CS/BBA(N)/Odd/SEM-1/BBA(N)-103/2018-19

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## Paper Code : BBA(N)-103

### FUNDAMENTALS OF STATISTICS

*Time Allotted*: 3 Hours

*Full Marks*: 70

*The figures in the margin indicate full marks.*
*Candidates are required to give their answers in their own words*
*as far as practicable.*

### Group – A
### (Multiple Choice Type Questions)

1. Choose the correct alternatives for *any ten* of the following: $1\times10=10$

   (i) Find range:

   | $x_i$ | 20 | 30 | 10 | 15 | 5 | 24 |
   |-------|----|----|----|----|---|----|

   (a) 20

   (b) 25

   (c) 30

   (d) None of these

   (ii) The value of 1st central moment is

   (a) 1

   (b) 0

   (c) 2

   (d) 3

   (iii) If $r_{xy} = 0.6$, cov$(x, y) = 12$ and sd$(x) = 5$, find sd$(y)$.

   (a) 3

   (b) 4

   (c) 5

   (d) None of these

   (iv) For any frequency distribution $Q_1 = 10, Q_2 = 25$ and $Q_3 = 35$. Find the value of QD.

   (a) 1.32

   (b) 13.5

   (c) 2.25

   (d) None of these

   (v) $r_{xy}$ lies between

   (a) −1, 1

   (b) 0, 1

   (c) −1, 0

   (d) None of these

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**Turn Over**

(vi) Find Mean:

| $x_i$ | 150 | 200 | 300 | 450 | 500 |
|---|---|---|---|---|---|

(a) 300  (b) 450

(c) 320  (d) None of these

(vii) Variance depends on

(a) origin  (b) scale

(c) Both (a) and (b)  (d) None of these

(viii) Find the value of $x$ when A.M. of 7, $x - 2$ and $x + 3$ is 9.

(a) 11  (b) 10

(c) 9  (d) None of these

(ix) If all the value of the variable is equal then sd is

(a) 1  (b) 0

(c) equal value  (d) None of these

(x) The highest point of the frequency curve is

(a) mean  (b) median

(c) mode  (d) None of these

(xi) In the $y = a + bx$, the regression equation $b$ is

(a) slope  (b) variable

(c) intercept  (d) None of these

(xii) The mode of the data— 2, 3, 4, 2, 2, 3, 4, 2, 2, 2, 3, 4, 4, 5, 2, 5 is

(a) 3  (b) 2

(c) 5  (d) 4

## Group – B
### (Short Answer Type Questions)
**Answer *any three* of the following questions.**  5×3=15

2. Calculate A.M. and S.D. for the following table:

| $x$ | 5 | 10 | 12 | 16 | 21 |
|---|---|---|---|---|---|
| $y$ | 2 | 5 | 7 | 4 | 2 |

3. Construct a Pie Chart from the following data:

| Countries | USA | India | Japan | UK | Brazil |
|---|---|---|---|---|---|
| Cotton exported (in tones) | 650 | 415 | 875 | 400 | 245 |

4. Find the missing frequency if Median is 413.11:

| Value | 300–325 | 325–350 | 350–375 | 375–400 | 400–425 | 425–450 | 450–475 | 475–500 | Total |
|-------|---------|---------|---------|---------|---------|---------|---------|---------|-------|
| Frequency | 5 | 17 | 80 | ? | 326 | ? | 88 | 9 | 1000 |

5. Fit a straight line trend to the following data:

| Year: | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 |
|-------|------|------|------|------|------|------|------|
| Gross ex-factory Value(Rs. crores) | 672 | 824 | 967 | 1204 | 1464 | 1758 | 2057 |

and estimate the Gross ex-factory value (Rs. Crores) for the year 1975.

6. Calculate three and five yearly moving averages of the following data:

| Year: | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|
| Sales ('000 Rs.) | 5.2 | 4.9 | 5.5 | 4.9 | 5.2 | 5.7 | 5.4 | 5.8 | 5.9 | 6.0 | 5.2 | 4.8 |

### Group – C
### (Long Answer Type Questions)
**Answer *any three* of the following questions.**                    15×3=45

7. (a) Find the value of Mean, Median and Mode:

| Class | 10–20 | 20–30 | 30–40 | 40–50 | 50–60 | 60–70 |
|-------|-------|-------|-------|-------|-------|-------|
| Frequency | 5 | 10 | 14 | 8 | 5 | 2 |

(b) Find the value of Inter-quartile range:

| $X_i$ | 100 | 200 | 300 | 400 | 500 |
|-------|-----|-----|-----|-----|-----|
| $F_i$ | 18 | 25 | 35 | 14 | 10 |

10+5=15

8. (a) Find the Rank Correlation between the following data:

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9. (a) Find the value of Median and Mode diagrammatically:

| Value | 1–10 | 11–20 | 21–30 | 31–40 | 41–50 |
|---|---|---|---|---|---|
| Frequency | 10 | 25 | 38 | 15 | 9 |

(b) Arrange the data in a Frequency Distribution table. Also find class mark, relative frequency and cumulative frequency.

| 12 | 15 | 17 | 25 | 36 | 38 | 26 | 28 |
|---|---|---|---|---|---|---|---|
| 39 | 24 | 39 | 37 | 32 | 16 | 45 | 28 |
| 14 | 15 | 25 | 36 | 10 | 14 | 05 | 25 |
| 26 | 08 | 34 | 14 | 12 | 11 | 19 | 28 |
| 32 | 36 | 38 | 37 | 25 | 12 | 14 | 17 |
| 18 | 15 | 16 | 25 | 31 | 30 | 50 | 26 |

8+7=15

10. (a) Given: Variance of $x$ = 9, Regression Equations are $8x - 10y + 66 = 0$ and $40x - 18y = 214$.

Find:

(i) Means of $x$ and $y$

(ii) Correlation coefficient of variance

(iii) S.D. of $y$

(b) Calculate the coefficient of correlation between $x$ and $y$ from the following table:

| $x$ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $y$ | 6 | 8 | 11 | 8 | 12 |

(c) What do you understand by 'Scalar Trend' in the analysis of a time series? Explain with examples.

6+5+4=15

11. (a) Draw an Ogive from the following distributions:

| Age (in years) | 60–62 | 63–65 | 66–68 | 69–71 | 72–74 |
|---|---|---|---|---|---|
| No. of Persons | 15 | 54 | 26 | 81 | 24 |

(b) The Mean and Variance from a group of 80 observations are 63.2 and 25.93 respectively. If 60 of these observations have mean = 64.8 and S.D. = 4, find mean, S.D. of the remaining 20.

(c) Prove that the correlation coefficient $r$ lies between +1 and –1.

5+5+5=15