

Semester I

Subject Name: Theory of Numbers	Duration: 6 hrs /Cycle
Subject Code: 1PGM5(2015 on)	Credit : 4
Unit I: Divisibility: Introduction – Definition – Division algorithm – Euclidean algorithm – Primes – Fundamental theorem of arithmetic.	
Unit II: Congruence: Definition – Fermat’s theorem – Wilson’s theorem – Solutions of congruence’s - Congruence’s of degree 1 - Function of $\varphi(n)$.	
Unit III: Quadratic Reciprocity: Quadratic residues – Lemma of Gauss – Gaussian reciprocity law - Jacobi symbol.	
Unit IV: Functions of Number theory: Greatest integer function – Arithmetic function – Mobius inversion formula – Multiplication of arithmetic function.	
Unit V: Diophantine equations and continued fractions- Definition – The linear equation - Positive solutions – Other linear equations - The equation $x^2 + y^2 = z^2$ - the equation $x^4 + y^4 = z^2$ - Euclidean algorithm – Uniqueness – Infinite continued functions.	

Text book: An introduction to the theory of numbers by Ivan Niven and Herbert Zuckerman, 3rd Edition 1972, Wiley Eastern Limited.

Chapters: 1, 2(2.1-2.4), 3, 4(4.1-4.4), 5(5.1-5.6), 7(7.1-7.3).

Reference Books: 1. Introduction to Analytic Number Theory by Tom M. Apostol, Narosa Publishing Housing Pvt. Ltd. (1998).

2. A Course in Number Theory by Neal Koblitz, 2nd Edition, Springer-Verlag (2002).