

2020

B.B.A.

[HONOURS]

(Business Statistics)

Paper : BBA-2.6

Full Marks : 80

Time : 4 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.*Answer **Q.No.1** and any **five** from the rest.

1. Answer any **ten** questions :  $2 \times 10 = 20$
- Distinguish between primary data and secondary data.
  - Distinguish between variable and attribute.
  - In an moderately skewed distribution, mean and median are respectively 25.6 and 26.1. What is the mode of the distribution?
  - If first quartile is 142 and semi-inter quartile range is 8. Find out third quartile and second quartile of the distribution.
  - If regression coefficient of x on y is 0.65,

and correlation coefficient is 0.78 and standard deviation of y is 4.2, what is the standard deviation of x?

- What weights are used in paasche's and haspeyre's price index numbers?
- What are the components of a Time Series data?
- What do you mean by mutually exclusive events?
- If the geometric mean of x, 4, 8 be 4, find the value of x.
- Given : Median =23, Mode=29 and Variance=100. Calculate coefficient of variation.
- Write down the regression equations of y on x and x on y.
- If two unbiased dice are tossed at a time, Write down the sample space.
- If  $b_{xy} = 0.45$  and  $b_{yx} = 0.8$ , find out the value of  $r_{xy}$ .
- Mention two uses of 'Index Number'.
- Mention any two limitations of classical definition of probability.

[Turn over]

2. Define ogive of a distribution. Find out histogram and frequency polygon of the following distribution.

<i>Class Interval</i>	30-34	35-39	40-44	45-49
<i>Frequency</i>	6	11	10	8
<i>Class Interval</i>	50-54	55-59	60-64	
<i>Frequency</i>	8	5	2	

$$2+6+4=12$$

3. a) The mean and standard deviation of marks in statistics obtained by the students of the boys' and girls' sections of class XI of a school in final examination are given below. Find the combined mean and combined standard deviation.

	Boys'	Girls'
Mean	60	50
S.D.	10	8
No. of Student	100	50

- b) Find the quartile deviation of the following distribution :

<i>Weights(kg)</i>	40-45	45-50	50-55
<i>No.of men</i>	10	22	28
<i>Weights(kg)</i>	55-60	60-65	65-70
<i>No.of men</i>	20	12	8

$$3+3+6=12$$

4. a) What are the uses of an Index Number?  
 b) Using the following data show that Fisher's Ideal Index satisfies both the time reversal and factor reversal test.

Commodity	Base Year		Current Year	
	Price (Rs.)	Quantity (Kg.)	Price (Rs.)	Quantity (Kg.)
A	10	50	12	60
B	8	30	9	32
C	6	35	7	40

$$4+8=12$$

5. a) For any two events A and B, prove that  $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ .  
 b) A card is drawn from each of two well-shuffled packs of cards. Find the probability that at least one of them is an ace.  
 c) Define axiomatic definition of probability.
- 4+4+4=12
6. Write short notes on :  
 a) Classical definition of probability  
 b) Correlation coefficient  
 c) Mean Deviation. 4+4+4=12
7. a) The arithmetic mean calculated from the following frequency distribution is known to be 67.45 inches. Find the value of 'f<sub>3</sub>'.

Height (inches)	60-62	63-65	66-68	69-71	72-74
Frequency	15	54	$f_3$	81	24

b) Calculate the median and mode of the following distribution:

Marks	No. of Students
Below 10	3
„ 20	8
„ 30	17
„ 40	20
„ 50	22

$$4+(4+4)=12$$

8. a) From the data given below, calculate the coefficient of variation : Pearson's measures of skewness = 0.42; Arithmetic mean = 86 and Median = 80.
- b) The first two moments of a distribution about the value 5 of the variable are 2 and 20. Find the mean and the variance.
- c) The arithmetic mean of a certain distribution is 5. The second and the third moments about the mean are 20 and 140 respectively. Find the third moment of the distribution about 10.

$$3+3+6=12$$

9. a) Find the coefficient of correlation from the following data:

X	65	63	67	64	68	62	70	66
Y	68	66	68	65	69	66	68	65

- b) The following data pertain to the marks in two subjects A and B.

Mean marks in A=39.5, S.D. of marks in A=10.8, Mean marks in B=47.5, S.D. marks in B=16.8

Correlation coefficient between marks in A and B=0.42 obtain the equations of the two regression lines and estimate the marks in B for a candidate who secured 50 marks in A.

$$6+(3+3)=12$$

10. a) Explain various components of Time Series.
- b) Fit a straight line trend by the least squares method to the following figures of production of a sugar factory.

Year	1969	1970	1971	1972	1973	1974	1975
Production ('000 tons)	76	87	95	81	91	96	90

Estimate the production for the year 1978.

$$4+8=12$$