Indraprastha College for Women
University of Delhi

Work Plan for ODD SEMESTER – 2026

Course Name:	B.A.(P)
Paper Title:	Elements of Number Theory
Unique Paper Code:	2353200008
Semester:	V
Faculty:	Ritika Gulati
Year:	2026

Work Plan			
Unit No.	Learning Objective	Lecture No.	Topics to be Covered
1	To get familiar with the basic number-theoretic techniques and Comprehend some of the open problems in number theory.	1,2,3	Division Algorithm
		4	Divisibility
		5,6,7	GCD
		8	Euclid Lemma
		9,10	Euclidean Algorithm
		11	Diophantine equation
		12,13	FTOA
		14	Sieve of Eratosthenes
		15,16	Euclid theorem
		17,18	Goldbach Conjecture
		19,20	Fibonacci sequence and its nature
2	Learn the properties and use of number-theoretic functions and special types of functions	21,22	Number theoretic function
		23	Multiplicative functions
		24	Greatest integer function
		25	Euler phi function
3	Acquire knowledge about public-key cryptosystems, particularly RSA.	26	Hill cipher, public key
		27	RSA

		28	Introduction to perfect numbers
		29,30	Mersenne number and perfect number

Unit	Contents/Syllabus
I	Revisiting: The division algorithm, divisibility and the greatest common divisor. Euclid's lemma; The Euclidean algorithm, Linear Diophantine equations; The Fundamental theorem of Arithmetic, The sieve of Eratosthenes, Euclid theorem and the Goldbach conjecture; The Fibonacci sequence and its nature.
II	Congruence relation and its basic properties, Linear congruences and the Chinese remainder theorem, System of linear congruences in two variables; Fermat's little theorem and its generalization, Wilson's theorem and its converse; Number-theoretic functions for sum and the number of divisors of a positive integer, Multiplicative functions, The greatest integer function; Euler's Phi-function and its properties.
III	Basics of cryptography, Hill's cipher, Public-key cryptosystems and RSA encryption and decryption technique; Introduction to perfect numbers, Mersenne numbers and Fermat numbers.

S. No.	Name of Authors/Books/Publishers
1.	Burton, David M. (2011). Elementary Number Theory (7th ed.). McGraw-Hill Education Pvt. Ltd. Indian Reprint 2017.
2.	
3.	
4.	

	Paper Components		
Credits	**Lecture (L)**	**Tutorial (T)**	**Practical (P)**
4	**2 (Total-3)**	**1**	**0**
Assessment Scheme			
S.No.	**Component**	**Marking Scheme**	**Total Marks**
1	Internal Assessment		**30**

	• Assignment	12	
	• Class Test	12	
	• Attendance	6	
2.	Continuous Assessment (**Tutorial)**		40
	• Activity 1	20	
	• Activity 2	15	
	• Attendance	5	
3.	Practical	NA	
	• Continuous Assessment		
	• End Term Written/Practical Exam		
	• Viva		
4.	End Semester Examination		90