

MASTER OF SCIENCE (ZOOLOGY)

(MSCZOO)

Term-End Examination

December, 2025

MZO-006 : BIostatISTICS AND

BIOINFORMATICS

Time : 2 Hours

Maximum Marks : 50

Note : (i) Attempt any *five* questions.

(ii) All questions carry equal marks.

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1. (a) Discuss the role of biostatistics in medical research and public health planning. 5
 - (b) What is the purpose of hypothesis testing in biostatistical research ? 5
 2. Differentiate between the following pairs of terms : $4 \times 2.5 = 10$
 - (a) Correlation and Regression

- (b) Binomial distribution and Poisson distribution
 - (c) Primary and Secondary biological databases
 - (d) Global and Local sequence alignment
3. Write short notes on the following : $4 \times 2.5 = 10$
- (a) Concept of probability
 - (b) Standard deviation
 - (c) Principle of microarray technology
 - (d) Multiple sequence alignment
4. (a) Define class limits, class intervals and range in data classification. 5
- (b) Define the p -value and explain its significance in hypothesis testing. 5
5. (a) A hospital wants to evaluate the workload of surgeons by analyzing the number of surgeries performed weekly

by a team of doctors over a span of
10 weeks : 5

Number of Surgeries (X)	Frequency of Surgeries (f)
3	2
4	3
5	4
6	5
7	3
8	3

- (i) Compute the mean, median and mode number of surgeries conducted.
- (ii) What does the mode suggest about the frequency of surgeries held in the hospital ?
- (b) Explain the use of C/C++ in the development of bioinformatic software. 5

6. (a) Briefly explain the molecular clock hypothesis. 5
- (b) Describe the key features of GenBank as a primary database. 5
7. (a) Explain the terms taxa, branches, nodes, root and clade in the context of phylogeny representation. 5
- (b) Describe the process of protein identification and characterisation using mass spectrometry. 5

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