BLOOM PUBLIC SCHOOL
C-8 Vasant Kunj, New Delhi
Syllabus for the Session 2023-24

Class: XII
Subject: MATHEMATICS

| SYLLABUS |  |  |
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| MONTH | CHAPTER <br> ( NCERT Text book) | CONTENT |
| April | Chapter 4: <br> Determinants <br> Chapter 1: Relation and Functions <br> Chapter 2: Inverse Trigonometric Functions | Determinant of a square matrix (up to $3 \times 3$ 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. <br> Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions. <br> Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. |
| May | Chapter 5: <br> Continuity and Differentiability <br> Chapter 6: <br> Applications of Derivatives | 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. <br> 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). |
| July | Chapter 7: Integrals | 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. |


|  | Chapter 8: <br> Applications of the Integrals | $\begin{gathered} \int \frac{d x}{x^{2} \pm a^{2}} \int \frac{d x}{\sqrt{x^{2} \pm a^{2}}} \cdot \int \frac{d x}{\sqrt{a^{2}-x^{2}}} \int \frac{d x}{a^{2}+b x+c}, \int \frac{d x}{\sqrt{a^{2}+b x+c}} \\ \int \frac{p x+q}{a x^{2}+b x+c} d x, \int \frac{p x+q}{\sqrt{a x^{2}+b x+c}} d x, \int \sqrt{a^{2} \pm x^{2}} d x, \quad \int \sqrt{x^{2}-a^{2}} d x \end{gathered}$ <br> Fundamental Theorem of Calculus (without proof). Basic properties of definite integrals and evaluation of definite integrals. <br> Applications in finding the area under simple curves, especially lines, circles/ parabolas/ellipses (in standard form only) |
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| August | Chapter 9: Differential Equations <br> Chapter 10: Vectors | 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: <br> $\mathrm{dy} / \mathrm{dx}+\mathrm{py}=\mathrm{q}$, where p and q are functions of x or constants. <br> $\mathrm{d} x / \mathrm{d} y+\mathrm{px}=\mathrm{q}$, where p and q are functions of y or constants. <br> 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. |
| September | Chapter 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. |
| October | Chapter 12: <br> Linear Programming <br> Chapter 13: Probability | 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). <br> Conditional probability, multiplication theorem on probability, independent events, total probability, Bayes' |


|  |  | theorem, Random variable and its probability distribution, <br> mean of random variable. |
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| November | Revision <br> Pre-Board Exam | Chapter wise revision <br> Sample papers \& Previous years Board Exam papers |
| December | Revision <br> Pre-Board Exam | Remedial classes |
| January | Revision | Remedial classes |
| February | Revision | Remedial classes |
| March | Board Exams | ASSESSMENT SYLLABUS |


|  | Chapter 3: Matrices |
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|  | Chapter 4: Determinants |
|  | Chapter 5: Continuity and Differentiability |
| Chapter 6: Applications of Derivatives |  |
|  | Chapter 7: Integrals |
| Chapter 8: Applications of the Integrals |  |
|  | Chapter 9: Differential Equations |
|  | Chapter 10: Vectors |
|  | Chapter 11: Three - dimensional Geometry |
|  | Chapter 12: Linear Programming |
|  | Chapter 13: Probability |

