

RAN-2303080603040003

M.Sc. Microbiology (Sem.-III) Examination October - 2025
Elective Paper- 1 : Research Methodology & Biostatistics

Time: 3 Hours]
[Total Marks: 70
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
 Fill up strictly the above details on your answer book
- (1) Figures to the right indicate full marks of the question.
- (2) Draw neat and labelled diagrams whenever necessary.

Seat No.:

----------------------	----------------------	----------------------	----------------------	----------------------	----------------------

Student's Signature

- Q.1. Answer any two of the following: 18**
- Define research and describe the importance of motivation for a researcher.
 - Explain the various types of research, providing examples to differentiate between applied and fundamental research.
 - Analyze the key characteristics of high-quality research and discuss how these criteria help in research.
- Q.2. Answer any two of the following: 18**
- What are the main components of a research report?
 - Define a hypothesis and explain the crucial aspects involved in its construction.
 - Analyze the significance of research design in the overall research process.
- Q.3. Answer any two of the following: 18**
- What is biostatistics? Explain how it helps in solving biological problems.
 - What are biological variables? Why are they important in experiments?
 - Discuss frequency distribution table. Show how to make one using a simple example.
- Q.4. Answer any two of the following: 16**
- Define the arithmetic mean. Give its advantages and disadvantages. Calculate it for the following plant heights (in cm): 25, 30, 21, 55, 47, 10, 15, 17, 45, 35.
 - What is Student's t-distribution? Explain its significance and how it is applied in statistical analysis.
 - Compare the geometric mean and harmonic mean. Provide a suitable example for each.