

Faculty of Sciences
B.Sc. (Statistics) II-Year, CBCS-III Semester Examinations 2018-19
PAPER-III: STATISTICAL METHODS

Time: 3 Hours

Max Marks: 80

Section-A

- I. Answer any five of the following questions (5x4=20 Marks)
1. Explain Bivariate data and Scatter diagram.
 2. Between three variables x_1, x_2 and x_3 simple Correlation Co-efficients are given:
 $r_{12} = 0.59; r_{13} = 0.46; \text{ and } r_{23} = 0.77$
 Compute the Partial Correlation Co-efficient $r_{12.3}$ and Multiple Correlation Co-efficient $R_{1.23}$
 3. Explain the method of fitting a power curve of your choice.
 4. Define Consistency in attributes and write Conditions for consistency involvement of three variables.
 5. Obtain the relation between t and F distributions.
 6. Define i) Unbiasedness ii) Consistency.
 7. If T is an unbiased estimator for θ . Then show that T^2 is biased estimator for θ^2 .
 8. Give the statement of Neyman's Factorization theorem.

Section-B

- II. Answer the following questions (4x15=60 Marks)
9. (a) Define "Correlation Ratio", and write its properties and also show that Correlation Co-efficient is independent of change of origin and scale.
 If X and Y are uncorrelated, Can we say that X and Y are independent.
 (OR)
 (b) Define the term Regression and Regression Co-efficients. State and prove its 5 properties.
 - 10.(a) Define Co-efficient of Contingency. Explain the procedure to fit a second degree parabola of the type $Y = a + bx + cx^2$ to a set of n points (x_i, y_i) .
 (OR)
 (b) Write the conditions for the consistency involvement of two attributes. Define Yule's Co-efficient of association (Q) and Yule's Co-efficient of Colligation (Y) and obtain the relation between them.
 - 11.(a) Define the terms:
 - i) Population.
 - ii) Parameter.
 - iii) Statistic.
 - iv) Sampling distribution.
 - v) Standard Error.
 (OR)
 (b) Define χ^2 distribution, and write its 5 properties. Obtain the relation between F and χ^2 distributions.
 - 12.(a) Discuss various criterion of a good estimator.
 (OR)
 (b) Define MVUE and also explain Maximum Likelihood method of estimation and write its 5 properties of MLE.
