VIT
Vellore Institute of Technology

Fall Semester – 2019~2020
Continuous Assessment Test – I
Programme Name & Branch : B.Tech./M.Tech.

Course Code & Name : MAT2001 – Statistics for Engineers
Exam Duration : 90 Minutes

Slot : B2+TB2
Maximum Marks : 50

Answer ALL the Questions

Each question carries equal marks ($5 \times 10 = 50$ Marks)

1. Find the Mean, Median and Mode : **[10 M]**

X :	2000 – 3000	3000 – 4000	4000 – 5000	5000 – 6000	6000 – 7000
Y :	3	5	20	10	5

2. Following is the distribution of marks obtained by 500 candidates in Statistics paper of a civil sevices examination:

X :	0	10	20	30	40	50
Y :	500	460	400	200	100	30

Calculate the lower quartile marks. If 70% of the candidates pass in the paper, find the minimum marks obtained by a pass candidate. **[10 M]**

3. The diameter of an electric cable, say X, is assumed to be a continuous random variable with probability density function given by $f(x) = \begin{cases} kx(1-x), & 0 < x < 1 \\ 0, & elsewhere \end{cases}$ then

   (i). Find the value of k

   (ii). Determine a number b such that $P(X < b) = P(X > b)$

   (iii). Find the mean and variance of the random variable X **[10 M]**

4. Two dimensional random variables X and Y have the joint probability function $P(X = x, Y = y) = \frac{x^2 + y}{32}$, for $x = 0, 1, 2, 3$ and $y = 0, 1$.

   (i). Find all the marginal distributions of X and Y

   (ii). Find the probability distribution of Z, mean and variance of Z where $Z = X + Y$

[10 M]

5. A sample of 12 fathers and their eldest sons have the following data about their heights in inches.

Fathers (X) :	65	63	67	64	68	62	70	66	68	67	69	71
Sons (Y) :	68	66	68	65	69	66	68	65	71	67	68	70

Calculate the rank correlation coefficient. **[10 M]**

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