QP Code: D136562	Total Pages: 2	Name:
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FIRST SEMESTER B.VOC (CUFYVP) REGULAR EXAMINATION NOVEMBER 2025

DATA SCIENCE AND ANALYTICS

DSA1CJ103 - Mathematics and Statistics for Data Science

2025 Admission

Maximum Time :2 Hours | **Maximum Marks :60**

Section A

All Questions can be answered. Each Question carries 3 marks (Ceiling : 20 Marks)

1	Define scalar and vector.
2	Find the median of 31,16,15,21,9,30,17,28,23
3	What is central tendency?
4	Define correlation.
5	Define an ogive curve.
6	Find the eigen values of the matrix $A = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$
7	If the first quartile is 15 and the third quartile is 25. What is the coefficient of quartile deviation?
8	Define cross product.
9	What is rank of a matrix?
10	What is skewness?
11	Define bar chart.
12	Find $a.\ b$, where $\vec{a} = 3i - 4j + 6k$ and $\vec{b} = 5i + j + 2k$

Section B

All Questions can be answered. Each Question carries 6 marks (Ceiling : 30 Marks)

13	Define mean, median and mode and explain their uses.
14	The mean of 20 observations is 15. On checking it was found that two observations were wrongly copied as 3 and 6. If the wrong observations are replaced by correct values 8 and 4. Find the correct mean.
15	Explain the uses of standard deviation.
16	Construct a histogram

Class	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	4	10	21	9	4	2

17	What is a scatter diagram? Write the conclusions that can be drawn from It.
18	If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, Show that $A^2 - 4A - 5I = 0$

Section C

Answer any ONE .Each Question carries 10 marks (1x10=10 Marks)

19 Find the coefficient of correlation from the following data:

X	1	2	3	4	5	6	7
Y	6	8	11	9	12	10	14

20 Find the eigen values and the corresponding eigen vectors of the matrix

$$A = \begin{bmatrix} 5 & 1 & -1 \\ 1 & 3 & -1 \\ -1 & -1 & 3 \end{bmatrix}$$