RAN-19110001030100001

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B.C.A. (Sem.-III) Examination

October / November - 2019

Statistical Methods: - 301

Time: 3 Hours] **[Total Marks: 70**

સૂચના : / Instructions

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. **Fill up strictly the details of ☛ signs on your answer book** Name of the Examination: ☛ **B.C.A. (Sem.-III)** Name of the Subject : ☛ **Statistical Methods: - 301** Subject Code No.: **1911000103010001**	Seat No.: Student's Signature

(1) All questions are compulsory.

(2) Figures to the right indicate marks of corresponding question.

(3) Follow usual notations.

(4) Use of non-programmable scientific calculator is allowed.

Q.1] Do as directed: (Any seven) **[14]**

1. Find Geometric mean of 3, 6, 24 and 48.
2. Find the range and coefficient of range of the data 3, 7, 2, 5, 8, 1.
3. $b_{yx} = 1.17$, $S_x^2 : S_y^2 = 9:81$ then find r and b_{xy}
4. If n = 10, $\Sigma x = 60$, $\Sigma x^2 = 1000$, then find standard deviation.
5. What is the standard deviation of 5, 5, 5, 5, and 5.
6. Compute Median for the following data:
   4, 6, 5, 8,12, 7,10, 5, 15, 9, 10, 11.
7. If two variables have perfect positive correlation then r = _____ .

8. If the sums of squares of rank differences of 7 pairs are 74 then find co efficient of correlation.

9. If r_1 and r_2 are two regression coefficients, then signs of r_1 and r_2 depend on _____ .

10. If $y = x + 1$ and $x = 3y - 7$ are two lines of regression, then $\bar{x}$ = _____ $\bar{y}$ = _____ and r =_____ .

Q.2] Attempt any two: **[14]**

1) Mean of the following frequency distribution is 18.1. Find the missing frequency.

Class	5-10	10-15	15-20	20-25	25-30	30-35
Frequency	11	20	35	20	?	6

2) Calculate Quartile deviation and coefficient of Quartile deviation:

Class	17-19	20-25	26-35	36-40	41-50	51-55	56-60	61-70
Frequency	9	16	12	26	14	12	6	5

3) The length of time taken by each of 18 workers to complete a specific task was observed to be the following:

Time (mins.)	5-9	10-14	15-19	20-24	25-29
No. of workers	3	8	4	2	1

Calculate a median time.

Q.3] Attempt any two: **[14]**

1) Find combined standard deviation of the following data:

No. of observation	Group A	Group B
	20	10
Mean	22	16
SD	$\sqrt{6}$	$\sqrt{2}$

2) Find mean, standard deviation and coefficient of variation for the following data:

Xi	1	2	3	4	5	6	7	8	9
Fi	92	49	52	82	102	60	35	24	4

3) The mean and the standard deviation of a sample of 10 sizes were found to be 9.5 and 2.5 respectively. Later on, an additional observation became available. This was 15.0 and was included in the original sample. Find the mean and standard deviation of 11 observations.

Q.4] Attempt any two; [14]

1) Calculate Correlation Co-efficient:

Production	100	102	104	107	105	112	103	99
No. of unemployed	15	12	13	11	12	12	19	26

2) Calculate correlation coefficient using the following data:

$n = 10$, $\Sigma x = 650$, Σy-660, $\Sigma(x-65)^2 = 15398$, $\Sigma(y-66)^2 = 12224$, $\Sigma(x-65)(y-66) = 12704$

3) For 10 pairs of observations on (X,Y) we get $\overline{X} = 12$, $\overline{Y} = 15$, $Sx = 3$, $S_y = 4$, $r = 0.5$.

Later on, it was noticed that one of the pairs was wrongly taken as (16, 18) instead of (15, 13). Find the correct value of correlation coefficient.

Q.5] Attempt any two: [14]

1) From the following data, find the two regression equations.

X	4	5	6	7	1	2	3
Y	6	5	6	5	2	4	7

2) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp. (x) (in crores)	Sales (y) (in crores)
Mean	20	120
S.D.	5	25

Correlation Coefficient = 0.8. Compute the two regression lines.

3) Obtain the regression line of y on x using the following data:

$n = 7$, $\Sigma x = 21$, $\Sigma y = 20$, $\Sigma x^2 = 91$, $\Sigma xy = 74$