

M.Sc. (Micro) Semester - 1 (CBCS) Examination**Nov/Dec-2023 (SYLLABUS YEAR JUNE-2016)****BIostatistics and Bioinformatics (Multi/Inter Disciplinary)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Que.1 Answer the following (Any seven out of Ten, each of 02 marks) (14)

- (1) Calculate Mean, Mode, Median and Range from **71,72,0,73,81,97** data
- (2) Write the full form of DDBJ and OMIM
- (3) What is difference between paired and unpaired student's t test?
- (4) Give the examples of tools use for Gene prediction.
- (5) Write any two merits and demerits of the median
- (6) Write note on Column graph with suitable example
- (7) What is difference between null hypothesis and alternative hypothesis?
- (8) Explain the uses of Bioinformatics in agriculture science.
- (9) Give the example of pairwise alignment.
- (10) Explain types of sequencing approach

Que.2 Answer the following (Any two out of three, each of 07 marks) (14)

- (1) Describe types of Graphs with suitable example.
- (2) Calculate the Coefficient of Variation (CV) for the following two sample data sets and give your interpretation from results.

Observation 1: 33, 31, 37, 33, 45, 34, 38, 22, 37, 30, 33.

Observation 2: 67, 56, 87, 47, 95, 88, 93, 84, 82, 98, 69.

- (3) Find the variance and standard deviation for the following experiment result.
75, 91, 72, 86, 77, 99, 75, 65, 80, 96, 11.

Que.3 Answer the following (14)

- (1) Write a detail note on Regression 05
- (2) What is the Chi-square test? Discuss in detail. 05
- (3) Write a detail note on the analysis of variance. 04

OR

Que.3 Answer the following (a & b – Both are compulsory, each of 07 marks) (14)

- (1) Calculate un-paired student's T-test with below two different water sample sites pH data (use 1.746 t critical/table value), set hypothesis and evaluate after result.

Water sample:

Forest area 1: 5.1, 6.1, 2.9, 4.2, 3.9, 4.4, 8.2, 9.7 and 11.1

Forest area 2: 3.7, 4.0, 7.2, 9.3, 9.7, 9.9, 7.4, 12.2 and 6.9

- (2) Write a note on Student's T-test? Discuss paired student's T-test with below data (use 1.833 t critical/table value)

Student: 1 2 3 4 5 6 7 8 9 10

Test mark: 48, 41, 16, 42, 59, 64, 77, 81, 23, 58

Test marks after remedial classes: 52, 45, 11, 44, 56, 64, 70, 83, 39, 60

Que.4 A. Answer the following (Any two out of three – Each of 05 marks) (14)

- (1) Write short note on PubMed. What is secondary data base? Explain any two data base in details
- (2) Application of Bioinformatics in biological sciences with appropriate examples.

Que.4 B. Answer the following (Any one out of two – 04 marks)

- (1) Explain Gene Bank in details
- (2) Explain nucleotide data base

Que.5 Answer the following (Any two out of four, each of 07 marks) (14)

- (1) What is drug discovery? explain in details
- (2) Describe Smith – Waterman algorithm
- (3) Explain the phylogenetic tree and mentioned its applications.
- (4) Write note on multiple alignment
