Code No: 50123/R19

FACULTY OF SCIENCE

B.Sc. **(CBCS)** II-Year (III-Semester) Regular Examinations, Dec-2022/Jan-2023

Statistics-III

(Statistical Methods & Theory of Estimation)

Time: 3 Hours Max Marks: 80

SECTION-A (4x5=20 Marks)

Answer any Four questions from the following

1. Define scattered diagram and briefly explain about it.
2. Explain about the independence of attributes.
3. Explain parameter and statistic.
4. Define interval estimator and confidence intervals.
5. State the **F**-distribution and it's two properties.
6. Properties of correlation coefficient for two variables.

SECTION-B (4x15=60 Marks)

Answer all the following questions

7. (a) i) Obtain the formula for spearman's rank correlation coefficient.
   ii) State the normal equations for fitting of a straight line y=a+bx (using least squares method)

   (OR)

   (b) i) Derive the regression line of Y on X.
   ii) Write any four properties of regression coefficients.

8. (a) i) Define multiple correlation with an example for three variables and state the its formula $R_{1.23}$, $R_{2.31}$ and $R_{3.12}$.
   ii) if $r_{12}=0.7 \quad r_{13}=0.61 \; r_{23}=0.4$
   Find the values of $R_{1.23}$, $R_{2.31}$ and $R_{3.12}$

   (OR)

   (b) i) Derive the relationship between Yule's coefficient of association and coefficient of colligation.

   ii) Examine the consistency of the following data
   N=1000, (A)=600 , (B)=500, (AB)=50.

9. (a) Write a short note on properties of good estimation.

   (OR)

   (b) Define t-distribution. Establish relationship between F and t- distribution.

10. (a) State the properties of maximum likelihood estimator.

    (OR)

    (b) Obtain MLE for θ in exponential distribution based on a random sample $X_1, X_2, X_3 \ldots\ldots\ldots X_n$ from the same.