BLOOM PUBLIC SCHOOL
C-8 Vasant Kunj, New Delhi
SYLLABUS FOR THE SESSION 2023-24

Class: XI
Subject: Mathematics

SYLLABUS		
MONTH	**CHAPTERS (NCERT TEXT BOOK)**	**CONTENT**
April	Ch 1: Sets	Sets and their representations, Empty set, Finite and Infinite sets, Equal sets, Subsets, Subsets of a set of real numbers especially intervals (with notations). Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. Properties of Complement.
	Ch 2: Relations and Functions	Ordered pairs. Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the set of reals with itself (upto R x R x R). Definition of relation, pictorial diagrams, domain, co-domain and range of a relation. Function as a special type of relation. Pictorial representation of a function, domain, co-domain and range of a function. Real valued functions, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum, exponential, logarithmic and greatest integer functions, with their graphs. Sum, difference, product and quotients of functions.

May	Ch 3: Trigonometric Functions	Positive and negative angles. Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions. Domain and range of trigonometric functions and their graphs. Expressing sin (x±y) and cos (x±y) in terms of sinx, siny, cosx & cosy and their simple applications. Deducing identities like the following: $\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}, \cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$ $\sin\alpha \pm \sin\beta = 2\sin\frac{1}{2}(\alpha \pm \beta)\cos\frac{1}{2}(\alpha \mp \beta)$ $\cos\alpha + \cos\beta = 2\cos\frac{1}{2}(\alpha + \beta)\cos\frac{1}{2}(\alpha - \beta)$ $cos\alpha - cos\beta = -2sin\frac{1}{2}(\alpha + \beta)sin\frac{1}{2}(\alpha - \beta)$ Identities related to sin2x, cos2x, tan2 x, sin3x, cos3x and tan3x.
	Ch 5: Complex Numbers and Quadratic Equations	Need for complex numbers, especially $\sqrt{-1}$, to be motivated by inability to solve some of the quadratic equations. Algebraic properties of complex numbers. Argand plane.
July	Ch 6: Linear Inequalities	Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line.
	Ch 7: Permutations and Combinations	Fundamental principle of counting. Factorial *n*. (n!) Permutations and combinations, derivation of Formulae for ${}^{n}P_r$ and ${}^{n}C_r$ and their connections, simple applications.

August	Ch 7: Permutations and Combinations (contd.) Ch 8: Binomial Theorem	 Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, simple applications.
September		Revision for Mid-Term Examination.
October	Ch 8: Binomial Theorem (Contd.) Ch 9: Sequences and Series Ch 10: Straight Lines	Historical perspective, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, simple applications. Sequence and Series. Arithmetic Mean (A.M.) Geometric Progression (G.P.), general term of a G.P., sum of *n* terms of a G.P., infinite G.P. and its sum, geometric mean (G.M.), relation between A.M. and G.M. Brief recall of two dimensional geometry from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axis, point -slope form, slope-intercept form, two-point form, intercept form, Distance of a point from a line.
November	Ch 11: Conic Sections Ch 12: Introduction to Three-dimensional Geometry	Sections of a cone: circles, ellipse, parabola, hyperbola, a point, a straight line and a pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle. Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points.
December	Ch 13: Limits and Derivatives	Derivative introduced as rate of change both as that of distance function and geometrically. Intuitive idea of limit. Limits of polynomials and rational functions trigonometric, exponential and logarithmic functions. Definition of derivative relate it to scope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions.

January	Ch 15: Statistics Ch 16: Probability	Measures of Dispersion: Range, Mean deviation, variance and standard deviation of ungrouped/grouped data. Events; occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events, Axiomatic (set theoretic) probability, connections with other theories of earlier classes. Probability of an event, probability of 'not', 'and' and 'or' events.
February		Revision for Annual Examination
March		Annual Examination

ASSESSMENT SYLLABUS	
PERIODIC ASSESSMENT - 1	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions
PERIODIC ASSESSMENT - 2	Ch 8: Binomial Theorem Ch 9: Sequences and Series Ch 10: Straight Lines
MID-TERM EXAMINATION	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions Ch 5: Complex Numbers and Quadratic Equations Ch 6: Linear Inequalities Ch 7: Permutations and Combinations
FINAL EXAMINATION	Ch 1: Sets Ch 2: Relations and Functions Ch 3: Trigonometric Functions Ch 5: Complex Numbers and Quadratic Equations Ch 6: Linear Inequalities Ch 7: Permutations and Combinations Ch 8: Binomial Theorem Ch 9: Sequences and Series Ch 10: Straight Lines Ch 11: Conic Sections Ch 12: Introduction to Three-dimensional Geometry Ch 13: Limits and Derivatives Ch 15: Statistics Ch 16: Probability