**SPLIT OF SYLLABUS WEEKWISE**

**MATHEMATICS**

**CLASS XII**

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|  | CHAPTER | DURATION | CONTENT | ACTIVITY |
| APRL/JUNE | **MATRICES** | FIRST WEEK | Concept, notation, order, equality, types of matrices, zero and  identity matrix, transpose of a matrix, symmetric and skew  symmetric matrices. Operation on matrices: Addition and  multiplication and multiplication with a scalar. Simple properties  of addition, multiplication and scalar multiplication. Noncommutativity  of multiplication of matrices and existence of  non-zero matrices whose product is the zero matrix (restrict to  square matrices of order 2) | ACTIVITY -1 |
| **MATRICES** | SECOND WEEK | Concept of elementary row and  column operations. Invertible matrices and proof of the  uniqueness of inverse, if it exists; |  |
| DETEMINANTS | THIRD WEEK | Determinant of a square matrix (up to 3 x 3 matrices),  properties of determinants, minors, co-factors and applications  of determinants in finding the area of a triangle. | ACTIVITY - 2 |
| DETEMINANTS | FOURTH WEEK | 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. |  |
| JULY | **RELATION FUNCTION, CALCULUS** | FIRST WEEK | Types of relations: reflexive, symmetric, transitive and  equivalence relations. One to one and onto functions,  composite functions, inverse of a function. | ACTIVITY : 1 |
| **INVERSE TRIGONOMETRIC FUNCTIONS** | SECOND WEEK | Definition, range, domain, principal value branch. Graphs of  inverse trigonometric functions. Elementary properties of  inverse trigonometric functions. | ACTIVITY -2 |
| **CONTINUITY AND DIFFERENTIABILITY** | THIRD WEEK | Continuity and differentiability, derivative of composite  functions, chain rule, derivatives of inverse trigonometric  functions, derivative of implicit functions. Concept of  exponential and logarithmic functions |
| **CONTINUITY AND DIFFERENTIABILITY** | FOURTH WEEK | Derivatives of logarithmic  and exponential functions.Logarithmic differentiation, derivative  of functions expressed in parametric forms. Second order  derivatives. Rolle's and Lagrange's Mean Value Theorems  (without proof) and their geometric interpretation.) |  |
| AUGUST | **APPLICATIONS OF DERIVATIVES** | FIRST WEEK | Applications of derivatives: rate of change of bodies,  increasing/decreasing functions, tangents and normals, use of  derivatives in approximation | ACTIVITY-1 |
| **APPLICATIONS OF DERIVATIVES** | SECOND WEEK | 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). |
| **INTEGRALS** | THIRD WEEK | Integration as inverse process of differentiation. Integration of  variety of functions by substitution, by partial fractions and by  parts. | ACTIVITY-2 |
| **INTEGRALS** | FOURTH WEEK | Evaluation of simple integrals and STANDARD integrals and  problems based on them.  Definite integrals as a limit of a sum, Fundamental Theorem of  Calculus (without proof).  . |
| SEPTEMBER | **APPLICATIONS OF THE INTEGRALS** | FIRST WEEK | Basic properties of definite integrals  and evaluation of definite integrals Applications in finding the area under simple curves, especially  lines, circles/parabolas/ellipses (in standard form only), | ACTIVITY-1 |
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| **APPLICATIONS OF THE INTEGRALS** | SECOND WEEK | Area  between any of the two above said curves (the region should  be clearly identifiable). |  |
| OCTOBER | **DIFFERENTIAL EQUATIONS** | FIRST WEEK | Definition, order and degree, general and particular solutions of  a differential equation. Formation of differential equation whose  general solution is given. Solution of differential equations by  method of separation of variables. Solutions of homogeneous  differential equations of first order and first degree |  |
| **DIFFERENTIAL EQUATIONS** | SECOND WEEK | Solutions of  linear differential equation of the type:  dy/dx + p y= q, where p and q are functions of *x* or constants.  dy/dx + p x = q, where p and q are functions of y or constants. | ACTIVITY-1 |
| **VECTORS** | THIRD WEEK | 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. |  |
| **VECTORS** | FOURTH WEEK | Definition, Geometrical Interpretation, properties and  application of scalar (dot) product of vectors, vector (cross)  product of vectors, scalar triple product of vectors. | ACTIVITY-2 |
| NOVMBER | **THREE DIMENSIONAL GEOMETRY** | FIRST WEEK | 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.. | ACTIVITY-1 |
| **THREE DIMENSIONAL GEOMETRY** | SECOND WEEK | Cartesian and vector equation of a plane. Angle between (i) two  lines, (ii) two planes, (iii) a line and a plane. Distance of a point  from a plane |
| **LINEAR PROGRAMMING** | THIRD WEEK | Introduction, related terminology such as constraints, objective  function, optimization, different types of linear programming  (L.P.) problems, mathematical formulation of L.P. problems,  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). | ACTIVITY-2 |
| **PROBABILITY** | FOURTH WEEK | Conditional probability, multiplication theorem on probability,  independent events, total probability, Bayes’ theorem, Random  variable and its probability distribution, mean and variance of  random variable. |
| **DECEMBER** |  |  | REVISION & 1ST PRE-BOARD (9-12-19 to 15-12-19) |  |
| **JANUARY** |  |  | REVISION & 2ND PRE-BOARD (18-01-20 to 31-01-20) |  |
| **FEBRUARY** |  |  | PRACTICE PAPERS |  |
| **MARCH** |  |  | BOARD EXAMINATIONS |  |