Set- I

2	3	U	K	1	A	6	6	4	6

VAAGDEVI COLLEGE OF ENGINEERING

AUTONOMOUS

P.O.BOLLIKUNTA, WARANGAL – 506 005

B. TECH II YEAR I SEMESTER, I - MID EXAMINATIONS SEPTEMBER– 2024

Mathematical and Statistical Foundation

[CSM]

Time: 2 Hours (R23 REGULATION) **Max. Marks: 30**

Note: This question Paper Contains two parts. Part A & B

Course Outcomes for Assessment in this Test:

COs	Course Outcome
1	Apply the number theory concepts to cryptography domain
2	Apply the concepts of probability and distributions to some case studies
3	Correlate the material of one unit to the material in other units

	PART – A (10 X 1 = 10 Marks) CHOOSE THE CORRECT ANSWER		**Marks**
1.	*GCD of 28 and 36 is* a) 4 b) 2 c) 3 d) 1	[ ]	1
2.	Find the GCD of 48, 72, 108 a) 21 b) 12 c) 6 d) 1	[ ]	1
3	LCM of 90 and 144 a) 520 b) 620 c) 720 d) 420	[ ]	1
4.	Second Fermat number is ..... a) 13 b) 23 c) 19 d) 17	[ ]	1
5.	If the probability density function of a random variable is given by $f(x) = k(1-x^2)$, $0 < X < 1$ find the value of K a) $\frac{1}{2}$ b) $\frac{1}{3}$ c) $\frac{2}{3}$ d) $\frac{3}{2}$	[ ]	1
	FILL IN THE BLANKS		
6.	The regression line of X on Y is _____		1
7.	By the method of least squares the normal equations of the regression line Y= a+bx are		1
8.	Formula to find angle between two regression lines is given by $\tan\Theta$= ----------		1
9.	What are the types of random variables		1
10.	Mean and variance of Binominal distribution_----------		1

	PART – B ANSWER ANY FOUR OF THE FOLLOWING (4X 5 = 20 Marks)	Marks	Mapping COs	Bloom's Taxonomy Levels
1.	Solve the system of congruences using Chinese remainder theorem $x \equiv 3 \pmod 5$ $x \equiv 1 \pmod 7$ $x \equiv 6 \pmod 8$	5	1	BL- 5
2.	Solve the linear congruence $9x = 6 \pmod{15}$	5	1	BL- 4
3.	Solve the system $2x_1 + 5x_2 + 6x_3 \equiv 3 \pmod 7$ $2x_1 + x3 = 4 \pmod 7$, $x_1 + 2x_2 + 3x_3 \equiv 1 \pmod 7$	5	1	BL- 5
4.	Find the regression line of Y on X and the regression line of X on Y from the following data X: 1 5 3 2 1 1 7 3 Y: 6 1 0 0 1 2 1 5	5	2	BL- 4
5.	Two dies are thrown once the random variable assigns to sum, write the distribution function, find the mean and variance.	5	2	BL- 3
6.	A random variable X has the following probability distribution X: 0 1 2 3 4 5 6 7 Y: 0 K 2k 2k 3k K^2 $2K^2$ $7k^2+k$ Find i) Value of K ii) P (x<6) iii) P $(x \geq 6)$ iv) P(0<x<5)	5	2	BL – 3, 5