

M.Sc. (Zoology) Semester - 1 (CBCS) Examination**Jan/Feb.-2022 [NEW COURSE]****BIostatistics and Bioinformatics(Multi/Inter Disciplinary)****Time: 1:30 Hours****Marks: 42****Instructions:**

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

- Q.1 Answer the following (Any seven out of Ten, each of 02 marks) 14
- (1) Calculate Mean, Mode, Median and Range from **1,15,0,13,18,13** data
 - (2) Write any two merits and demerits of the mean
 - (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) Explain drug discovery in brief.
 - (7) Mention the uses of bioinformatics in medical sciences.
 - (8) Enlist the methods used for sequencing.
 - (9) What is OMIM and PubMed? explain in brief.
 - (10) Define the Needleman-wunch algorithm in brief.
- Q.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. 13, 21, 27, 31, 35, 24, 28, 32, 17, 20.
 Microbiology. 100, 115, 112, 113, 95, 87, 90, 104, 107, 98.
 Zoology. 55, 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
- Q.3 Answer the following (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 16 22 19 24 17 21 23 18
 Post module score: 22 25 17 24 16 29 20 23 19 20
- Q.4(A) Answer the following (Any two out of three – Each of 05 marks) 14
- (1) Write a note on Phylogenetic tree.
 - (2) What is alignment? Explain multiple sequence alignment.
 - (3) Explain pairwise alignment
- Q.4(B) Answer the following (Any one out of two –04 marks)
- (1) Write a note on Drug discovery.
 - (2) Write a note on BLAST.
- Q.5 Answer the following (Any two out of four, each of 07 marks) 14
- (1) Describe the secondary database in detail
 - (2) How bioinformatics useful in Agricultural and medicinal sciences.
 - (3) Describe the nucleotide database in detail.
 - (4) Write a note on PDB and its file format used for study.
