UNIT-1

Basics of Number Theory

S.NO	PART-A (SHORT ANSWER QUESTIONS)	BT	CO	PO
1	Define the Greatest Common Divisor (GCD) of two integers.	L1	CO1	P01
2	State the Euclidean algorithm.	L1	CO1	P01
3	State the Fundamental Theorem of Arithmetic.	L1	CO1	P01
4	Find the GCD of 56 and 72 .	L2	CO1	P02
5	Define a prime number and a composite number.	L1	CO1	P01
6	Define a Fermat number and Write the first three Fermat numbers.	L2	CO1	P02
7	Define congruence modulo n.	L1	CO1	P01
8	Using fundamental theorem of arithmetic express 5544 as a product of prime numbers.	L2	CO1	P02
9	Define a linear congruence.	L1	CO1	P01
10	Find the solution of -15≡ -84(mod 7).	L2	CO1	P02

S.NO	PART-B (ESSAY ANSWER QUESTIONS)	BT	CO	PO
1	Find the GCD of 414 and 662 using the Euclidean algorithm and express it as a linear combination.	L1	CO1	P02
2	Find the GCD of 7200,3132, Hence express GCD as linear combination of that numbers.	L3	CO1	PO3
3	State and prove the Fundamental Theorem of Arithmetic.	L3	CO1	PO3
4	Find the GCD of 4321,5295 using Euclidean algorithm.	L2	CO1	PO2
5	Use Fermat Factorization method to factorize n=119143.	L2	CO1	PO2
6	Find all possible solutions of the linear Congruence $9x \equiv 12 \pmod{15}$.	L3	CO1	PO2
7	Find all possible solutions of the linear congurence $14x \equiv 12 \pmod{18}$.	L3,L4	CO1	PO2
8	Find the solutions of the system of linear congurences $2x+4y=5 \pmod{13}$, $2x+5y \equiv 7 \pmod{13}$.	L3,L4	CO1	PO3
9	State and prove Chinese Remainder theorem.	L3,L4	CO1	PO4
10	Find the value of x if possible such that $x \equiv 4 \pmod{6}$ $x \equiv 2 \pmod{8}$ $x \equiv 1 \pmod{7}$.	L3,L4	CO1	PO3