647510 **Msc1MicI0110** **Seat No :_____**

M.Sc. (Micro) Semester - 1 (*CBCS*) Examination

Jan/Feb.-2022 [OLD COURSE]

BIOSTATISTICS AND BIOINFORMATICS(MULTI/INTER DESCIPLINARY)

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 **two** marks) **14**

1. What is ANOVA?
2. What is GeneBank ? explain its importance in bioinformatics.
3. What is difference between null hypothesis and alternative hypothesis?
4. Define Entrez.
5. Explain dendrogram and its importance.
6. Describe the application of biostatistics in biological science.
7. Calculate Mean, Mode, Median and Range from 2,4,0,6,8,6 data.
8. What is UniprotKB and EMBL explain in brief.
9. What is UPGMA?
10. What is difference between paired and unpaired student's t test?

Q. 2 Answer the following (any two out of three, each of **seven** marks) **14**

1. Write merits and demerits of mean, median and mode.
2. Calculate the Coefficient of Variation (CV) for the following two sample data sets and give your interpretation from results.

Exp.1	51	41	47	51	55	44	48	52	37	40
Exp.2	79	95	92	93	75	67	70	84	87	78

3. Find the variance and standard deviation for the following test score.
   32, 22, 99, 102, 33, 57, 75, 100, 81, 62, 29.

Q. 3 Answer the following (each of **seven** marks) **14**

1. Explain nucleotide sequence alignment with appropriate example.
2. Describe Phylogenetic tree.

Q.4 (A) answer the following (any two out of three, each of **five** marks) **10**

1. Describe types of biological database.
2. Write about industrial and medicinal application of bioinformatics.
3. Write about secondary database and explain its important.

Q.4 (B) Answer the following (any one out of two, each of **four** marks) **04**

1. Describe primary database with suitable example.
2. Why sequence format mandatory for bioinformatics study? Explain types of file format in detail.

Q.5 Answer the following (Any two out of four, each of **seven** marks) **14**

1. Based on field experiments, a new variety groundnut 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 34.3, 32.6, 33.7, 30.9, 33.7, 32.0, 31.4, 32.0, 32.6, and 33.1. 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-test score:	48	51	47	54	49	54	47	53	53	48
Post test score:	52	55	48	56	46	59	50	55	49	50

3. Write a detail note on the analysis of variance
4. What is the Chi-square test? Discuss in detail.

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