BBA 3rd Semester (Honours) Examination, 2022 (CBCS)

Subject : Business Statistics

Course : BBA-3.2

Time: 4 Hours　　　　　　　　　　　　　　　　　　Full Marks: 80

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

Answer Question No. 1 *and* any five *from the rest.*

1. Answer *any ten* questions:　　　　　　　　　　　　　2×10=20

   (a) What is the classification of data?

   (b) Define 'Central Tendency'.

   (c) Define median for a grouped frequency distribution.

   (d) If the mean and median of a frequency distribution be 35 and 33 respectively, find the mode of the distribution.

   (e) Define 'Mean Absolute Deviation (MAD)'.

   (f) Find the mean deviation of the following about median:
   46, 79, 26, 85, 39, 65, 29, 59, 73

   (g) Define raw and central moments of a frequency distribution.

   (h) For a moderately skewed distribution, Mean = 172, Median = 167 and Standard Deviation = 60. Find the coefficient of skewness.

   (i) What is a Scatter Diagram?

   (j) What does regression coefficients indicate?

   (k) Find the value of the correlation coefficient r, when $b_{yx} = -0.4$ and $b_{xy} = -0.9$.

   (l) What are index numbers?

   (m) Mention any two uses of index numbers.

   (n) What do you mean by a time series?

   (o) State the merit of Least Squares Method.

2. (a) The arithmetic mean of 50 items of a series was calculated by a student as 20. However, it was later discovered that an item 25 was misread as 35. Find the correct value of mean.

   (b) Find the median and mode of the following distribution:

Age:	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60
No. of Men:	5	70	100	180	150	120	70	60

   5+7

Please Turn Over

3. (a) What are quartiles of a distribution? How do you use them to measure dispersion and skewness?

   (b) The median and mode of the following frequency distribution are known to be 27 and 26 respectively. Find the values of a and b.

Values:	0-10	10-20	20-30	30-40	40-50
Frequency:	3	a	20	12	b

   6+6

4. (a) Define (i) quartiles (ii) deciles and (iii) percentiles.

   (b) State the properties of standard deviation.

   6+6

5. (a) The first three moments of a distribution about 3 are respectively 4, 65 and 134. Find the arithmetic mean, standard deviation and moment measure of skewness of the distribution.

   (b) Write a short note on 'Measures of Kurtosis'.

   6+6

6. (a) The students obtained the following marks in Mathematics and Statistics. Calculate the rank correlation coefficient.

Marks in Mathematics	78	36	98	25	75	82	90	62	65	39
Marks in Statistics	84	51	91	60	68	62	86	58	53	47

   (b) Mention the properties of regression coefficients.

   6+6

7. (a) In order to find correlation coefficients between two variables X and Y from 12 pairs of observations, the following calculations were made:

   $\sum X = 30, \sum Y = 5, \sum X^2 = 670, \sum Y^2 = 285, \sum XY = 334$

   On subsequent verification it was found that pair $(X = 11, Y = 4)$ was copied wrongly, the correct value being $(X = 10, Y = 14)$. Find the correct value of correlation coefficient.

   (b) Find the linear regression equation of y on x from the following data:

x	1	2	3	4	5
y	3	2	5	4	6

   6+6

8. (a) Explain with example what do you mean by a price index number and write down its uses.

   (b) Find index numbers by the (i) method of aggregates and (ii) method of relatives (using arithmetic mean) from the following:

Commodity	Base Price	Current Price
Rice	35	42
Wheat	30	35
Pulse	40	38
Fish	107	120

   7+5

9. (a) Fit a linear trend equation to the following series on production:

Year:	2011	2012	2013	2014	2015	2016
Production: (Tons)	21	37	48	56	62	69

(b) With what characteristic component of time series should each of the following be associated?

   (i) An upturn in business activity

   (ii) Fire loss in a factory

   (iii) Withdrawal of bank deposits by 15th March for tax payment

   (iv) General increase in sale of T.V. sets

8+4

4×3=12

10. Write short notes on:

  (a) Frequency distribution

  (b) Spearman's Rank Correlation

  (c) Factor reversal test of index numbers

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