	UNIT-I	
1.	Use mathematical induction to prove $\sum_{j=1}^{n} j = 1+2+3+\ldots+n=(n(n+1))/2$	L2, CO1,10M
2.	Use mathematical induction to prove that $\sum_{j=1}^{n} j^2 = 1^2+2^2+3^2+\ldots+n^2 = (n(n+1)(2n+1))/6$	L2, CO1,10M
3.	Let n and k be positive integers with $n \geq k$. Prove that $(nc_k)+(nc_{k-1})=(n+1ck)$ b) Find the values of i) $\sum_{j=1}^{10} j^2$ ii) $\prod_{i=1}^{5} 2^i$ iii) 10c4 iv) 12c5	L2, CO1,10M
4.	a)State and prove the division theorem. b) Find the quotient and remainder in the division algorithm with divisor 17 and dividend 100	L2, CO1,10M
5.	a) Convert $(1864)_{10}$ and $(2FB3)_{16}$ to binary notation. b) Convert $(A35B0F)_{16}$ and $(6105)_7$ to decimal notation	L2, CO1,10M
6.	a) Find gcd of 28 and 49, express it as linear combination of 28 and 49. b) find the gcd (4340, 2821) by Euclidean algorithm and also express as GCD (4340,2821) = 2821x+4340y.	L2, CO1,10M
7	Show that event +ve integer can be written as the sum of distinct Fibonacci number	L2, CO1,10M
8	Find factor 6077 by using the method of Fermat factorization.	L2, CO1,10M
9	Find all integer solutions of linear Diophantine equation 2x+3y+4z=5.	L2, CO1,10M
10	Find all integer solutions of systems of linear Diophantine equation x +y +z =100, x+8y+50z =156.	L2, CO1,10M

	UNIT-II	
11.	a)find the least positive residue of 2^{644} mod 645 b) find the least positive residue of 3^{10} (mod11)	L2, CO2, 10M
12.	find the all solutions $9x \equiv 12(\text{mod}15)$ find the values of x, $2x \equiv 3 (\text{mod } 8)$	L2,CO2,10M
13.	solve the systems of linear congruence's $x \equiv 1 (\text{mod}3)$, $x \equiv 2(\text{mod}5)$, $x \equiv 3(\text{mod}7)$	L2, CO2,10M
14.	solve the systems of linear congruence's $x \equiv 2 (\text{mod}3)$, $x \equiv 3(\text{mod}5)$, $x \equiv 2 (\text{mod}7)$	L2, CO2,10M
15	solve $2x \equiv 1(\text{mod } 3)$,$2x \equiv 2 (\text{mod}4)$, $x \equiv 3(\text{mod}5)$ using c.r.t	L2, CO2,10M
16	find the solutions of the congruence's $x \equiv 4 (\text{mod } 11)$,$x \equiv 3(\text{mod } 17)$ solve the system of congruences $x \equiv 1 (\text{mod } 3)$, $x \equiv 2 (\text{mod } 6)$, $x \equiv 3 (\text{mod}7)$ by iterative method	L2, CO2,10M
17.	system of congruences $x \equiv 3 (\text{mod } 7)$, $x \equiv 4 (\text{mod } 11)$, $x \equiv 5 (\text{mod}13)$ to solve of congruences using c. r.t . method	L2, CO2,10M
18.	solve the system of liner congruences $3x+4y \equiv 5 (\text{mod } 13)$, $2x+5y \equiv (\text{mod}13)$	L2, CO2,10M
19.	Find an inverse modulo [redacted] $\begin{pmatrix} 3 & 4 \\ 2 & 5 \end{pmatrix} \text{mod}(13)$	L2,CO2,10M
20.	Find the solution of the system of linear congruence's $2x+3y \equiv 5 (\text{mod } 7)$, $x+5y \equiv 6 (\text{mod } 7)$.	L2,CO2,10M
21.	Find all the solution of the following system of congruence's $x \equiv 4(\text{mod } 11)$, $x \equiv 3(\text{mod } 17)$.	L2,CO2,10M
22.	Find all the solutions of the system of congruence's $x+y \equiv 1 (\text{mod } 7)$, $x+z \equiv 2 (\text{mod } 7)$,$y+z \equiv 3(\text{mod } 7)$.	L2,CO2,10M
23.	Find a multiple of 11 that leaves a remainder of 1 when divided by of the integers 2,3,5,and7	L2,CO2,10M
24.	Find the solutions of $3x \equiv 2(\text{mod } 7)$.	L2,CO2,10M