9/5/2023 (Evening)

Exam.Code:0440
Sub. Code: 3497

2053

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.

1. Answer the following:-
   i) List the essential components of a statistical table.
   ii) Define random variable with suitable example.
   iii) Write down the assumptions to apply Binomial distribution.
   iv) Define deciles and percentiles.
   v) State conditional probability with example.
   vi) Write ANOVA table for one-way classification.
   vii) Differentiate between null and alternative hypothesis.
   viii) Define expectation of a random variable. $(8\times 1\frac{1}{2})$

Unit-I

2 (a): What do you understand by dispersion? List various measures of dispersion and compare any two of them.

(b): Calculate the median, mode and standard deviation for the following data:

X:	30-40	40-50	50-60	60-70	70-80	80-90
F:	15	18	26	20	16	12

(6, 6)

3 (a): What do you understand by cumulative frequency curves or Ogive curves and explain how would you locate graphically the median?

(b): Explain the following with examples.
(i) Nominal and Ratio scale.
(ii) Attribute and Variable.
(iii) Skewness and Kurtosis. (6, 6)

P.T.O.

Unit-II

4(a): Two dice are tossed. Find the probability of getting 'an even number on the first die or a total of 10'.

(b):Explain the followings:
(i) Baye's Theorem,
(ii) Probability mass function,
(iii) Scatter Diagram,
(iv) Rank Correlation. (6, 6)

5(a): Define Linear regression and discuss the properties of regression coefficients.

(b): Consider the following data:

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

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

Unit-III

6(a): Define Binomial distribution, write its important properties. Under what conditions it can be approximated to a Poisson distribution?

(b): Discuss the followings:
(i) Chi-Square test of goodness of fit,
(ii) Important properties of Normal distribution,
(iii) Type-I and Type-II errors (6, 6)

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

(b): Discuss Wilcoxon signed-rank non-parametric test. (6, 6)

x-x-x