Exam.Code:0440
Sub. Code: 3497

2072

M.Sc. (Bio-Informatics) Second Semester

MBIN-8007: Statistics and Probability

Time allowed: 3 Hours

Max. Marks: 60

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting atleast one question from each Unit. Use of simple calculator is allowed.*

x-x-x

1. Answer the following:-

   i) Differentiate between Attribute and Variable.
   ii) How can we construct a frequency polygon?
   iii) State the conditional probability theorem.
   iv) Define linear regression with examples.
   v) Under what conditions, the binomial distribution tends to Poisson distribution?
   vi) Define type-I and Type-II errors.
   vii) Differentiate between population and sample.
   viii) Write ANOVA table for two-way classification. $\left(8\times1\frac{1}{2}\right)$

Unit-I

2(a). Explain the four measurement scales with suitable examples.

(b). Write the procedure to construct an Ogive or cumulative frequency curve.

(c). Compare mean, median and mode. (5, 4, 3)

3(a). Define the followings:

   i) Quartile deviation and Standard deviation.
   ii) Kurtosis and how can it be measured?
   iii) Box and Whisker plot.

(b). Find mean, median, mode and standard deviation of the following data:

Class:	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency:	13	17	19	26	23	15	11

(6, 6)

P.T.O.

Unit-II

4(a). Define the followings:

i) Independent and favorable events with examples.
ii) Scatter diagram.
iii) State Baye's Theorem.
iv) Probability mass function and probability density function.

(b). Define expectation of a random variable with suitable example and how can we find variance of a random variable with the help of expectation. (8, 4)

5(a). Explain the properties of regression coefficients.

(b). Find the Karl Pearson's coefficient of correlation and Spearman's rank correlation coefficient of the following data:

X:	50	52	56	55	58	51	54
Y:	52	49	58	53	56	57	51

(4, 8)

Unit-III

6(a). Define binomial distribution and find its mean and variance. Under what conditions it can be approximated to a normal distribution.

(b). Explain chi-square goodness of fit problem and also write its testing procedure.

(6, 6)

7(a). Explain Mann Whitney test for testing a non-parametric problem.

(b). Write the testing procedure to test the significance of difference between two means when the population variances are unknown and equal. (6, 6)

x-x-x