



CBSE · CLASS 12

Mathematics

Senior secondary board examination syllabus covering Relations & Functions, Matrices & Determinants, Calculus (Differentiation, Integration, Differential Equations), Vectors & 3D Geometry, Linear Programming, and Probability.

Board: Central Board of Secondary Education**Theory:** 80 Marks**Internal/Practical:** 20 Marks**Exam Duration:** 3 Hours

UNIT-WISE SYLLABUS & MARKS BREAKDOWN

UNIT	CHAPTERS & PRESCRIBED TOPICS	MARKS
Unit I	Relations and Functions Types of relations: reflexive, symmetric, transitive and equivalence relations; One to one and onto functions; Inverse Trigonometric Functions: Definition, range, domain, principal value branch	08
Unit II	Algebra Matrices: Concept, notation, order, equality, operations (addition, scalar multiplication, multiplication), transpose of a matrix, symmetric and skew-symmetric matrices; Determinants: Determinant of a square matrix (up to 3×3), minors, cofactors, applications in finding area of a triangle, adjoint and inverse of a matrix, solving system of linear equations in two or three variables using inverse of a matrix	10
Unit III	Calculus Continuity and Differentiability: Continuity and differentiability, derivative of composite functions, chain rule, derivative of inverse trigonometric functions, derivative of implicit functions; Concept of exponential and logarithmic functions, logarithmic differentiation, derivative of functions expressed in parametric forms, second order derivatives; Applications of Derivatives: Rate of change of quantities, increasing/decreasing functions, maxima and minima; Integrals: Integration as inverse process of differentiation, integration of a variety of functions by substitution, by partial fractions and by parts; Fundamental Theorem of Calculus, basic properties of definite integrals and evaluation of definite integrals; Applications of the Integrals: Applications in finding the area under simple curves, especially lines, circles/parabolas/ellipses; Differential Equations: Definition, order and degree, general and particular solutions of a differential equation, solution of differential equations by method of separation of variables, homogeneous differential equations of first order and first degree, solutions of linear differential equation of the type: $dy/dx + py = q$	35
Unit IV	Vectors and Three-Dimensional Geometry Vectors: Vectors and scalars, magnitude and direction of a vector, direction cosines and direction ratios of a vector, types of vectors, position vector of a point, negative of a vector, components of a vector, addition of vectors, multiplication of a vector by a scalar, dot (scalar) product of vectors, projection of a vector on a line, cross (vector) product of vectors; Three-Dimensional Geometry: Direction cosines and direction ratios of a line joining two points, Cartesian equation and vector equation of a line, coplanar and skew lines, shortest distance between two lines	14

UNIT	CHAPTERS & PRESCRIBED TOPICS	MARKS
Unit V	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)	05
Unit VI	Probability Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean of a random variable	08

INTERNAL / PRACTICAL ASSESSMENT SCHEME (20 MARKS)

EVALUATION COMPONENT	MARKS WEIGHTAGE
Periodic Written Tests Best 2 out of 3 periodic tests conducted in school	10 Marks
Math Activities & Viva Voce NCERT Mathematics lab manual practicals and oral exam	10 Marks

RECOMMENDED REFERENCE LITERATURE

Prescribed Textbooks: NCERT Mathematics Class 12 (Parts 1 & 2), RD Sharma, Excellence Calculus & Vector Problem Bank

The Excellence Tuition Edge

Every unit in this curriculum is taught with structured conceptual lectures, followed by weekly speed-testing, detailed mistake analysis, and dedicated 1:1 doubt-clearing sessions to build board exam confidence.

Excellence Tuition Centres: Sarsuna (Opp. High School) · Joka · Chatterjee Para (Behala)

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