CET SYALLBUS (MATHEMATICS)

1. **Mathematical Logic Statements**

2. **Matrices**

3. **Pair of Straight Lines**

4. **Circle**

5. **Line**

6. **Conics**

7. **Trigonometric Functions**

8. **Vectors**

9. **Three-Dimensional Geometry**

10. **Plane**

11. **Linear Programming Problems**

12. **Continuity**

13. **Applications of Derivative**

14. **Integration**

15. **Differentiation**

16. **Applications of Definite Integral**

17. **Differential Equation**

18. **Probability Distribution**

19. **Statistics**

Mathematics Syllabus from Class 11th

1. Trigonometric Functions of Compound Angles
2. Factorization Formulae
3. Trigonometric Functions
4. Straight Line
5. Circle and Conics
6. Sets, Relations, and Functions
7. Sequences & Series
8. Probability

MHT CET Exam Pattern 2020-21

Candidates who wish to appear for the exam must know the exam pattern along with the syllabus of MHT CET 2020. The computer-based test will have an objective type of questions and candidates will have to finish each paper within 90 minutes. As per the marking scheme, there will be no negative marking. Check the table below for more understanding of MHT CET exam pattern:

Paper pattern of MHT CET 2020

Papers	Time Duration	Marks
Paper I (Mathematics)	90	100

| Paper II (Physics and Chemistry) | 90 | 100 |

MHT CET 2020-21 Marking Scheme

Candidates appearing for the exam must know the marking scheme. As per the MHT CET 2020 exam pattern in Paper I (Mathematics) candidates will be allotted two marks for each question whereas in paper II (Physics and Chemistry) for each correct answer one mark will be given. There will be no negative marking and for unattempt

answers, no marks will be deducted.

Subject	Approximate number of questions	Total marks
Mathematics	Class 11 – 10 Class 12 – 40	100
Physics	Class 11 – 10 Class 12 – 40	50
Chemistry	Class 11 – 10 Class 12 – 40	50

JEE (ADVANCE) MATHEMATICS SYALLBUS

Algebra

Algebra of complex numbers, addition, multiplication, conjugation, polar representation, properties of modulus and principal argument, triangle inequality, cube roots of unity, geometric interpretations. Quadratic equations with real coefficients, relations between roots and coefficients, formation of quadratic equations with given roots, symmetric functions of roots. Arithmetic, geometric and harmonic progressions, arithmetic, geometric and harmonic means, sums of finite arithmetic and geometric progressions, infinite geometric series, sums of squares and cubes of the first n natural numbers. Logarithms and their properties. Permutations and combinations, binomial theorem for a positive integral index, properties of binomial coefficients.

Matrices

Matrices as a rectangular array of real numbers, equality of matrices, addition, multiplication by a scalar and product of matrices, transpose of a matrix, determinant of a square matrix of order up to three, inverse of a square matrix of order up to three, properties of these matrix operations, diagonal, symmetric and skew-symmetric matrices and their properties, solutions of simultaneous linear equations in two or three variables.

Probability

Addition and multiplication rules of probability, conditional probability, Bayes Theorem,

independence of events, computation of probability of events using permutations and combinations.

Trigonometry

Trigonometric functions, their periodicity and graphs, addition and subtraction formulae, formulae involving multiple and sub-multiple angles, general solution of trigonometric equations. Relations between sides and angles of a triangle, sine rule, cosine rule, half-angle formula and the area of a triangle, inverse trigonometric functions (principal value only).

Analytical geometry

Two dimensions: Cartesian coordinates, distance between two points, section formulae, shift of origin. Equation of a straight line in various forms, angle between two lines, distance of a point from a line; Lines through the point of intersection of two given lines, equation of the bisector of the angle between two lines, concurrency of lines; Centroid, orthocentre, incentre and circumcentre of a triangle. Equation of a circle in various forms, equations of tangent, normal and chord. Parametric equations of a circle, intersection of a circle with a straight line or a circle, equation of a circle through the points of intersection of two circles and those of a circle and a straight line. Equations of a parabola, ellipse and hyperbola in standard form, their foci, directrices and eccentricity, parametric equations, equations of tangent and normal. Locus problems. Three dimensions: Direction cosines and direction ratios, equation of a straight line in space, equation of a plane, distance of a point from a plane.

Differential calculus

 Real valued functions of a real variable, into, onto and one-to-one functions, sum, difference, product and quotient of two functions, composite functions, absolute value, polynomial, rational, trigonometric, exponential and logarithmic functions.

Limit and continuity of a function,

 limit and continuity of the sum, difference, product and quotient of two functions ,L- Hospital rule of evaluation of limits of functions. Even and odd functions, inverse of a function, continuity of composite functions, intermediate value property of continuous functions. Derivative of a function, derivative of the sum, difference, product and quotient of two functions, chain rule, derivatives of polynomial, rational, trigonometric, inverse trigonometric, exponential and logarithmic functions. Derivatives of implicit functions, derivatives up to order two, geometrical interpretation of the derivative, tangents and normals, increasing and decreasing functions, maximum and minimum values of a function, Rolle's theorem and Lagrange's mean value theorem.

Integral calculus

 Integration as the inverse process of differentiation, indefinite integrals of standard functions, definite integrals and their properties, fundamental theorem of integral calculus. Integration by parts, integration by the methods of substitution and partial fractions, application of definite integrals to the determination of areas involving simple curves. Formation of ordinary differential equations, solution of homogeneous differential equations, separation of

variables method, linear first order differential equations.

Vectors

Addition of vectors, scalar multiplication, dot and cross products, scalar triple products and their geometrical interpretations.

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