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Reg. No. :

Code No. : 10667 E Sub. Code : CABA 11/
CASL 11/CAAM 11

B.B.A. (CBCS) DEGREE EXAMINATION,
NOVEMBER 2023

First Semester

Business Administration/Shipping and Logistics
Management/Aviation Management – Allied

BUSINESS STATISTICS

(For those who joined in July 2021-2022)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. What is the mean of the following numbers:
23, 45, 87, 40, 50?
- (a) 49 (b) 34
(c) 56 (d) 58

2. The range represents _____.
- (a) The lowest number
(b) The highest number
(c) The middle number
(d) The difference between the lowest and highest number
3. A scatter plot shows
- (a) Scores on one variable plotted against scores on a second variable
(b) The frequency with which values appear in the data
(c) The average value of groups of data
(d) The proportion of data falling into different categories
4. Range of the Correlation coefficient is _____.
- (a) $0 \leq r \leq 3$ (b) $-1 \leq r \leq 1$
(c) $r > 1$ (d) $0 \leq r \leq 1$
5. The Regression Lines $5X + 2Y = 16$ and $9X + 10Y = 48$ intersect at _____.
- (a) (0, 8) (b) (2, 3)
(c) (3, 2) (d) (8, 0)

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6. How many coefficients do you need to estimate in a simple linear regression model?

(a) 1 (b) 2
(c) 3 (d) 4

7. A time series consists of

(a) Short-term variations
(b) Long-term variations
(c) Irregular variations
(d) All of the above

8. The most commonly used mathematical method for measuring the trend is:

(a) Moving average method
(b) Semi average method
(c) Method of least squares
(d) None of them

9. The index number for base year is always

(a) 1000 (b) 100
(c) 200 (d) 500

10. The weights used in a quantity index are

(a) Quantity (b) Price
(c) Values (d) None of the above

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PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Identify the median of the following data set.
32, 6, 21, 10, 8, 11, 12, 36, 17, 16, 15, 18, 40,
24, 21, 23, 24, 24, 29, 16, 32, 31, 10, 30, 35,
32, 18, 39, 12, 20

Or

- (b) Find the quartile deviation and the coefficient of quartile deviation for the following given data : 23, 8, 5, 16, 33, 7, 24, 5, 30, 33, 37, 30, 9, 11, 26, 32

12. (a) What is Scatter Diagram. Explain it.

Or

- (b) Calculate the coefficient of correlation for the following data:

(1,2), (2,4), (3,8), (4,7), (5,10), (6,5), (7,14),
(8,16), (9,2), (10,20).

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[P.T.O.]

13. (a) Find the means of X and Y variables and the coefficient of correlation between them from the following two regression equations : $2Y - X - 50 = 0$, $3Y - 2X - 10 = 0$.

Or

- (b) For the following observations find the regression coefficients b_{yx} and b_{xy}
 $\{x, y\} = \{(4,2), (2,3), (3,2), (4,4), (2,4)\}$

14. (a) Fit a straight-line trend on the following data using the Least Squares Method.

Period (year):	1996	1997	1998	1999	2000	2001	2002	2003	2004
Y:	4	7	7	8	9	11	13	14	17

Or

- (b) Explain the components of time series.
15. (a) Commodity Price in 2005 Price in 2006
- | | | |
|---|----|-----|
| A | 90 | 95 |
| B | 40 | 60 |
| C | 90 | 110 |
| D | 30 | 35 |

Construct an index number for 2006 taking 2005 as base.

Or

- (b) Explain the difference between Chain Base method and Fixed base method.

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18. (a) Obtain regression equation of Y on X and estimate Y when X = 55 from the following
- | | | | | | | | |
|---|----|----|----|----|----|----|----|
| X | 40 | 50 | 38 | 60 | 65 | 50 | 35 |
| Y | 38 | 60 | 55 | 70 | 60 | 48 | 30 |

Or

- (b) The following table shows the sales and advertisement expenditure of a firm

	Sales	Advertisement expenditure (Rs. in crores)
Mean	40	6
Standard deviation	10	1.5

Coefficient of correlation $r = 0.9$. Estimate the likely sales for a proposed advertisement expenditure of Rs. 10 crores.

19. (a) Given below are the data relating to the production of sugarcane in a district. Fit a straight-line trend by the method of least squares and tabulate the trend values.

Year	2000	2001	2002	2003	2004	2005	2006
Production of sugarcane	40	45	46	42	47	50	46

Or

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PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Calculate the median marks of students from the following distribution.

Marks:	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of students:	7	10	10	20	20	15	8

Or

- (b) Calculate the Standard Deviation for the below data:

Interval	0-10	10-20	20-30	30-40	40-50
Frequency	30	12	5	11	7

17. (a) Calculate Karl Pearson's coefficient of correlation between the following data:

X	5	9	13	17	21
Y	12	20	25	33	35

Or

- (b) For the following data, Calculate coefficient of Rank correlation :

X	80	91	99	71	61	81	70	59
Y	123	135	154	110	105	134	121	106

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- (b) The sale of a company in thousands of rupees for the year 1980 through 1986 are given below

Year	1980	1981	1982	1983	1984	1985	1986
Sales	32	47	65	92	132	190	275

Estimate the sales figure for the year 1987. equation of the form $Y = ab^X$, where X = years and Y = sales.

20. (a) Compute a Price index for the following by (i) Simple aggregate and (ii) average of price relative method by using arithmetic mean

Commodity	A	B	C	D	E	F
Price in 2005 (Rs.)	20	30	10	25	40	50
Price in 2006 (Rs.)	25	30	15	35	45	55

Or

- (b) Convert the following fixed base index numbers into chain base index numbers:

Year	2002	2003	2004	2005	2006	2007
F.B.I.	376	392	408	380	392	400

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