285/BBA   22-23/23212

B.B.A. Semester-II (Honours) Examination, 2022-23

BACHELOR OF BUSINESS ADMINISTRATION

Course ID : 23212   **Course Code : CC-04**

Course Title : Business Statistics

Time : 3 Hours   Full Marks : 80

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP-A

1. Choose the best alternative from the following options for each question: $10 \times 1 = 10$

    i) A die is rolled twice.Then the probability of getting two even numbers is

    a) $\dfrac{1}{6}$ b) $\dfrac{1}{4}$

    c) $\dfrac{1}{2}$ d) $\dfrac{5}{6}$

    e) None of these

    ii) If X is a random Variable, then find the value of $\dfrac{\text{Var}(6X)}{\text{Var}(3X)}$ is

    a) 4   b) 9

    c) $\dfrac{1}{2}$ d) 2

    e) None of these

    iii) A frequency distribution is said to be leptokurtic when

    a) $\beta_2 < 3$ b) $\beta_2 = 3$

    c) $\beta_2 > 3$ d) $\beta_2 = 2$

    e) None of these

    iv) If the living index number is 120 and the salary of a worker is RS.800, his real wage is

    a) RS. 600.00   b) RS. 660.67

    c) RS. 666.67   d) RS. 606.67

    e) None of these

    v) A Symmetric distribution has its skewness

    a) 1   b) −1

    c) 0   d) 2

    e) None of these

    vi) The most repeated(popular) Value in a data set is called

    a) Variance   b) Median

    c) Mode   d) Mean

    e) None of these

    vii) Median of the values 8,20,50,25,15,30 is

    a) 25   b) 20

    c) 22.5   d) 20.5

    e) None of these

    viii) The mean of first n natural numbers is

    a) n^2 b) $\dfrac{n+1}{2}$

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c) $\dfrac{n^2-1}{12}$ d) $\dfrac{n(n+1)}{2}$

e) None of these

ix) Lowest value of variance can be

    a) –1   b) 0

    c) 1   d) –0.1

    e) None of these

x) If n=10, $\Sigma d^2 = 280$, then the rank Correlation coefficient is

    a) 2.8   b) 0.28

    c) –0.7   d) +0.7

    e) None of these

GROUP-B

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

a) For two events A and B let $P(A)=\dfrac{1}{3}, P(B)=\dfrac{1}{4}$

and $P(A\cup B)=\dfrac{1}{2}$, then find the value of $P\left(\dfrac{A}{B}\right)$.

b) If the arithmetic mean of 2, x–6, 8, 16, 3x is 8, then the value of x is—

c) Prove that Var(ax+b) = a²Var(x).

d) What is an index number?

e) Define measure of kurtosis.

f) What are the raw and the central moments?

g) Define Regression Curve.

h) What is a cost of living index number?

i) Define Time Series.

j) What are the different measures of Seasonal Variation?

k) Define Fisher's ideal index number.

l) Find the median of 46, 79, 26, 85, 39, 65, 99, 29, 56 and 72.

m) Find the Probability of obtaining an event either an even or multiple of three in throwing a die.

n) Find the mode of a distribution whose mean is 68.2 and median is 71.3.

o) If the lines 4x+y=52 and x+y=32 be the regression lines of x on y and of y on x respectively, obtain the correlation coefficient.

GROUP-C

3. Answer any **four** questions: 5×4=20

a) Define time reversal and factor reversal tests for index number. State the uses of an index number.

b) Three coins having probabilities of head $\dfrac{1}{2}, \dfrac{2}{5}, \dfrac{3}{7}$ respectively are thrown. Find the probability of obtaining exactly one head.

c) Find the mean and standard deviation of the first n natural numbers.

d) If the lines of regression of y on x and x on y are 3x+2y=26 and 6x+y=31 respectively, find the correlation coefficient between x and y.

e) Calculate the median of the following frequency distribution:

Height in inches:	56-60	61-65	66-70	71-75	76-80
No. of Persons:	7	25	43	28	7

f) Calculate Pearson's measure of Skewness based on mean, mode and standard deviation-

x :	14.5	15.5	16.5	17.5	18.5	19.5	20.5	21.5
f :	35	40	48	100	125	87	43	22

GROUP-D

4. Answer any **three** questions.   10×3=30

i) a) Define the expectation of a random Variable X and Proved that E(aX+b)=aE(X)+b.

b) Define classical definition of probability.The frequencies of the numbers 6.4,11.6,15.6 and 9 are respectively a, a+2, a–3 and a+6. Find the value of a if their A.M is 9.752.   5+5

ii) a) Write down two merits and demerits of median.

b) Determine the trend using 4 Year moving average method from the following data :

Year :	1990	1991	1992	1993	1994	1995	1996	1997
Yearly Sale (Rs.'000) :	3.6	4.3	4.3	3.4	4.4	5.4	3.4	2.4

4+6

iii) a) Write down two merits and demerits of Mean Absolute Deviation.

b) Find the mean deviation from median and mode of the observations 15,10,6,15,12,9,3,5,4,2.

4+6

iv) a) Define correlation coefficient. Prove that correlation coefficient lies in -1 and 1.

b) Two regression lines are of the form 5x+12y=7, 3x+8y=ll. Identify the regression lines.   5+5

v) a) Calculate the mode of the following frequency distribution:

Marks :	10-19	20-29	30-39	40-49	50-59	60-69
Frequency:	8	11	15	17	17	7

b) Prove that the standard deviation of two Variate values is equal to the half of their absolute difference. 5+5

vi) a) Define scatter diagram.

b) Compute the coefficient of skewness based on quartiles from the following data:

Age(Under Year):	10	20	30	40	50	60
No. of persons:	15	32	51	78	97	109

2+8

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