BISHOP SCOTT BOYS' SCHOOL

C - Curriculum

D - Development &

L - Learning

O - Objectives

12

MATHS

BISHOP SCOTT BOYS' SCHOOL

STUDENT CURRICULUM MANUAL

Subject : MATHEMATICS | **Class : XII** | **Academic Plan : 2025 -26**

Month	Course Description	Learning Outcome	Activity	No. of Periods	Portion for PT & TERM Assessment
April	LESSON 1: RELATIONS AND FUNCTIONS	• Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions	ACTIVITY 1, 2, 3, 4	15	
	LESSON 2: INVERSE TRIGONOMETRIC FUNCTIONS	• Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions.	ACTIVITY 5, 6, 7 & 8	15	
May	LESSON 3: MATRICES	• Concept, notation, order, equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication and multiplication with a scalar. Simple properties of addition.	ACTIVITY 9 & 10	12	
June	LESSON 3: MATRICES	• Multiplication and scalar multiplication. On- commutativity of multiplication of matrices and existence of non-zero matrices whose product is the zero matrix (restrict to square matrices of order 2). Invertible matrices and proof of the uniqueness of inverse, if it exists;	ACTIVITY 11,12 & 13	13	

		(Here all matrices will have real entries).			
Month	Course Description	Learning Outcome	Activity	No. of Periods	Portion for PT & TERM Assessment
July	LESSON 4: DETERMINANTS	• Determinant of a square matrix (up to 3 x 3 matrices), minors, co-factors and applications of determinants in finding the area of a triangle. Adjoint and inverse of a square matrix. Consistency, inconsistency and number of solutions of system of linear equations by examples, solving system of linear equations in two or three variables (having unique solution) using inverse of a matrix.	ACTIVITY 14, 15, 16 & 17	25	PT – 1 PORTION LESSON 1 - RELATIONS AND FUNCTIONS LESSON 2: INVERSE TRIGONOMETRIC FUNCTIONS LESSON 3: MATRICES
	LESSON 5: CONTINUITY AND DIFFERENTIABALITY	• Continuity and differentiability, chain rule, derivative of inverse trigonometric functions, like $\sin^{-1} x$, $\cos^{-1} x$ and $\tan^{-1} x$, derivative of implicit functions. Concept of exponential and logarithmic functions. Derivatives of logarithmic and exponential functions. Logarithmic differentiation, derivative of functions expressed in parametric forms. Second order derivatives.		20	

August	LESSON 6: APPLICATION OF DERIVATIVES LESSON 7: INTEGRALS	• Applications of derivatives: rate of change of quantities, increasing/decreasing functions, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate basic principles and understanding of the subject as well as real-life situations). Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of simple integrals of the following types and problems based on them. $\int \frac{dx}{x^2 \pm a^2}, \int \frac{dx}{\sqrt{x^2 \pm a^2}}, \int \frac{dx}{\sqrt{a^2 - x^2}},$ $\int \frac{dx}{a^2 + bx + c}, \int \frac{dx}{\sqrt{a^2 + bx + c}}$ $\int \frac{px + q}{a^2 + bx + c}\, dx,$ $\int \frac{px + q}{\sqrt{a^2 + bx + c}}\, dx,$ $\int \sqrt{a^2 \pm x^2}\, dx, \int \sqrt{x^2 - a^2}\, dx,$ $\int \sqrt{a^2 + bx + c}\, dx$ • Fundamental Theorem of Calculus (without proof). Basic	ACTIVITY 18, 19, 20 & 21	30	

		properties of definite integrals and evaluation of definite integrals			

Month	Course Description	Learning Outcome	Activity	No. of Periods	Portion for PT & TERM Assessment
September	LESSON 8: APPLICATION OF INTEGRALS	• Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only)	ACTIVITY 22, 23 & 24	15	**TERM – 1 PORTION** LESSON 1 - RELATIONS AND FUNCTIONS LESSON 2: INVERSE TRIGONOMETRIC FUNCTIONS LESSON 3: MATRICES LESSON 4: DETERMINANTS LESSON 5: CONTINUITY AND DIFFERENTIABALITY LESSON 6: APPLICATION OF DERIVATIVES
	LESSON 9: DIFFERENTIAL EQUATIONS	Definition, order and degree, general and particular solutions of a differential equation. Solution of differential equations by method of separation of variables, solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation of the type: $\frac{dy}{dx} + py = q$,where p and q are fuctions of x or constants $\frac{dx}{dy} + px = q$ where p and q are fuctions of y or		15	

		constants			

Month	Course Description	Learning Outcome	Activity	No. of Periods	Portion for PT & TERM Assessment
October	LESSON 10: VECTORS	• Vectors and scalars, magnitude and direction of a vector. Direction cosines and direction ratios of a vector. Types of vectors (equal, unit, zero, parallel and collinear vectors), position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, position vector of a point dividing a line segment in a given ratio. Definition, Geometrical Interpretation, properties and application of scalar (dot) product of vectors, vector (cross) product of vectors.	ACTIVITY 25, & 26	15	

	LESSON 11: THREE DIMENSIONAL GEOMETRY	• Direction cosines and direction ratios of a line joining two points. Cartesian equation and vector equation of a line, skew lines, shortest distance between two lines. Angle between two lines.		15	
Month	Course Description	Learning Outcome	Activity	No. of Periods	Portion for PT & TERM Assessment
November	LESSON 12: LINEAR PROGRAMMING	• Introduction, related terminology such as constraints, objective function, optimization, graphical method of solution for problems in two variables, feasible and infeasible regions (bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints).	ACTIVITY 27	20	**PT – 2 PORTION** LESSON 7: INTEGRALS LESSON 8: APPLICATION OF INTEGRALS LESSON 9: DIFFERENTIAL EQUATIONS

	LESSON 13: PROBABILITY	• Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of random variable.		30	
December	**REVISION**				**PRE-BOARD EXAM-I**
Janwary	**REVISION**				**PRE-BOARD EXAM-II**