Code No. 8075

FACULTY OF SCIENCE

B.Sc. III – Semester (CBCS) Examination, November / December 2019

Subject: Statistics
Statistical Methods
Paper – III (DSC)

1209 18 467025

Time: 3 Hours **Max.Marks: 80**

PART – A (5x4 = 20 Marks)
(Short Answer Type)

Note: Answer any FIVE of the following questions.

1 What is scatter diagram? Show different types of correlations using scatter diagram.
2 Explain why two lines of regression exist.
3 Define partial association. Give the formulae for computation of partial association.
4 Define:
a) Attributes b) Positive Association
c) Negative association d) Independence of attributes
5 Define a) Unbiasedness b) Consistency
Give one example for each.
6 Define sampling distribution and standard error
7 Write about Interval estimation.
8 Explain estimation by method of moments.

PART – B (4x15 = 60 Marks)
(Essay Answer Type)

Note: Answer all questions.

9 a) Derive the normal equations for fitting of a curve of the form:
i) $Y = ab^x$ ii) $Y = ae^{bx}$

OR

b) Derive the regression equation of X on Y.

10 a) i) Define multiple correlation for three variables and give the formulae for the same.
ii) Calculate $R_{1.23}$, $R_{2.13}$ and $R_{3.12}$ if $r_{12} = 0.6$; $r_{13} = 0.7$; $r_{23} = 0.65$

OR

b) i) Define consistency of data. Give the conditions for consistency of three attributes.
ii) If (A) = 450, (B) = 650, (AB) = 310, N = 1000. Find whether A and B are independent or associated.

11 a) Define Chi-square Distribution. Derive the relationship between F and Chi-square distributions.

OR

b) Let $x_1, x_2, \ldots, x_n$ be a random sample from normal population with mean μ and variance σ^2. Show that sample mean is an unbiased estimator of population mean and sample variance is not an unbiased estimator of population variance.

12 a) State Neyman Factorization Theorem. Find a sufficient estimator to the parameter λ in Poisson distribution based on a random sample of size 'n' from the same.

OR

b) Explain the method of maximum likelihood estimation. Obtain MLE for θ in exponential distribution based on a random sample $x_1, x_2, \ldots, x_n$ from the same.

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