Exam.Code:0041
Sub. Code: 18003

2124

B.Sc. (Hons.) Bio-Informatics
Third Semester
BIN-3004: Statistical Methods

Time allowed: 3 Hours **Max. Marks: 60**

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit. Use of simple non-programmable calculator is allowed.*

x-x-x

1.(a) Define the concept of correlation with examples.

(b) Write the ANOVA Table for two way classification.

(c) Critical Region and Level of Significance.

(d) Explain the layout of randomized block design.

(e) What do you mean by non-parametric tests?

(f) Discuss about Yates correction. (6×2=12)

Unit-I

2. (a) What is rank correlation coefficient? Deduce Spearman's formula for rank correlation coefficient. How should the formula be modified for tied ranks?

(b) Consider the following data:

X	60	61	62	62	63	64	65	67
Y	62	63	60	63	67	67	64	66

Calculate Karl Parson's Coefficient of correlation between X and Y. (6+6)

3. (a) State and prove the important properties of regression coefficients.

(b) From the following data:

X	18	20	21	17	19	20	24	22
Y	16	17	14	19	20	17	18	21

Obtain the line of regression of Y on X and estimate the value of Y when X=26. (6+6)

P.T.O.

4. (a) Describe the sampling distribution of the difference of two sample means in case of large samples, when the two populations distributed normally. Also, obtain the $100(1-\alpha)\%$ confidence interval for difference of two population means.

(b) How will you determine the sample size in case of single mean? (7+5)

Unit-II

5. (a) Define

(i) Null and Alternative Hypothesis with examples.

(ii) Explain type-I and type-II errors.

(iii) Completely randomized design (CRD).

(b) Develop a test procedure for testing the equality of two means for two normal populations, where population variances are equal and unknown. (6+6)

6. (a) A random sample of 10 boys had the following I.Q.'s: 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumption of a population mean I.Q. of 100? Find a reasonable range in which most of the mean I.Q. values of samples of 10 boys lie (Given $\alpha = 5\%$).

(b) Discuss in detail (i) Sign test and (ii) Mann-Whitney test. (6+6)

7. (a) Explain one-way ANOVA, its mathematical model and statistical analysis with ANOVA table.

(b) Explain Chi-square test of goodness of fit. (7+5)

x-x-x