REG.NO.:

VIT
Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

SLOT: B2+TB2

Programme Name & Branch : B Tech.
Course Code and : BMAT202L
Course Name : Probability and Statistics
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s): Answer All Questions

Q. No	Question	M	CO	BL
1.	Given the following frequency distribution of earners by daily in a company. Earns: 57.5-62.5 | 62.5-67.5 | 67.5-72.5 | 72.5-77.5 | 77.5-82.5 | 82.5-87.5 | 87.5-92.5 | 92.5-97.5 No. of worker: 4 | 5 | 31 | 39 | 114 | 30 | 25 | 2 Calculate from the data the (i) mean, (ii) median and (iii) mode.	10	1	1
2.	For the following open-ended data, calculate the Quartile Deviation and its coefficient. Also find the standard deviation. Marks: 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 No. of students: 10 | 20 | 30 | 50 | 40 | 30	10	1	1
3.	A discrete random variable X has the following probability distribution: x: 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 $f(x)$: a | 3a | 5a | 7a | 9a | 11a | 13a | 15a | 17a (i) Find the value of a, (ii) Find P $\{X < 3\}$. (iii) Find the cumulative distribution function of X and (iv) Evaluate the mean of X.	10	2	2
4.	The joint probability density function of two random variables (X, Y) is given by $f_{XY}(x,y) = \begin{cases} cx(x-y), & 0 < x < 2;\ -x < y < x \\ 0 & \text{elsewhere} \end{cases}$ (a) Determine the value of c. (b) Find the marginal distribution for X. (c) Evaluate $f_{Y/X}(y/x)$.	10	2	3
5.	A computer while calculating the correlation coefficient between two variables X and Y from 25 pairs of observations obtained the following results: n=25, $\sum X = 125$, $\sum X^2 = 650$, $\sum Y = 100$, $\sum Y^2 = 460$, $\sum XY = 508$. If was, however, later discovered at the time of checking that he had copied down two pairs as X | Y 6 | 14 8 | 6 while the correct values were X | Y 8 | 12 6 | 8 Obtain the correct value of correlation coefficient.	10	2	3

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