principle and working procedure in the preparation of a Gas chromatogram.
4. Discuss the various methods of data collection and their presentation.
5. What is the full form of COPE? Explain its function with a flowchart.

