1911000103010001

**BCA S.Y. (Sem-III) EXAMINATION**

**March 2020**

**Statistical Methods (301)**

**Seat No:** | | | | | | |

**Student's Signature**

**[Time: Three Hours]** **[Max.Marks: 70]**

N.B
1. All questions are compulsory.
2. Figures to the right indicate marks of corresponding question.
3. Follow usual notations.
4. Use of nonprogrammable scientific calculator is allowed.

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

1. Find Arithmetic Mean of 13, 16, 24, 48.
2. Define: Mean Deviation
3. A regression equation is given by $X + 5Y = 10$, if $X = 5$ then find Y.
4. Value of correlation coefficient of two variables lies between _____ and _____.
5. Find the variance of the following data: 8, 9, 12, 18, 15.
6. What is Mode?
7. If $r_{xy} = -0.84$ then $x_{yx}$ =?
8. Value of $r^2$ lies between _____ and _____.
9. State the formulas to find Range and Quartile deviation.
10. The mode of the numbers 7, 7, 7, 9, 10, 11, 11, 11, 12 is _____

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 Median for following data:

| Class | 10-19 | 20-29 | 30-39 | 40-49 | 50-59 | 60-69 |
|---|---|---|---|---|---|---|
| Frequency | 12 | 19 | 31 | 27 | 16 | 8 |

3) Find the mode of the following data:

| Class | 93-97 | 98-102 | 103-107 | 108-112 | 113-117 | 118-122 | 123-127 | 128-132 |
|---|---|---|---|---|---|---|---|---|
| Frequency | 2 | 5 | 12 | 17 | 14 | 6 | 3 | 1 |

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

1) 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.

2) Calculate Mean Deviation.

| Age groups (years) | 15-19 | 19-23 | 23-27 | 27-31 | 31-35 | 35-39 |
|---|---|---|---|---|---|---|
| No. of grooms | 8 | 59 | 47 | 23 | 6 | 4 |

3) Calculate the Quartile deviation for the following distribution.

| Age (years) | Less than 1 | 1-5 | 5-10 | 10-15 | 15-25 | 25-35 | 35-45 | 45-65 | 65 and above |
|---|---|---|---|---|---|---|---|---|---|
| Frequency | 15 | 113 | 122 | 91 | 229 | 132 | 65 | 46 | 15 |

Q.4 Attempt **any two:** 14

1) Eight competitors were ranked in a beauty contest by 3 judges as follows. Use rank correlation coefficient to determine which of the two judges have similar approach to common tastes and liking for beauty.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Judge A | 2 | 4 | 3 | 8 | 1 | 5 | 7 | 6 |
| Judge B | 5 | 3 | 2 | 7 | 1 | 8 | 6 | 4 |
| Judge C | 3 | 1 | 5 | 4 | 2 | 6 | 8 | 7 |

2) Calculate the coefficient of correlation from the following data:

| x | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
|---|---|---|---|---|---|---|---|
| y | 30 | 50 | 60 | 80 | 100 | 110 | 130 |

3) Coefficient of rank correlation between X and Y obtained as -0.05 and the sum of the squares of the difference in ranks in 126. Find the number of observations.

Q.5 Attempt **any two:** 14

1) In a partially destroyed laboratory record of an analysis of regression data, the following results only are legible: Variance of X = 9
Regression equations: $18X - 10Y + 66 = 0$ and $40X - 18Y = 214$
Find
   i) The mean value of X and Y
   ii) Co-efficient of correlation between X and Y
   iii) Standard deviation of Y.

2) With the 10 observations on price (x) and supply (y), the following data were obtained:
$\Sigma x = 130, \Sigma y = 220, \Sigma x^2 = 2288, \Sigma y^2 = 5506, \Sigma xy = 3467$
Obtain the line of y on x and estimate the supply when price is 16.

3) 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 |

Given that Correlation Coefficient = 0.8 then compute the two regression lines.