



**JBG-003-1181004**

Seat No. \_\_\_\_\_

**M. Sc. (Sem. I) (CBCS) (W.E.F. 2016) Examination**

**December - 2019**

**Zoology : ZOOL - 104**

**(Biostatistics & Bioinformatics)**

**Faculty Code : 003**

**Subject Code : 1181004**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**1** Answer the following : (any seven) **2×7=14**

- (a) Differentiate sample mean and population mean.
- (b) What is cumulative frequency and relative cumulative frequency ?
- (c) What is paired and unpaired t- test ?
- (d) What is the difference between mathematical and positional averages ?
- (e) What is Partial Correlation Analysis ?
- (f) Explain gene prediction.
- (g) What is Biological Database ?
- (h) Name software / tools for eukaryotic gene prediction.
- (i) Differentiate analogous and orthologous gene.
- (j) What is GenBank format ?

**2** Answer of the following : (any two) **7×2=14**

- (a) Describe different measures of dispersion with suitable examples.
- (b) What is bivariate Regression analysis ? Describe the steps involved it.
- (c) Describe any non-parametric test you have studied with suitable example.

- 3** Answer the following : **7×2=14**
- (a) Distinguish between :
- (a) Null hypothesis and Alternate hypothesis.
- (b) Type I Error and Type II Error.
- (b) What is "F" ratio ? Describe the method of calculating it and write its application in biological science.

**OR**

- 3** Answer the following : **7×2=14**
- (a) What is sequence alignment ? Distinguish between pairwise and multiple sequence alignment with significance in molecular biology.
- (b) Discuss applications of bioinformatics in molecular biology and medicine / drug designing.
- 4** Answer the following : **7×2=14**
- (a) Write notes on Structural modeling of Proteins.
- (b) Define Transcriptomics and their importance.
- 5** Write short notes on any two of the following : **7×2=14**
- (a) Describe Chi-Square Test and their importance giving suitable example.
- (b) What is the difference between 't' test and ANOVA ? Explain Giving examples.
- (c) Write note on BLAST.
- (d) Write note on Functional Genomics.
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