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Total No. of Questions : 07] [Total No. of Pages : 02

Paper ID [C0216]

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BBA (Sem. - 3rd)

BUSINESS STATISTICS (BB - 304)

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.

Section - A

Q1) *(10 × 2 = 20)*

a) Define quantitative classification.

b) Define multiple bar diagrams.

c) Show that weighted arithmetic mean of first 'n' natural numbers whose weights are equal to corresponding numbers is equal to $2n + 1$ /3.

d) To 5, 8, 6 and 1 occur with frequencies 3, 2, 4 and 1 respectively. Find the geometric mean

e) Write the merits of measures of Dispersion.

f) To the standard deviation of a set of observations is zero, then all observations are equal. Comment.

g) Define linear and non-linear correlation.

h) The following sums have been obtained from 100 observation pairs : $\Sigma x = 12{,}500$, $\Sigma x^2 = 15{,}85{,}000$, $\Sigma y = 8{,}000$, $\Sigma y^2 = 6{,}48{,}100$, $\Sigma xy = 10{,}07{,}425$. Find the regression of y on x.

i) Define Paasche's Price index number.

j) Define Binomial distribution.

Section - B

(4 × 10 = 40)

Q2) Find the missing frequencies f_1, f_2 in the following distribution. It is given that median of distribution is 41 and the total number of observations is 82.

Class Interval	10-20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	Total
Frequency	10	f_1	15	20	f_2	11	82

Also calculate Q_3 and D_7 for the complete frequency distribution.

Q3) The variable x takes only two values x_1 and x_2 with frequencies f_1 and f_2. If 's' be S.D. of x, then show that $s^2 = f_1 f_2 \left[\frac{x_1 - x_2}{f_1 + f_2}\right]^2$

Q4) Ten competitors in a beauty contest were ranked by three judges in the following order.

First Judge	1	6	5	10	3	2	4	9	7	8
Second Judge	3	5	8	4	7	10	2	1	6	9
Third Judge	6	4	9	8	1	2	3	10	5	7

Use the method of rank correlation to determine which pair of judges has the nearest approach to common tastes in beauty.

Q5) Sample observations obtained to study the relation between the measure of waist and the length of trousers is as under

Measure of Waist (in cm)	70	72.5	75	77.5	80	82.5	85	87.5	90	92.5
Length of Trousers (in cm)	100	102	100	95	105	110	95	98	100	105

Obtain the line of best fit of length of trousers on measurement of the waist. Calculate the coefficient of determination.

Q6) Prove that whereas Fisher's Ideal index number satisfy time reversal test and factor reversal test Laspeyre's index number and Paasche's index number do not satisfy these tests.

Q7) Define Normal and Poisson distributions in detail.