Code No.: MA302BS	R20	H.T.No.			8	R					

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–I–Semester End Examinations (Supply) - December- 2025
COMPUTER ORIENTED STATISTICAL METHODS
(CSD)

[Time: 3 Hours] **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1.	a)	Define conditional probability.	[2M]
	b)	Define Discrete probability function and continuous probability function.	[2M]
	c)	Define Uniform distribution.	[2M]
	d)	Define Poisson distribution.	[2M]
	e)	Define Normal distribution.	[2M]
	f)	State Central limit theorem.	[2M]
	g)	Write about one tailed & two tailed tests.	[2M]
	h)	Write about type-I error and type-II error.	[2M]
	i)	Write the difference between first order and higher order Markov process.	[2M]
	j)	State n-step transition probabilities.	[2M]

PART-B **(50 Marks)**

2. Write the axioms of probability? State and prove Baye's theorem. [10M]

OR

3. For the continuous probability function $f(x)=kx^2e^{-x}$ when $x\geq 0$ find (i) k (ii) mean (iii) variance. [10M]

4. The joint p .d. f. of the random variable (X,Y) is [10M]
$f(x, y)=3(x + y)$ $o\leq x\leq 1$, $o\leq y\leq 1$, $x + y=1$. Find Cov (X,Y).

OR

5. State Chebyshev's theorem? Fit a binomial frequency distribution for the following data [10M]

x	0	1	2	3	4	5
f	2	14	20	34	22	8

6. Define Normal distribution? In a normal distribution exactly 7%of the items are under 35 and 89% are under 63. What are the mean and S.D of the distribution? [10M]

OR

7. Two independent samples of 8 & 7 items are given below. Is the difference between the means of the sample significant?($t_{tab} = 2.16$) [10M]

Sample 1	11	11	13	11	15	9	12	14
Sample 2	9	11	10	13	9	8	10	-

8. Write the procedure for test of hypothesis? A die is tossed 256 times and it turns up with an even digit 150 times. Is the die biased? [10M]

OR

9. In two large populations, there are 30% and 25% respectively of fair haired people. Is this difference likely to be hidden in samples of 1200 and 900 respectively from the two populations [10M]

10. A housewife buys 3 kinds of cereals A, B and C. She never buys the same cereal in successive weeks. If she buys cereals A, the next week she buys B. However, if she buys B or C , the next week she is 3 times as likely to buy A as the other cereal. In the long run, how often does she buy each of the three cereals? [10M]

OR

11. Three boys A, B, C are throwing a ball to each other. A always throws the ball to B and B always throws the ball to C, but C is just as likely to throw the ball to B as to A .Show that the process is Markovian. Find the transition matrix and classify the states. [10M]

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