2017

STATISTICS

[Gen. Elective]

(CBCS)

[First Semester]

PAPER — GE1T

Full Marks : 40

Time : 2 hours

The figures in the right hand margin indicate marks

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

Illustrate the answers wherever necessary

GROUP – A

1. Answer any *five* questions :   2 × 5

    (*a*) What is coefficient of variation ?

    (*b*) Mention the empirical relationship between mean, median and mode.

(c) Define ordinal data with example.

(d) Define Rank correlation.

(e) What is seatter diagram ?

(f) Define relative frequency and frequency density.

(g) Prove that

$$GM = \sqrt{AM \times HM}$$

for any two abservations x_1 and x_2.

(h) Define contingency χ^2.

GROUP – B

Answer any **four** questions : 5×4

2. Suppose there are two groups of data. There are n_1 observations in 1st group and m_1 and s_1 are the mean and standard deviation for this group respectively. The 2nd group is of size n_2 and m_2 and s_2 are the mean standard deviation for the group respectively. Deduce the formula for

composite standard deviation in terms of group sizes, means, standard deviations and their composite mean.

3. Define Chi-square measure for association. What are its defects ? Mention two measures to remove these defects.

4. Derive the mean and variance of 1st n natural numbers.

5. Define r^{th} order central moment. Express r^{th} order central moment in terms of raw moments.

6. Explain the ordinary least square method for estimating regression coefficients.

7. Define correlation coefficient and two regression coefficients. Prove that correlation coefficient is the glometric mean of two regression co-efficients.

GROUP – C

*Answer any **one** question :* 10×1

8. What is scatter diagram ? Define Pearson's

product moment correlation coefficient. How are the scatter diagram for the following values of correlation coefficient (r) :

(i) $r = 1$
(ii) $r = -1$
(iii) $r = 0$.

Also show that, $-1 <= r <= 1$

9. What do you mean by skewness and Kurtosis of a frequency distribution ? Define b_1 and b_2 measures for skewness and kurtosis. Show that $b_2 > b_1 + 1$.

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