

2021

STATISTICS — GENERAL

Paper : GE/CC-1

(Descriptive Statistics)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer **any five** of the following : 2×5
- (a) Distinguish between nominal and ordinal data with examples.
 - (b) Compute a suitable measure of central tendency for the data {1, 2, 3, 4, 5, 100}.
 - (c) Find the GM of a set of observations for which AM = 2 and SD = 0.
 - (d) If for a symmetrical distribution $Q_1 = 20$, $Q_3 = 36$, find the median.
 - (e) Give an example where quartile deviation is an appropriate measure of dispersion.
 - (f) Mention the type of kurtosis of a frequency distribution when $b_2 = 1.5$.
 - (g) When are the two regression lines identical?
 - (h) If (3, 7), (5, 5), (7, 3), (2, 8) and (8, 2) are the 5 pairs of observations on two variables (x, y), find the value of r_{xy} .
2. Answer **any two** of the following : 5×2
- (a) For a set of observations show that $|\text{Mean} - \text{Median}| \leq \text{SD}$.
 - (b) Show that the coefficients of regression are independent of change of origin but depend on change of scale of variables.
 - (c) Derive the formula for Spearman's rank correlation coefficient in case of no tie.
3. Answer **any three** of the following :
- (a) Explain, with examples, frequency type and non-frequency type data. What is meant by median of a distribution? How do you obtain the median for a grouped data? If a variable x has median 'm' what will be the median of the variable $y = e^x$? 5+2+2+1
 - (b) What do you mean by dispersion of a data set? Suggest a suitable measure of dispersion to compare the heights of two different ethnic groups. Derive a formula for variance based on the mutual difference of the observations. 2+4+4
 - (c) Express r -th order central moment in terms of raw moments upto order r . What is meant by skewness of a distribution? Suggest a measure of skewness based on quartiles. Find the limits of this measure. 5+2+1+2

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- (d) Applying the least square method derive the regression line of y on x on the basis of n pairs of observations on two variables x and y . If θ is the angle between two regression lines find an expression for θ and interpret the case when $\theta = \pi/2$. 5+5
- (e) Give a real life example of trivariate data. What is multiple correlation? Express multiple correlation coefficient in terms of total and partial correlation coefficients for three variables. 2+2+6
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