WBJEE Mathematics Syllabus 2027: Chapter-Wise Topics

Based on the WBJEE 2026 Information Bulletin shared, the Mathematics syllabus includes the following topics:

1. **Algebra:** Arithmetic Progression (A.P.), Geometric Progression (G.P.), Harmonic Progression (H.P.), summation of series, Arithmetic-Geometric Series, A.M., G.M., H.M., and infinite G.P.
2. **Logarithms:** Definition, general properties, and change of base.
3. **Complex Numbers:** Representation in a plane, Argand plane, conjugates, triangle inequality, amplitude, square and cube roots, De Moivre's theorem, and quadratic equations in the complex number system.
4. **Polynomial Equations:** Fundamental theorem of algebra, quadratic equations, relations between roots and coefficients, nature of roots, and quadratic expressions.
5. **Permutation and Combination:** Permutations, permutations with repetitions, combinations, and related problems.
6. **Principle of Mathematical Induction:** Principle and proof by induction, sums of squares and cubes, and divisibility properties.
7. **Binomial Theorem:** Positive integral index, general and middle terms, equidistant terms, binomial coefficients, and applications.
8. **Matrices and Determinants:** Matrix operations, transpose, determinants, minors, cofactors, adjoint, inverse, non-singular matrices, systems of linear equations, and area of a triangle using determinants.
9. **Sets, Relations and Mappings:** Sets, subsets, power sets, set operations, Venn diagrams, De Morgan's laws, inclusion-exclusion, Cartesian products, and relations between sets.
10. **Relation and Its Properties:** Equivalence relations, mappings, range and domain, injective, surjective and bijective mappings, composition, and inverse mappings.
11. **Statistics and Probability:** Mean, variance, standard deviation, frequency distribution, probability rules, conditional probability, Bayes' theorem, independent events, repeated independent trials, and binomial distribution.

12. **Trigonometry:** Trigonometric functions, compound angles, addition and subtraction formulae, multiple and submultiple angles, general solutions of trigonometric equations, and inverse trigonometric functions.
13. **Coordinate Geometry of Two Dimensions:** Distance and section formulae, area of a triangle, collinearity, polar coordinates, coordinate transformations, locus, and problems involving families of geometrical configurations.
14. **Straight Lines:** Slope, equations of straight lines, angles between lines, perpendicularity and parallelism, distance of a point from a line, distance between parallel lines, intersection of lines, and angle bisectors.
15. **Circle and Conic Sections:** Circle equations, tangent, normal and chord, common chords and tangents, conic sections, focus, directrix, eccentricity, and classification of conics.
16. **Vectors:** Addition of vectors, scalar multiplication, dot product, cross product, scalar triple product, geometrical interpretations, and applications.