ACADEMIC PLANNER – XIth – MATHEMATICS – (2025-26)

MONTH / DAYS	CONTENT	LEARNING OUTCOMES	MODE OF ASSESSMENT	ASSIGNMENT	TEACHING PEDAGOGY	INTERDISCIPLINE ASPECT / SDG	21ST CENTURY SKILLS	MATH LAB ACTIVITY
16th April – 30th April (12 Days)	**CH: Statistics** Measures of Dispersion 1. Range 2. Mean Deviation for Grouped and Ungrouped Data 3. Variance: Variance for Grouped and Ungrouped Data 4. Standard Deviation for Grouped and Ungrouped Data	1. The learner will be able to find the range of a given data set. 2. The learner will be able to calculate the mean deviation for grouped and ungrouped data. 3. The learner will be able to determine the variance for grouped and ungrouped data. 4. The learner will be able to compute the standard deviation for grouped and ungrouped data.	1. Class Assignments 2. Written examination 3. Oral Viva 4. Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Graphical Demonstrations. 4. Use of GeoGebra. 5. Think-Pair-Share. 6. Peer Teaching	1. Economics 2. Business & Management 3. Engineering 4. Computer Science 5. Healthcare SDG: Quality Education, Responsible Consumption and Production	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	
1st May – 15th May (11 Days)	**CH: Complex Numbers and Quadratic Equations** 1.Need for Complex Numbers a. Introduction to $\sqrt{-1}$ and imaginary unit '*i*'. b. Motivation through unsolvable quadratic equations in real numbers 2.Algebraic Properties of Complex Numbers a. Addition, Subtraction, Multiplication, and Division b. Conjugate, Modulus, and Properties of Modulus 3.Argand Plane a. Representation of Complex Numbers on the Argand Plane b. Cartesian and Polar Forms c. Geometrical Interpretation	1. The learner will be able to understand the need for complex numbers, the imaginary unit 'i', and their role in solving quadratic equations that have no real solutions. 2. The learner will be able to perform algebraic operations on complex numbers, including addition, subtraction, multiplication, division, conjugate, modulus, and apply properties of modulus. 3. The learner will be able to represent complex numbers on the Argand plane, express them in Cartesian and polar forms, and interpret their geometrical significance.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Solves unsolvable equations and extends operations. 2.Geometry: Visualizes complex numbers on the Argand Plane. 3.Linear Algebra: Applies in eigenvalues and transformations. SDG Goals Covered: Quality Education and Industry, Innovation, and Infrastructure through fostering mathematical skills and technological applications.	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	
16th May– 25th May (8 Days)	**CH: Linear Inequalities** 1. Introduction to Linear Inequalities 2. Algebraic Solutions of Linear Inequalities in One Variable 3. Representation of Solutions on the Number Line	1. The learner will be able to understand the concept of linear inequalities and their significance. 2. The learner will be able to solve linear inequalities algebraically in one variable. 3. The learner will be able to represent the solutions of linear inequalities on the number line.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1. Algebra: Builds foundational understanding of inequalities and extends equation-solving techniques. 2. Optimization: Sets the stage for analysing constraints in real-world problems. SDG: Quality Education, Industry Innovation and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	

1st July – 15th July (12 Days)	**CH: Trigonometric Functions** 1. Positive and Negative Angles 2. Measuring Angles: Radians and Degrees, Conversion between Radians and Degrees 3. Definition of Trigonometric Functions using the Unit Circle 4. Signs of Trigonometric Functions in Different Quadrants 5. Domain and Range of Trigonometric Functions 6. Graphs of Trigonometric Functions 7. Sum and Difference Formulas $\sin(x \pm y)$, $\cos(x \pm y)$ in terms of $\sin x, \sin y, \cos x, \cos y$ 8. Deducing Standard Identities	1. The learner will be able to understand positive and negative angles, measure angles in radians and degrees, and convert between them. 2. The learner will be able to define trigonometric functions using the unit circle, determine their signs in different quadrants, and analyse their domain, range, and graphs. 3. The learner will be able to apply sum and difference formulas and deduce standard trigonometric identities.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1. Algebra: Applies to solving trigonometric equations and identities. 2. Geometry: Links angles, circles, and distances using the unit circle. 3. Calculus: Integral for derivatives and integrals of trigonometric functions. 4. Physics: Used to model oscillations and waves mathematically. 5. Graphs: Connects with coordinate geometry for visualization. SDG: Quality Education, Industry Innovation and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	1. To verify the relation between the degree measure and the radian measure of an angle. 2. To find the values of sine and cosine functions in second, third and fourth quadrants using their given values in first quadrant. 3. To prepare a model to illustrate the values of sine function and cosine function for different angles which are multiples of $\pi/2$ and π 4.To plot the graph of $\sin x$, $\sin 2x$ & $\sin x/2$ on the same axes
16th July – 31st July (14 Days)	**CH: Sets** 1.Sets and Their Representations Empty Set (Null Set) 2.Types of sets, Finite and Infinite Sets, Equal Sets 3. Subsets, Subsets of a Set of Real Numbers (Intervals and Notations), Universal Set, 4. Venn Diagrams 5. Operations on Sets: Union Intersection, Difference of Sets, Complement of a Set 6. Properties of Complement	1. The learner will be able to understand sets, their representations, and different types of sets, including empty, finite, infinite, and equal sets. 2. The learner will be able to identify subsets, subsets of real numbers, universal sets, and represent relationships using Venn diagrams. 3. The learner will be able to perform operations on sets, including union, intersection, difference, complement, and apply properties of complements.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1. Algebra: Forms the basis for operations and relationships in mathematical expressions. 2. Logic: Enhances reasoning through set theory concepts like intersections and complements. 3. Geometry: Links to spatial understanding via Venn diagrams. 4. Probability: Connects to events	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	1.To find the number of subsets of a given set and verify that if a set has n number of elements, then the total number of subsets is 2^n. 2. To represent set theoretic operations

						and sample spaces defined through sets. 5. Statistics: Supports classification and organization of data using set operations. SDG: Quality Education, Industry Innovation and Infrastructure		using Venn diagrams. 3. To verify distributive law for three given non-empty sets A, B and C, that is, $A \cup (B \cap C)$
1st Aug – 15th Aug (11 Days)	**CH: Relations and Functions** 1. Ordered Pairs and Cartesian Product of Sets, Number of Elements in the Cartesian Product of Two Finite Sets, Cartesian Product of the Set of Reals with Itself (Up to R×R×R) 2. Definition of Relation, Pictorial Representation of Relations, Domain, Co-Domain, and Range of a Relation 3. Function as a Special Type of Relation, Pictorial Representation of a Function, Domain, Co-Domain, and Range of a Function 4. Real-Valued Functions, Domain and Range of Real-Valued Functions 5. Types of Functions and Their Graphs: Constant Function, Identity Function, Polynomial Function, Rational Function, Modulus Function, Signum Function, Exponential Function, Logarithmic Function, Greatest Integer Function 6. Operations on Functions: Sum of Functions, Difference of Functions, Product of Functions, Quotient of Functions	1.The learner will be able to understand ordered pairs, the Cartesian product of sets, and determine the number of elements in the Cartesian product of two finite sets. 2.The learner will be able to define relations, represent them pictorially, and identify their domain, co-domain, and range. 3.The learner will be able to define functions as special types of relations, represent them graphically, and determine their domain, co-domain, and range. 4.The learner will be able to analyse real-valued functions, their domain and range, and recognize different types of functions and their graphs. 5.The learner will be able to perform operations on functions, including sum, difference, product, and quotient of functions.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Provides a foundation for solving equations and understanding mathematical relationships. 2. Geometry: Relates functions to graphical representation, aiding visual comprehension. 3. Calculus: Links functions to concepts like limits, derivatives, and integrals. 4. Set Theory: Enhances understanding of ordered pairs, Cartesian products, and mappings. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	To verify that for two sets A and B, $n(A \times B) = pq$ and the total number of relations from A to B is 2^{pq}, where $n(A) = p$ and $n(B) = q$. 2.S To identify a relation and a function. 3. To distinguish between a Relation and a Function.
16th Aug – 31st Aug (12 Days)	**CH: Permutations and Combinations** 1. Fundamental Principle of Counting 2. Factorial n! 3. Permutations Derivation of Formulae for ${}^{n}P_{r}$ and special cases when some objects are of the same type. 4. Combinations and Derivation of Formulae for ${}^{n}C_{r}$, the relation between ${}^{n}P_{r}$ and ${}^{n}C_{r}$.	1. The learner will be able to understand the fundamental principle of counting and factorial notation. 2.The learner will be able to derive and apply permutation formulas, including special cases when some objects are identical. 3.The learner will be able to derive and apply combination formulas and understand the relationship between permutations and combinations.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Utilizes factorials and arithmetic operations to derive formulas. 2.Probability: Forms the basis for calculating probabilities of events in experiments. 3.Set Theory: Connects to combinations and subsets of finite sets.	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	1.To find the number of ways in which three cards can be selected from given five cards. 2. To construct a Pascal's Triangle and to write binomial expansion for a given

	5. Simple Applications of Permutations and Combinations	4.The learner will be able to solve real-life problems using permutations and combinations.				5.Logic: Enhances problem-solving through structured counting and arrangement techniques. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure		positive integral exponent.
1st Sep – 15th Sep (11 Days)	**CH: Binomial Theorem** 1. Statement of the Binomial Theorem for Positive Integral Indices 2. Proof of the Binomial Theorem for Positive Integral Indices 3. Pascal's Triangle 4. Simple Applications of the Binomial Theorem	1. The learner will be able to state and prove the binomial theorem for positive integral indices. 2. The learner will be able to understand and apply Pascal's triangle in binomial expansion. 3. The learner will be able to solve problems using the binomial theorem in real-life applications.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration .	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Fundamental for expanding powers of binomial expressions. 2.Combinatorics: Strongly connected to Pascal's Triangle and binomial coefficients. 3.Probability: Utilized in calculating probabilities in binomial distributions. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	To evaluate the definite integral $\int_a^b \sqrt{1-x^2}\,dx$ as the limit of a sum and verify it by actual integration.
16th Sep – 30th Sep (12 Days)	HALF YEARLY EXAMINATIONS. SYLLABUS – ALL THE ABOVE CHAPTERS							
1st Oct – 15th Oct (8 Days)	**CH: Straight Lines** 1.Brief Recall of Two-Dimensional Geometry 2.Slope of a Line and Angle Between Two Lines 3.Various Forms of Equations of a Line: Parallel to Axis Form, Point-Slope Form, Slope-Intercept Form , Two-Point Form, Intercept Form 4.Distance of a Point from a Line 5.Distance between two parallel lines.	1. The learner will be able to recall concepts of two-dimensional geometry and understand the slope of a line and the angle between two lines. 2. The learner will be able to derive and apply various forms of equations of a line, including parallel to axis, point-slope, slope-intercept, two-point, and intercept forms. 3. The learner will be able to calculate the distance of a point from a line and the distance between two parallel lines.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration .	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Geometry: Strengthens the understanding of shapes and spatial relations through lines and angles. 2.Algebra: Connects equations and slopes to represent lines algebraically. 3.Coordinate Geometry: Merges algebraic and geometric concepts for visualization and problem-solving. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	To verify that the equation of a line passing through the point of intersection of two lines $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ is of the form: $a_1x+b_1y+c_1+\lambda(a_2x+b_2y+c_2)=0$

16th Oct – 31st Oct (10 Days)	**CH: Conic Sections** 1.Sections of a Cone: Circle, Ellipse , Parabola, Hyperbola. A Point (Degenerate Case), A Straight Line (Degenerate Case), A Pair of Intersecting Lines (Degenerate Case) 2.Standard Equation and Simple Properties of Parabola 3.Standard Equation and Simple Properties of Ellipse 4.Standard Equation and Simple Properties of Hyperbola 5.Standard Equation of a Circle	1. The learner will be able to understand the different sections of a cone, including circles, ellipses, parabolas, hyperbolas, and degenerate cases. 2. The learner will be able to derive and apply the standard equations and properties of parabolas, ellipses, and hyperbolas. 3.The learner will be able to derive and apply the standard equation of a circle.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration .	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Geometry and Algebra: Combines the study of conic shapes like circles, ellipses, parabolas, and hyperbolas with their algebraic equations. 2.Coordinate Geometry and Visualization: Merges spatial representation with analytical methods for better understanding. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure.	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	To locate the points to given coordinates in space, measure the distance between two points in space and then to verify the distance using distance formula.
1st Nov – 15th Nov (11 Days)	**CH: Limits and Derivatives** 1. Derivative introduced as rate of change, distance function, geometric interpretation 2. Intuitive idea of limit, limits of polynomials, rational functions, trigonometric functions, exponential functions, logarithmic functions 3. Definition of derivative, relation to slope of tangent to a curve 4. Derivative of sum, difference, product, and quotient of polynomial and trigonometric functions	1. The learner will be able to understand the concept of derivatives as a rate of change, its relation to distance functions, and its geometric interpretation. 2. The learner will be able to develop an intuitive understanding of limits and evaluate limits of polynomials, rational, trigonometric, exponential, and logarithmic functions. 3. The learner will be able to define derivatives, relate them to the slope of a tangent to a curve, and apply differentiation rules to sums, differences, products, and quotients of polynomial and trigonometric functions.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration .	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra and Functions: Links derivatives to polynomial, rational, trigonometric, exponential, and logarithmic functions for advanced manipulation. 2.Geometry: Relates derivatives to the slope of tangents and geometric interpretation of curves. 3.Calculus Foundations: Establishes core ideas of limits and derivatives for further exploration in integration and differential equations. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy 5. Collaboration & Communication	1, To find analytically $\lim_{x \to c} \frac{x^2 - c^2}{x - c}$. 2. Verification of the geometrical significance of derivative.
16th Nov – 30th Nov (12 Days)	**CH: Probability** 1. Events, occurrence of events 2.'Not', 'And', and 'Or' events 3.Exhaustive events, mutually exclusive events 4. Axiomatic (set-theoretic) probability, connections with earlier theories 5. Probability of an event 6. Probability of 'Not', 'And', and 'Or' events	1. Learner will be able to understand the concept of events and the occurrence of events. 2. Learner will be able to explore the principles of 'Not', 'And', and 'Or' events in probability. 3. Learner will be able to differentiate between exhaustive and mutually exclusive events. 4. Learner will be able to study axiomatic (set-theoretic) probability and its connections with earlier theories. 5. Learner will be able to calculate the probability of an event. 6. Learner will be able to analyse the probability of 'Not', 'And', and 'Or' events. .	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration .	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1. Set Theory: Provides the foundation for axiomatic probability and event analysis. 2.Algebra: Facilitates computation of probabilities involving operations like 'Not', 'And', and 'Or'. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy	1. To write the sample space, when a die is rolled once, twice -------- 2. To write the sample space, when a coin is tossed once, two times, three times, four times.

1st Dec – 15th Dec (12 Days)	**CH: Introduction to Three-Dimensional Geometry** 1. Coordinate axes and coordinate planes in three dimensions 2. Coordinates of a point in three-dimensional space 3. Distance between two points in three dimensions	1. Learner will be able to identify and describe the coordinate axes and coordinate planes in three-dimensional space. 2. Learner will be able to determine and represent the coordinates of a point in three-dimensional space. 3. Learner will be able to calculate the distance between two points in three dimensions using the distance formula.	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Utilizes equations and formulas for determining distances and coordinates. 3.Vector Algebra: Lays the groundwork for vector operations in three-dimensional space. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy	To explain the concept of octants by three mutually perpendicular planes in space.
16th Dec – 31st Dec (13 Days)	**CH: Sequence and Series** 1. nth term a_n of a sequence 2. Arithmetic Mean (A.M.) 3. Geometric Progression (G.P.), general term of a G.P. 4. Sum of 'n' terms of a G.P. 5. Infinite G.P. and its sum 6. Geometric Mean (G.M.) 7. Relation between A.M. and G.M.	1.Learner will be able to determine and derive the nth term of a sequence. 2.Learner will be able to calculate and understand the concept of Arithmetic Mean (A.M.). 3.Learner will be able to explain and apply the properties of Geometric Progression (G.P.), including determining its general term. 4.Learner will be able to compute the sum of 'n' terms of a Geometric Progression (G.P.). 5.Learner will be able to analyse and calculate the sum of an infinite G.P. when applicable. 6.Learner will be able to calculate and understand the concept of Geometric Mean (G.M.). 7.Learner will be able to explore and establish the relationship between Arithmetic Mean (A.M.) and Geometric Mean (G.M.).	1.Class Assignments 2.Written examination 3.Oral Viva 4.Practical Demonstration.	Questions form NCERT & PYQs (Previous Years Question Papers)	1, Interactive Discussions. 2. Problem Solving Approach, 3. Role Play 4. Think-Pair-Share. 5. Peer Teaching	1.Algebra: Develops formulae for nth terms, sums of progressions, and relationships between A.M. and G.M. 2.Number Theory: Explores patterns and properties of sequences and series in mathematical contexts. 3.Calculus: Lays the foundation for analysing series and understanding limits in infinite G.P. SDG: Quality Education – SDG: Industry, Innovation, and Infrastructure	1. Critical Thinking 2. Problem-Solving 3. Analytical Skills 4. Digital Literacy	
2026 16thJan – 31stJan (13 Days)	REVISION							
Feb'26	ANNUAL EXAMINATIONS – FULL SYLLABUS							