



DCST101

Reg. No.

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I Semester B.Sc. (NEP) Degree Examination, February/March - 2023

STATISTICS - I

Descriptive Statistics - I

(2021 - Freshers and Repeaters)



Time : 2½ Hours

Maximum Marks : 60

**Instructions to Candidates:**

1. Answer **any EIGHT** sub - divisions from Section A and **Three** questions from Section -B.
2. Scientific **calculators** are allowed.

**SECTION - A**Answer **any EIGHT** sub-divisions from the following.

(8×3=24)

1.
  - a) Distinguish between primary data and secondary data. Give an example for each.
  - b) Distinguish between classification and tabulation of data.
  - c) Explain different parts of a statistical data.
  - d) Show that Arithmetic mean (A.M) is not independent of change of origin and scale.
  - e) Define raw and central moments. Write moment co-efficient of skewness.
  - f) What is scatter diagram? Draw neat sketches to show perfect positive and negative correlation.
  - g) Define Karl Pearson's co-efficient of correlation and show that it is independent of both change of origin and scale.
  - h) Define co-efficient of determination and give its interpretation.
  - i) Write the properties of regression co-efficients.
  - j) Establish the relationship between multiple and partial correlation co-efficients.

[P.T.O.]



## SECTION - B

Answer any THREE questions.

(3×12=36)

2. a) Describe the various steps that are taken in conducting a statistical survey.  
b) What is a questionnaire? Mention the precautions necessary in drafting a good questionnaire.  
c) Explain the construction of Histogram and frequency curve. (4+4+4)
3. a) State the properties of arithmetic mean and prove any one of them.  
b) Obtain an expression for combined geometric mean.  
c) Show that standard deviation (S.D) is not less than mean deviation from mean M.D.  $(\bar{X})$ . (4+4+4)
4. a) Derive the expression for combined variance.  
b) With usual notations, show that  $\beta_2 \geq \beta_1$  where  $\beta_1$  and  $\beta_2$  are moment co-efficients of skewness and Kurtosis respectively.  
c) What is skewness? Explain different types of skewness with sketches. (5+4+3)
5. a) Obtain limits for Spearman's rank correlation co-efficient.  
b) What is curve fitting? Obtain the normal equations for fitting a curve of the type  $y = a + bx$ .  
c) Distinguish between correlation and regression. (5+5+2)
6. a) What is contingency table?  
b) With usual notations prove that  $r_{12}^2 + r_{13}^2 + R_{23}^2 = 1 + 2r_{12}r_{13}r_{23}$ .  
c) With usual notations prove that  $1 - R_{1.23}^2 = (1 - r_{12}^2)(1 - r_{13.2}^2)$ . (2+5+5)
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