

Mathematics

WBJEE 2026 Question Paper Pattern

All questions in WBJEE are **Multiple-Choice Questions (MCQs)** with four options. Each subject contains three categories of questions with different marking and negative-marking schemes.

Subject	Category 1	Category 2	Category 3	Total Questions	Total Marks
Mathematics	50	15	10	75	100
Physics	30	5	5	40	50
Chemistry	30	5	5	40	50

Category-wise Marking Scheme

Category	Marks per Question	Negative Marking
Category 1	1 mark	–¼ mark for an incorrect answer
Category 2	2 marks	–½ mark for an incorrect answer
Category 3	2 marks	No negative marking

Total: 155 questions carrying **200 marks**.

Particular	Details
Subject	Mathematics
Number of Questions	75

Total Marks	100
Major Topics	Calculus, Algebra, Coordinate Geometry, Vectors, 3D Geometry, Probability, etc.
Difficulty Level	Challenging
Key Skills Required	Strong problem-solving and analytical skills
Preparation Focus	Conceptual clarity, extensive practice and strict time management

WBJEE 2027 Mathematics Syllabus

No.	Mathematics Chapter	Important Topics
1	Algebra – A.P., G.P. & H.P.	A.P., G.P., H.P.: Definitions of A.P., G.P., and H.P.; General term; Summation of first n-terms of series Σn , Σn^2 , Σn^3 ; Arithmetic/Geometric series, A.M., G.M. and their relation; Infinite G.P. series and its sum
2	Logarithms	Definition; General properties; Change of base

3	Complex Numbers	Definition in terms of ordered pair of real numbers and its representation in a plane; Argand plane and properties of complex numbers; Complex conjugate; Triangle inequality; Amplitude of complex numbers and its properties; Square root of complex numbers; Cube roots of unity and its applications; De Moivre's theorem (statement only) and its elementary applications; Solution of quadratic equation in the complex number system.
4	Polynomial Equation	Polynomial equation with real coefficients, Fundamental theorem of Algebra; Quadratic equations with real coefficients; Relations between roots and coefficients; Nature of roots; Formation of a quadratic equation; Sign and magnitude of the quadratic expression $ax^2 + bx + c$ (where a, b, c are rational numbers and $a \neq 0$).

5	Permutation and Combination	Permutation of n different things taken r at a time ($r \leq n$); The permutation of things which are not all different; Permutation with repetitions; Combinations of n different things taken r at a time ($r \leq n$); Combination of things not all different; Problems involving both permutations and combinations.
6	Principle of Mathematical Induction	Statement of the principle, proof by induction for the sum of squares; The sum of cubes of first n natural numbers; Divisibility properties like $2^{2^n} - 1$ is divisible by 3 ($n \geq 1$), 7 divides $3 \cdot 2^{n+1} + 2^{n+2}$ ($n \geq 1$), etc.
7	Binomial Theorem	(positive integral index): Statement of the theorem; General term; Middle term; Equidistant terms and Properties of binomial coefficients and its applications

8	Matrices	concepts of $m \times n$ ($m \leq 3, n \leq 3$) real matrices; Operations of addition, Scalar multiplication and Multiplication of matrices; Transpose of a matrix; Determinant of a square matrix; Properties of determinants; Minor, Cofactor and Adjoint of a matrix; Non-singular matrix; The inverse of a matrix; Solutions of system of linear equations (Not more than 3 variables); Application of Determinants in finding the area of triangle
9	Sets, Relations and Mappings	Concept of sets; Subsets, Power set, Complement, Union, Intersection, Difference and Symmetric difference of sets; Venn diagram; De Morgan's Laws; Inclusion / Exclusion formula for at most three sets; Cartesian product of sets
10	Relation and its Properties	equivalence relation — definition and elementary examples; Mapping; Range and Domain; Injective, Surjective, and Bijective mappings; Composition of mappings; Inverse of a mapping

11	Statistics and Probability	Measure of dispersion; Mean; Variance and Standard deviation; Frequency distribution; Notion of probability; Addition and Multiplication rules of probability; Conditional probability and Bayes' Theorem; Independence of events; Repeated independent trials and Binomial distribution.
12	Trigonometry	Trigonometric functions; Compound angles; Addition and Subtraction formulae; Formulae involving Multiple and Submultiple angles; General solution of trigonometric equations; Inverse trigonometric functions and their properties

13	Coordinate Geometry of Two Dimensions	Coordinates: Distance formula; Section formula; Area of a triangle; Condition of collinearity of three points in a plane; Polar coordinates; Transformation from Cartesian to polar coordinates and vice versa; Parallel transformation of axes; Concept of locus; Problems on Locus involving familiar geometrical configurations.
14	Straight Lines	The slope of a straight line; Equation of straight lines in different forms; The angle between two straight lines; Condition of perpendicularity and parallelism of two straight lines; Distance of a point from a straight line; Distance between two parallel straight lines; Straight lines through the point of intersection of two straight lines; Equations of bisectors of angles between two straight lines

15	Circle & Conic Sections	Equation of a circle with a given centre and radius; Condition that a general equation of second degree in x, y may represent a circle; Equation of a circle in terms of endpoints of a diameter; Parametric equation of a circle; Equation of tangent, normal and chord of a Circle; The intersection of a straight line with a circle; Equation of common chord and common tangent of two intersecting circles; Definition of conic section; Directrix; Focus and Eccentricity; Classification based on eccentricity; Equation of Parabola, Ellipse and INFORMATION BULLETIN-WBJEE-2026 WBJEEB 41 Hyperbola in standard form; Their foci, directrices, eccentricities and parametric equations.
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16	Coordinate Geometry of Three Dimensions	Direction cosines and Direction ratios; Distance between two points and Section formula; Equation of a straight line; Equation of a plane and Distance of a point from a plane and straight lines; Angle between two straight lines; Shortest distance between two skew lines
17	Calculus – Differential Calculus	Functions; Domain and Range of functions; Composition of two functions and Inverse of a function; Basic properties of functions; Limit; Continuity; Differentiability; Derivative; Chain rule and Derivative of functions in various forms; Concept of differential and its applications; Second order derivative.
18	Rolle's Theorem & Lagrange's Mean Value Theorem	(statement only). Their geometric interpretation and Elementary application; L'Hospital's rule (statement only) and applications.

19	Integral Calculus	Integration as a reverse process of differentiation; Indefinite integral of standard functions; Integration by parts; Integration by substitution and Partial fraction; Definite integral as a limit of a sum with equal subdivisions; Fundamental theorem of integral calculus and its applications; Properties of definite integrals.
20	Differential Equations	Formation of ordinary differential equations; Order and Degree of differential equations; Solution of homogeneous differential equations; Separation of variables method; Linear first order differential equations

21	Application of Calculus	Differential coefficient as a measure of rate; Determination of monotonicity of functions; Maxima and Minima of functions; Tangent and Normal; Conditions of tangency; Motion in a straight line with constant acceleration; Calculation of area bounded by elementary curves and Straight lines; The area of the region included between two elementary curves
22	Vectors	Addition of vectors; Scalar multiplication; Dot and Cross products; Scalar triple product; Geometrical interpretation of these products and their applications.