VIT
Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES

DEPARTMENT OF MATHEMATICS

SLOT F1

CONTINUOUS ASSESMENT TEST-I (January 2023)

WINTER SEMESTER 2022-23

Programme Name & Branch: B.Tech

Course Code: BMAT202L

Course Name: Probability and Statistics

Exam Duration: 90 minutes **Maximum Marks:** 50

General instruction(s): Answer all questions 5×10=50

Sl.No.	Question	Marks
1.	Calculate the lower quartile, median and upper quartile for the following distribution.	10

Age	54-57	58-61	62-65	66-69	70-73	74-77	78-81	82-85
No. of employees	5	7	10	12	6	5	4	1

2.	Find the coefficient of mean deviation from mean, coefficient of variation for the following data.								10

x	0	1	2	3	4	5	6	7	8
f	4	36	100	232	280	204	112	28	4

3.	Let X and Y are two random variables having the joint probability mass function $f(x,y)=\frac{1}{27}(2x+y)$ where x and y can assume only the integer values 0, 1 and 2. (i) Find all marginal distributions and means of X and Y. (ii) Determine the value of $P[X \le 1/Y=1]$.	10
4.	Let X and Y have the joint probability density function $f(x,y)=\begin{cases} x^2+\frac{xy}{3}, 0 \le x \le 1, 0 \le y \le 2 \\ 0, \quad otherwise \end{cases}$ Then Find (i) $P\left(X>\frac{1}{2}\right)$ (ii) $P(Y<X)$ (iii) $P\left(Y<\frac{1}{2}/X<\frac{1}{2}\right)$ (iv) Verify whether X and Y are independent?	10
5.	Obtain the correlation coefficient for the following ages of husbands(X) and wives (Y).	10

X	23	27	28	28	29	30	31	33	35	36
Y	18	20	22	27	21	29	27	29	28	29