HAPPY DAYS SCHOOL, SHIVPURI (M.P.)

DEPARTMENT OF MATHEMATICS

CLASS: XI

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
April	Sets	Sets & their representation, types of sets, power set, Venn diagrams, operations on a set , Practical applications,	Constructive , Inquiry based, Integrative		Concept Presentation Application		Video for venn diagram
	Relations & Functions	Cartesian product of two sets, Definition of relation, its domain and range, Functions , domain & range of real valued functions	Constructive , Inquiry based, Integrative	Class test	Accuracy, Relevant		Video relation and function
July	Trigonometric Functions	Measuring angles in radians & degree, different trigonometric identities & their proves.	Constructive , Inquiry based, Integrative	Lab Activity	Concept Presentation Application	Prepare a chart of trigonometric formulae	
	Complex Number & Quadratic Equations	Introduction of iota, algebraic properties of complex numbers, , argand plane , polar representation, square root of complex number, solution of quadratic equations with complex roots.	Constructivist, inquiry based , Reflective	Class Test Quiz	Accuracy, Topic relevant		Video for complex number
	Revision for first periodic assessment						
	First periodic assessment						
AUGUST	Linear Inequalities	Algebraic and graphical solutions of linear equations	Inquiry based	Problem solving	Approach Steps Accuracy	Activity	

	Permutations & combinations	Fundamental principle of counting , factorial , permutation & combination, simple applications	Constructivist, Inquiry based	Team work / Games			Online Quiz
SEPTEMBER	Sequences & Series	Arithmetic and geometric progressions, their general terms, sum to n terms , their means	Constructivist, Reflective	Lab Activity	Concept Presentation Application		Module on special series
	Binomial Theorem	Statement & proof for positive integral indices, Pascal's triangle , General and middle term in binomial expansion, simple applications	Deductive		Concept Presentation Application		
	Revision for Mid-term Exam						
OCTOBER	**Mid-term Exam**						
	Straight Lines	Slope of a line, angle b/w two lines, various forms of equation of a straight line, distance of a point from a line	Lecture, Classroom Discussion	Worksheet	Accuracy, Relevant to topic		
	Conic Sections	Conic sections- introduction Standard equations and properties of parabola , ellipse and hyperbola	Constructivist approach	Lab Activity	Concept Presentation Application		Module on conic section
NOVEMBER	3D Geometry	Coordinate axes and coordinate planes in three dimensions, coordinates of a point , distance b/w two points and section formula	Integrative(computer assisted)	Lab Activity worksheet	Concept Presentation Application		Module on 3D geometry
	Limit & Derivative	Fundamental of limit, limit of rational, trigonometric function, Algebra of derivative, Derivative of trigonometric function and Derivative by first principle	Constructivist, Reflective	Class test Extra Question	Accuracy, Relevant to topic		Video for derivation

DECEMBER	**Second periodic assessment**						
	Statistics	Mean Deviation , variance & standard deviation of ungrouped & grouped data	Inductive – Deductive, Inquiry based, Integrated	Project Based Assignment	Concept Presentation Application	Activity based on election 2024	Video
	Principle of Mathematical Induction	proof by induction method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications.	Inductive – Deductive, Inquiry based	Class test	Accuracy, Relevant to topic		
JANUARY	Probability	Random experiment, outcomes, sample spaces, mutually exclusive, exhaustive events, Probability of an event, probability of 'not ', 'and' and 'or' events.	Constructivist, Reflective	Lab activity		Game based on probability	
FEBRUARY	**Revision for Annual Exam**						
	Annual Examination						

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DEPARTMENT OF MATHEMATICS

CLASS: XII

MONTH	CHAPTER	EXPECTED LEARNING OUTCOMES	PEDAGOGICAL APPROACH (TEACHING METHODS/ STRATEGIES)	ASSESSMENT TOOLS	RUBRICS	ART INTEGRATION	ICT INTEGRATION
APRIL	Relations and Functions	Types of relations, equivalence relation, bijective function.	Inquiry based, Classroom discussion Real life simulations	Concept mapping Class test Lab Activity Worksheet	**Content**- relevant concepts **Logic & understanding**- linkages **Presentation**- neat, legible, easy to follow	Sketch concept map	PPT
	Inverse Trigonometric Functions	Definition , range , domain, principal value branch, Graphs of ITF	Constructive, Inquiry based, Integrative	Lab activity worksheet	Content Coordination Presentation	Role Play (LET'S SPEAK	PPT
	Matrices	Notation, equality, Order, types of matrices, operations on matrices, transpose, symmetric and skew symmetric, invertible matrices	Inductive – Deductive	Worksheet			
	Determinants	Determination of a square matrix, minors & cofactors, adjoint & inverse, application of determinants in finding area of a triangle, solving system of linear equations in two or three variables, inconsistency &no.of solutions	Constructive, Inquiry based	Problem solving worksheet	Approach Steps/ performance Accuracy		Module for finding inverse

JULY	Continuity & Differentiability	Continuity & differentiability, derivative of composite functions, chain rule, derivative of ITF, implicit functions, parametric functions, logarithmic differentiation, second order derivative	Inquiry based, Lecture, Inductive	Worksheet Class Test		Role Play	
	Applications of Derivate	Rate of change, increasing decreasing functions, maxima & minima, simple problems of real-life situations		Worksheet Lab activity	Content Research Analysis Presentation		
	Linear Programming	Related terminology, types of linear programming problems and their graphical solutions, feasible & non feasible solution		Project based			
AUGUST	First periodic assessment						
	Integrals	Integration as inverse process of differentiation, Indefinite integration by substitution, partial fractions, by parts, Evaluation of integrals in the standard forms Definite integrals as a limit of the sums, basic properties of definite integrals and evaluation of definite integrals	Classroom discussion, Lecture	Worksheet Lab activity	Concept Presentation Application	Prepare a chart of formulae of Integrals	

	Applications of the integrals	Applications in Finding the area under simple curves especially lines,circle/parabola/ellipse in the standard form only.	Classroom Discussion, Inquiry based	Assignment Lab activity			Module on area under curves
SEPTEMBER	Differential Equations	Order & degree, solutions of differential equations by separation of variables, soln. of homogeneous and linear diff. equations.	Lecture	Worksheet Concept Map	**Content** **Logic & understanding**-linkages **Presentation**	Sketch concept map	
OCTOBER	**MID -TERM EXAMINATION**						
	Probability	Conditional probability, multiplication theorem, independent events, total probability, Bayes' theorem, Random variable& probability distribution	Constructivist, Lecture	Home Assignment Lab activity	Concept Presentation Application		
NOVEMBER	Vectors	Direction cosine, direction ratios of a vector, types of vectors, addition, subtraction of vectors, multiplication by a scalar, dot product, cross product	Inquiry based	Flipped classroom **Pen and Paper Test**			Module on vectors
	3D Geometry	d. ratios & d. cosines of a line joining two points, Cartesian & vector equation of a line, coplanar & skew lines,	Lecture, Drill & Practice	Concept Mapping	**Content** **Logic & understanding**-linkages **Presentation**	Sketch the concept map	

		shortest distance b/w two lines.					
DECEMBER + JANUARY	**REVISION PRE -BOARD EXAMINATION**			**Sample Papers**			
FEBRUARY	**Revision -**		**Drill & practice**	**Sample papers**			

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