KENDRIYA VIDYALAYA SANGATHAN (KOLKATA REGION)

SPLIT UP SYLLABUS (2017-18)

CLASS XII –MATHEMATICS

MONTHS	CHAPTERS/TOPICS	NO.OF PERIODS	PERIODICAL TESTS, PRE BOARDS AND SYLLABUS
APRIL TO JUNE 2017	1. **Relations and Functions**: Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one and onto functions, composite functions, inverse of a function. Binary operations. **2. Inverse Trigonometric Functions** : Definition, range, domain, principal value branch. Graphs of inverse trigonometric functions. Elementary properties of inverse trigonometric functions. **3. Matrices:** 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).Concept of elementary row and column operations. Invertible matrices and proof of the uniqueness of inverse, if it exists; (Here all matrices will have real entries).	36	
JULY 2017	**1. Determinants:** 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. 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. **2. 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. 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. **3. Applications of Derivatives**: Applications of derivatives: rate of change of bodies, increasing/decreasing functions.	36	**PERIODICAL TEST 1**: EXP. DATE : 17TH JULY TO 26TH JULY,2017 Syllabus: Relation and function, Inverse trigonometric function and Matrices and determinant.
AUGUST 2017	**1. Applications of Derivatives (Conti..):** Tangents and normals, use of derivatives in approximation, maxima and minima (first derivative test motivated geometrically and second derivative test given as a provable tool). Simple problems (that illustrate	33	

	basic principles and understanding of the subject as well as real-life situations). **2. 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 special types and problems based on them. $\int \frac{dx}{ax^2+bx+c}$, $\int \frac{dx}{\sqrt{ax^2+bx+c}}$, $\int \frac{px+q}{\sqrt{ax^2+bx+c}}\,dx$		**PERIODICAL TEST 2:** EXP. DATE : 18TH AUGUST TO 26TH AUGUST,2017 Syllabus: Continuity and differentiability, Application of derivatives.
SEPTEMBER 2017	**1. Integrals(conti…)** $\int \sqrt{ax^2+bx+c}$ **dx ,** $\int (px+q)\sqrt{ax^2+bx+c}$ **dx etc.** **2.** Definite integrals as a limit of a sum, Fundamental Theorem of Calculus (without proof).Basic properties of definite integrals and evaluation of definite integrals. **3. Applications of the Integrals** : Applications in finding the area under simple curves, especially lines, circles/parabolas/ellipses (in standard form only), Area between any of the two above said curves (the region should be clearly identifiable). **4. Differential Equations** : 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	27	
OCTOBER 2017	**Differential Equations(conti…):** Solutions of homogeneous differential equations of first order and first degree. Solutions of linear differential equation. **1. Vectors and Three-Dimensional Geometry :** **Vectors** : 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, scalar triple product of vectors. **2. Three - dimensional Geometry**: 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. 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.	28	**HALF YEARLY EXAM**: EXP. DATE : 20TH OCTOBER TO 31ST OCTOBER,2017 Syllabus: Up to Differential Equation and Vector.
NOVEMBER 2017	**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	36	

	two variables, feasible and infeasible regions(bounded or unbounded), feasible and infeasible solutions, optimal feasible solutions (up to three non-trivial constraints). **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. Repeated independent (Bernoulli) trials and Binomial distribution. **REVISION**		**Class test** on 3-D, LPP and PROBABILITY after the completion of syllabus.
DECEMBER 2017	REVISION	**FIRST PRE BOARD**: ON WHOLE SYLLABUS EXP. DATE OF COMMENCEMENT: 4TH DECEMBER , 2017	
JANUUARY 2017	REVISION	**SECOND PRE BOARD**: ON WHOLE SYLLABUS EXP. DATE OF COMMENCEMENT: 8TH JANUARY, 2018	
FEBRUARY 2017	REVISION	**THIRD PRE BOARD**: ON WHOLE SYLLABUS	