MONTHLY SYLLABUS

SESSION-2016-17

CLASS XII

SUBJECT : MATHEMATICS

MONTH	CONTENTS
April 2016	**Matrices** : Concept, notation, order equality, types of matrices, zero and identity matrix, transpose of a matrix, symmetric and skew symmetric matrices, properties of transpose, addition, subtraction, multiplication of matrices. Non-commutability of matris multiplication and existence of non-zero matrices whose product in null matrix. Concept of elementary row and column operations. Invertible matrices and proof of uniqueness of inverse, if it exists. Finding inverse using elementary row column transformation. **Determinates**: determinants of square matrix (upto 3 x 3 order) properties of, determinants, problems based on properties of determinants. Minors, co-factors application of determinants in finding the area of triangle. Adjoint, inverse of a square matrix. Properties of inverse of a matrix, consistency, inconsistency of system of linear equations. Number of solutions with examples. Solving the system of linear equations in two or three variables (having unique solution) using inverse of matrix **Relation and Functions**: Relations, types of relations, reflexive, symmetric, transitive and equivalence relations, equivalence class. Function it's definition, injective, surjective, bijective function,composite function. Inverse of a function, binary operations towards responsible relationships. **YUVA SESSION: Towards better understanding of Gender**

	and Sex (1st APRIL TO 15 APRIL) **YUVA Session : towards responsible relationships.**
May 2016	**Inverse Trigonometric Function** : Definition, range, domain, principal value branches graphs of inverse trigonometric function, elementary properties of inverse trigonometric function. **Continuity and differentiability** : Continuity and differentiability, derivative of composite functions, chain rule, derivatives of inverse trigonometric functions. Derivative of implicit functions. Concept of exponential and logarithmic functions, derivative of Exponential and logarithmic functions, logarithmic differentiation, derivative of parametric functions, second order derivatives.
July 2016	**Rolle's and Lagrange's** mean value theorems (without proof) and their geometrical interpretation. Application of Derivatives: rate of change of bodies/quantities, increasing/decreasing functions. Interdisciplinary Problems. Tangents and normals, use of derivative in approximations, maxima and minima (first order derivative test motivated geometrically and second order derivative test given as provable tool). Simple problems that illustrate basic principle and understanding of the subject as well as real life situations. **YUVA SESSION : Let everyone Live**
August 2016	**Integrals:** integration as inverse process of differentiation, integration by substitutions. Integration of special types (Some Special integrals).

	$\frac{dx}{x^2 \quad a^2}$, $\frac{dx}{\sqrt{x^2 \quad a^2}}$, $\frac{dx}{\sqrt{a^2 \quad x^2}}$, $\frac{dx}{ax^2 \quad bx \quad c}$, $\frac{px \quad q}{ax^2 \quad bx \quad c}dx$, $\sqrt{a^2 \quad x^2}\,dx$, $\sqrt{x^2 \quad a^2}dx$, $\sqrt{ax^2 \quad bx \quad c}\,dx$, $(px \quad q)\sqrt{ax^2 \quad bx \quad c}\,dx$ Integration by partial fractions, by parts, miscellaneous problems. Definite integral as a limit of a sum. Fundamental theorem of integral- calculus (without proof). Introduction of properties of definite integrals. Integration based on properties of definite integrals. **Application of definite integrals**: application of definite integrals in finding area under simple curves, lines, circles, parabolas ellipses (standard form only) Ares between the two above said curves (the region should be clearly identifiable)
September 2016	Differential Equations: Definition, order and degree. General and particular solution of a differential equation whose general solution is given. Formation of differential equation whose general solution is given. Solution of differential equation by method of separation of variables, homogeneous differential equations of first order and first degree. Linear differential equation of type: $\frac{dy}{dx}$ py q Where p and q are functions of x or constants. $\frac{dx}{dy}$ px q Where p and q are functions of y or constants. Revision of SAI- Syllabus SA-I EXAMS

October 2016	Discussion of SA-1 Question paper Vectors and scalars, magnitude and direction of a vector, direction cosines and direction ratios of a vector, types of vectors, position vector of a point, negative of a vector, components of a vector, addition of vectors multiplication of vector by a scalar, position vector of a point dividing a line segment in a given ratio, Scalar (dot) product of vectors, projection of a vector on a line. Vector (cross) product of vectors. Scalar triple product of vectors. **Three dimensional Geometry** Direction cosines and direction ratios of a line joining two points, Cartesian and vector equation of a line, coplanar and skew lines, shortest distance between two lines, angle between two lines, distance between two parallel lines. Cartesian and vector equations of a plane in different forms, angle between two planes, angle between a line and a plane, distance of a point from a plane, condition for coplanarity to two lines. **YUVA SESSION : LET NOT THE NEWBORNS DIE**
November 2016	**Linear programming :** 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, feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints), (value based problems). Interdisciplinary problems. **Probability :** Conditional Probability, multiplication theorem on probability, independent events, total probability, Bayes' theorem, Random variable and its probability distribution, mean and variance of random variable. (Value based Problems)

	Repeated independent (Bernoulli's) trails, and binomial distribution.
December 2016	Revision of mock test syllabus, mock test, discussion of mock test, Question paper Revision of Unit 1,2,3,4,5,6 Discussion of CBSE Sample Paper
Jan 2017	Winter vacation Common Pre-Board School Examination 2016-17 Discussion of question paper of Pre- board Examination Revision of chapters 1-3 with support material.
Feb 2017	Revision of chapter 4-8 with support material Revision of chapter 9-12 with support material Discussion of HOTS questions with value based questions Discussion of doubts of students.
March 2017	**Board Examinations** **BEST Wishes**