

Exam.Code:0041
Sub. Code: 18003

2125
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. 1 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 term correlation by giving real life examples.
(b) What do you mean by confidence interval?
(c) Write the formula of standard error of difference of two proportions.
(d) Differentiate between null and alternative hypothesis.
(e) Mention the difference between parametric and non-parametric tests.
(f) If the two variable X and Y are negatively correlated then what is the range of Karl Pearson's correlation coefficient?
(g) Write Spearman's formula for rank correlation coefficient. (2+2+2+2+2+1+1)

Unit-I

2. (a) Explain the Karl Pearson's correlation coefficient and write its properties.
(b) Calculate the Karl Pearson's Coefficient of correlation of the following data:

X:	1	2	3	4	5
Y:	10	20	30	50	40

(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=25. (6, 6)

P.T.O.

(2)

4. (a) Find 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 means.
- (b) How will you determine the sample size in case of single proportion? (6, 6)

Unit-II

5.a) Define the followings:

- (i) one-tailed and two-tailed tests with examples.
- (ii) Chi-square test of goodness of fit.

b) Below are given the gain in weights (in kgs.) of pigs fed on two diets A and B.

Gain in weight

Diet A : 25, 32, 30, 34, 24, 14, 32, 24, 30, 31, 35, 25

Diet-B : 44, 34, 22, 10, 47, 31, 40, 30, 32, 35, 18, 21, 35, 29, 22

Test. if the two diets differ significantly as regards their effect on increase in weight
(Given $\alpha = 5\%$). (6, 6)

6. (a) Develop a test procedure for testing the equality of two populations proportions, when the two populations distributed normally.

(b) Discuss Mann-Whitney test procedure for testing the equality of two medians. (6, 6)

7. (a) Define Randomized Block Design (RBD) and write its advantages and disadvantages.

(b) Explain ANOVA one-way classification in detail. (6+6)