	SRM Institute of Science and Technology Department of Mathematics 18MAB302T-Discrete Mathematics Unit – II: Combinatorics, Number Theory **Tutorial Sheet - 3**

S.No.	Questions	Answers
	Part - A	
1	Let a, b ∈ $\mathbb{Z}$ and $\gcd(a,b) = 1$, then show that gcd $(a+b, a-b)$ is either 1 or 2.	
2	Let a, b ∈ $\mathbb{Z}$ and $\gcd(a,b) = 1$, then show that gcd (a^n, b^n) = 1 for all n ∈ N.	
3	If $\gcd(a,d) = 1$ and $c|a$, prove that $\gcd(b,c) = 1$	
4	The lcm and gcd of two integers a and b are denoted by $[a,b]$ and (a,b) respectively. Prove that $(a,b) = (a+b, [a,b])$	
5	If $\gcd(a,d) = 1$, then show that gcd $(a+b, a^2 - ab + b^2)$ is either 1 or 3.	
	Part - B	
6	Use the Euclidean algorithm to find (i) gcd(2464, 7469) and (ii) gcd(6060, 9888)	(i) 77 (ii) 12
7	Find the integers x and y such that (i) $154x + 260y = 3$ and (ii) $196x + 260y = 14$	No integral values of x and y
8	Find the integers m and n such that $423m + 198n = 9$	$m = -7, n = 15$
9	Find the gcd and lcm of the following pair of integers and also verify their correctness: (432, 95256)	216; 190512
10	Find the integers m and n such that $100996m + 20048n = 28$	$m = -53, n = 267$