

M.Sc. (Botany) Semester - 1 (CBCS) Examination**Nov/Dec - 2022 [OLD COURSE]****BIostatistics and Bioinformatics (Multi/Interdisciplinary)****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 4,19,0,19,18,13 data
- (2) Write any two merits and demerits of the median
- (3) What is difference between paired and unpaired student's t test?
- (4) Write note on Column graph with suitable example
- (5) What is difference between null hypothesis and alternative hypothesis?
- (6) What is Gene bank?
- (7) Mention the uses of bioinformatics in medical sciences.
- (8) Describe BLAST.
- (9) What is PubMed? Explain in brief.
- (10) Define the smith - waterman algorithm in brief.

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

- (1) Describe any seven types of Graph with suitable example.
- (2) Calculate the Coefficient of Variation (CV) for the following three sample data sets and give your interpretation from results.
Botany. 37, 21, 27, 37, 35, 24, 28, 32, 17, 20.
Microbiology. 99, 115, 112, 113, 95, 87, 90, 104, 107, 98.
Zoology. 57, 54, 59, 55, 52, 51, 57, 49, 61, 57.
- (3) Find variance and standard deviation of the five highest (meter) mountains summits in India.
Kanchenjunga 8,598m Nanda Devi 7,816m Kamet 7,756m Saltoro Kangri (K10) 7,742m and
Saser Kangri (K22) 7,672m

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) Based on field experiments, a new variety green gram is expected to give a yield of 12.0 quintals per hectare. The variety was tested on 10 randomly selected farmers' fields. The yields (quintals/hectare) were recorded as 14.3, 12.6, 13.7, 10.9, 13.7, 12.0, 11.4, 12.0, 12.6, and 13.1. Do the results confirm the expectation? (use 2.262 t critical/table value)
- (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
 Pre module score: 18 21 17 24 19 24 17 23 23 18
 Post module score: 22 25 18 26 16 29 20 25 19 20

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

- (1) Write application of bioinformatics in various field of biology.
- (2) Describe secondary database.
- (3) Write about sequence format.

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

- (1) Describe protein database.
- (2) Discuss primary database.

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

- (1) Define Genomic study and explain its importance in Biology.
- (2) What is drug discovery? Explain in details.
- (3) Explain Phylogenetic tree.
- (4) Explain multiple sequence alignment.
