Continuous Assessment Test (CAT) – I AUGUST 2025

Programme	:	B.Tech.	Semester	:	Fall Semester 2025-26
Course Code & Course Title	:	BMAT202L & Probability and Statistics	Class Number(s)	:	CH2025260101123, 1121, 1327, 1117, 2422, 1322, 2425, 1111, 2424
Faculty	:	Dr. Ashish Nandi, Prof. Sakthidevi K, Dr. Surath Ghosh, Dr. Sudip Debnath, Dr. Saroj Dash, Dr. B. Krishna Kumar, Dr. B Jaganathan, Dr. Mohana N, Dr. V. Parthiban	Slot	:	F1+TF1
Duration	:	90 Minutes	Max. Mark		50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted

Answer all questions

Q. No	Description	Marks	CO	BT Level
1.	The following is the number of words typeset by two different typists A and B in 2 hours. They were tested on 10 consecutive days. Who is typing faster and who is more consistent?	10	1	1
2.	Find the values of a, b, and c for the following table:	10	1	2
3.	The joint probability density function (PDF) of the random variables X and Y is defined as: $f(x,y) = \begin{cases} k(x^2+y^2), & for\ 0<x<1\ and\ 0<y<1 \\ 0, & Otherwise \end{cases}$ Find (i) The value(s) of k, such that $f(x,y)$ will be a joint PDF. (ii) Justify whether X and Y are independent or not. (iii) Evaluate $P(X+Y<1)$.	10	2	2

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10
A	700	675	725	625	650	700	650	700	600	650
B	550	600	575	550	650	600	550	525	625	600

	Group I	Group II	Group III	Combined
Number	50	a	90	200
Std Dev	6	7	b	7.746
Mean	113	c	115	116

4.	A pair of fair dice are tossed twice. Let Y be the sum of the face values from both tosses. (i) Find the MGF of Y. (ii) Hence find the $E(Y)$ by using this MGF.	10	2	3
5.	The following data shows the speed of a car (in mph) and the corresponding stopping distance (in feet) collected during a road test. (i) Compute the Karl Pearson correlation coefficient. (ii) Interpret the strength and direction of the relationship.	10	3	1

Speed	4	10	12	14	16	18	19
Distance	10	18	28	80	32	56	68

**********All the best **********