

Day : Thursday  
Date : 02/05/2019

S-2019-1128

Time : 12.00 NOON TO 02.00 PM  
Max. Marks : 40.

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate full marks.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Use of logarithmic tables, statistical table and pocket **CALCULATOR** are allowed.

**Q.1** Attempt any **TWO** of the following: (10)

- a) Describe the scope of statistics in industry and agriculture.
- b) Draw a histogram for the following frequency distribution. Hence find mode graphically.

I.Q.	150-155	155-160	160-165	165-170	170-175	175-180	180-185
Frequency	2	17	29	22	15	7	3

- c) The daily expenditure of 100 families is given below:

Expenditure	19.5 – 29.5	29.5 – 39.5	39.5 – 49.5	49.5 – 59.5	59.5 – 69.5
No. of families	14	--	27	--	15

If the mode of the distribution is 43.5, find the missing frequencies.

**Q.2** Attempt any **TWO** of the following: (10)

- a) Explain the concept of dispersion and state any three measures of dispersion.
- b) If  $\mu'_1 = 1, \mu'_2 = 4, \mu'_3 = 10$ , compute  $\gamma_1$  and interpret the result.
- c) If  $\sigma_x = \sigma_y, \text{corr}(X, Y) = r$ , then show that  $\text{corr}(X, X+Y) = \sqrt{\frac{1+r}{2}}$ .

**Q.3** Attempt any **TWO** of the following: (10)

- a) Explain the term correlation. Discuss types of correlation with illustration.
- b) You are given the following information on variables  
 $n = 10, \bar{x} = 5.5, \bar{y} = 4, \sum_{i=1}^{10} x_i^2 = 385, \sum_{i=1}^{10} y_i^2 = 192, \sum_{i=1}^{10} x_i y_i = 185$ ,  
 (i) Fit the regression line of Y on X.      (ii) Estimate Y when X = 5.
- c) For a moderately asymmetric distribution the arithmetic mean, median and Karl Pearson's coefficient of skewness are 86, 80, 0.42 respectively. Find the mode and coefficient of variation.

**Q.4** Attempt any **FIVE** of the following: (10)

- a) Explain inclusive method of classification.
- b) State any two merits and demerits of median.
- c) Define variance.
- d) If  $\beta_2 = 2.6$  and  $\mu_2 = 1.2$ , find  $\mu_4$ .
- e) If  $n = 10$  and  $\sum_{i=1}^{10} \left( \frac{x_i - 5}{5} \right) = 18$ , find mean of X.
- f) If  $r = 1$ , then comment about the relation between X and Y.
- g) If  $b_{yx} = 0.4, b_{xy} = 1.6$  then find r.

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