SPLIT UP SYLLABUS (SUMMER STATION)

CLASS: XI

SUB: MATHEMATICS

MONTH	DISTRIBUTION OF SYLLABUS	No. Of Periods	No. Of Working Days	Weightage Covered	Progressive Weightage
June, July	**Sets :** Sets and their representations. Empty set. Finite & Infinite sets. Equal sets. Subsets. Subsets of the set of real umbers especially intervals (with notations). Power set. Universal set. Venn diagrams. Union and Intersection of sets. Difference of sets. Complement of a set. **Relations & Functions** : Ordered pairs, Cartesian product of sets. Number of elements in the Cartesian product of two finite sets. Cartesian product of the reals with itself (upto R x R x R). Definition of relation, pictorial diagrams, domain. codomain and range of a relation. Function as a special kind of relation from one set to another. Pictorial representation of a function, domain, co-domain & range of a function. Real valued function of the real variable, domain and range of these functions, constant, identity, polynomial, rational, modulus, signum and greatest integer functions with their graphs. Sum, difference, product and quotients of functions. **Trigonometric Functions:** Positive and negative angles. Measuring angles in radians & in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Signs of trigonometric functions and sketch of their graphs.	12 14 18	32	29	29
August	**Trigonometric Functions: Continued …….** Expressing sin (x+y) and cos (x+y) in terms of sin$x$, sin$y$, cos$x$ & cos$y$. Deducing the identities like the following: $\tan(x \pm y) = \frac{\tan x \pm \tan y}{1 \mp \tan x \tan y}$, $\cot(x \pm y) = \frac{\cot x \cot y \mp 1}{\cot y \pm \cot x}$, $\sin x + \sin y = 2 \sin\frac{x+y}{2}\cos\frac{x-y}{2}$, $\cos x + \cos y = 2 \cos\frac{x+y}{2}\cos\frac{x-y}{2}$, $\sin x - \sin y = 2 \cos\frac{x+y}{2}\sin\frac{x-y}{2}$, $\cos x - \cos y = -2 \sin\frac{x+y}{2}\sin\frac{x-y}{2}$, Identities related to sin 2x, cos2x, tan 2x, sin3x, cos3x and tan3x. General solution of trigonometric equations of the type $\sin\theta = \sin\alpha$, $\cos\theta = \cos\alpha$ and $\tan\theta = \tan\alpha$. **Principle of Mathematical Induction:** Processes of the proof by induction, motivating the application of the method by looking at natural numbers as the least inductive subset of real numbers. The principle of mathematical induction and simple applications	10	25	37	

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	. **Complex Numbers and Quadratic Equations:** Need for complex numbers, especially , to be motivated by Inability to solve every quadratic equation. Brief description of algebraic properties of complex numbers. Argand plane and polar representation of complex numbers. Statement of Fundamental Theorem of Algebra, solution of quadratic equations in the complex number system.	10			66
Sep	**Linear Inequalities:** Linear inequalities. Algebraic solutions of linear inequalities in one variable and their representation on the number line. Graphical solution of linear inequalities in two variables. Solution of system of linear inequalities in two variables- graphically. **Permutations & Combinations:** Fundamental principle of counting. Factorial *n.* (*n!*) Permutations and combinations, derivation of formulae and their connections, simple applications **Binomial Theorem:** History, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, General and middle term in binomial expansion, simple applications.	10 12 8	25		
October	**Sequence and Series:** Sequence and Series. Arithmetic progression (A. P.). arithmetic mean (A.M.) Geometric progression (G.P.), general term of a G.P., sum of *n* terms of a G.P., geometric mean (G.M.), relation between A.M. and G.M. Sum to *n* terms of the special series $\sum_{k=1}^{n} k,\ \sum_{k=1}^{n} k^2$ and $\sum_{k=1}^{n} k^3$ **Straight Lines:** Brief recall of 2D from earlier classes. Slope of a line and angle between two lines. Various forms of equations of a line: parallel to axes, point-slope form, slope-intercept form, two point form, intercept form and normal form. General equation of a line. Distance of a point from a line.	10 9	14		
November	**Conic Sections:** Sections of a cone: circle, ellipse, parabola, hyperbola, a point, a straight line and pair of intersecting lines as a degenerated case of a conic section. Standard equations and simple properties of parabola, ellipse and hyperbola. Standard equation of a circle. **Introduction to Three -dimensional Geometry** Coordinate axes and coordinate planes in three dimensions. Coordinates of a point. Distance between two points and section formula.	20	26		79

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December	Limit and differentiation Derivative introduced as rate of change both as that of distance function and geometrically, intuitive idea of limit. Definition of derivative, relate it to slope of tangent of the curve, derivative of sum, difference, product and quotient of functions. Derivatives of polynomial and trigonometric functions. **Mathematical Reasoning:** Mathematically acceptable statements. Connecting words/ phrases - consolidating the understanding of "if and only if (necessary and sufficient) condition", "implies", "and/or", "implied by", "and", "or", "there exists" and their use through variety of examples related to real life and Mathematics. Validating the statements involving the connecting words difference between contradiction, converse and contrapositive.	26	19	06 03	88
January	**Statistics:** Measures of dispersion; mean deviation, variance and standard deviation of ungrouped/grouped data. Analysis of frequency distributions with equal means but different variances. **Probability:** Random experiments: outcomes, sample spaces (set representation). Events: occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events Axiomatic (set theoretic) probability, connections with the theories of earlier classes. Probability of an event, probability of 'not', 'and' & 'or' events.	20	23	12	100
Februar	**Revision**				

Note- Every week atleast one computer aided class should be organised.