MZO-006

ASSIGNMENT BOOKLET

M.Sc. (Zoology) Programme

(MSCZOO)

Biostatistics and Bioinformatics

Valid from 1st January, 2026 to 31st December, 2026

School of Sciences
Indira Gandhi National Open University
Maidan Garhi
New Delhi-110068

(2026)

Dear Student,

Please read the Section on assignments in the Programme Guide for M.Sc. (Zoology). A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment for this course. The assignment is in this booklet. The total marks for this assignment is 100, of which 40 marks are needed to pass it.

Instructions for formatting your Assignments

Before attempting the assignment please read the following instructions carefully:

1) On top of the first page of your answer sheet, please write the details exactly in the following format:

ROLL NO.: ……

NAME: ……..

ADDRESS: ……

……

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COURSE CODE: ……..

COURSE TITLE: ……..

ASSIGNMENT NO.: ……..…

STUDY CENTRE: ……..…...

DATE: ……..……...

PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.

2) Use only foolscap size writing paper (but not of very thin variety) for writing your answers.

3) Leave 4 cm margin on the left, top and bottom of your answer sheet.

4) Your answers should be precise.

5) Solve this assignment, and **submit the complete assignment answer sheets within the due date.**

6) The assignment answer sheets are to be submitted to your Study Centre within the due date. **Answer sheets received after the due date shall not be accepted. We strongly suggest that you retain a copy of your answer sheets.**

7) This assignment is valid from 1st January, 2026 to 31st December, 2026. If you have failed in this assignment or fail to submit it till its validity, then you need to get the assignment for the next year and submit it as per the instructions given in the Programme Guide.

8) **You cannot fill the examination form for this course** until you have submitted this assignment.

We wish you good luck.

ASSIGNMENT

Course Code: MZO-006
Assignment Code: MZO-006/TMA/2026
Maximum Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it.

Part I (Biostatistics)

1. a) Describe the limitations and importance of biostatistics. (5)

   b) Explain the benefits and drawbacks of variance and standard deviation. (5)

2. a) What do you understand by Median and Mode? Discuss with suitable examples. (5)

   b) What is regression analysis? Give a short note on linear regression analysis. (5)

3. a) Comment on the basic concept of probability. (5)

   b) Definition of the F-test formula. (5)

4. a) Write the application of the chi-square test with an example. (5)

   b) Describe the theorems of probability. (5)

5. a) Explain Poisson distribution with an appropriate example.

   b) Write in detail about 'Critical Region'.

6. a) Calculate standard deviation and its coefficient from the following data: (5)

Marks out of 10	0-2	2-4	4-6	6-8	8-10
No. of Students	2	5	15	7	1

   b) Calculate median from the following distribution. (5)

Class	20-24	25-29	30-34	35-39
Frequency	3	5	10	20
Class	40-44	45-49	50-54	5-59
Frequency	12	6	3	1

Part II (Bioinformatics)

7. a) What do you understand by database? Explain primary, secondary and composite databases. (5)

   b) What do you understand by Multiple Sequence Alignment (MSA)? (5)

8.	a)	Explain the various approaches used in pairwise sequence alignment.	(5)
	b)	Explain the significant steps involved in the process of homology modeling.	(5)
9.	a)	How do mass spectrometry techniques like HDX-MS and CX-MS contribute to molecular modeling?	(5)
	b)	Define the term ‘Omics’? Discuss their types and importance in modern biological research.	(5)
10.	a)	Discuss the importance of C and C++ programming languages in bioinformatics.	(5)
	b)	Briefly explain the molecular clock hypothesis.	(5)