

**MATHEMATICS (041)**

**CLASS 12 (SESSION: 2020-2021)**

<b>Serial No.</b>	<b>Month</b>	<b>Name of the chapter</b>	<b>Learning Outcomes</b>
1	April	<b><u>Relations and functions:</u></b> Types of relations: reflexive, symmetric, transitive and equivalence relations. One to one functions.	To verify equivalence relation in a given set. Verifying that a given function is one-one, many-one, onto/not onto or one-one onto.
2	May & June	<b><u>Inverse Trigonometric Functions</u></b> Definition, range, domain, principal value branch.  <b><u>Matrices and Determinants:</u></b> Matrices concept, notation, order, equality, types of matrices, zero and identity matrix, symmetric and skew symmetric matrices. Operation on matrices: Addition and multiplication with a scalar.	To find the inverse of trigonometric functions, explaining the concept of principal value branch and principal value of inverse trigonometric functions.  Understanding matrices and its practical uses, performing different operations on two or more matrices. Formation of matrices of different order.
3	July	<b><u>Matrices and Determinants:</u></b> Simple properties of addition, multiplication and scalar multiplication. Non-commutativity of multiplication of matrices, Invertible matrices. Determinants: Determinant of a square matrix, minors, co-factors and application of determinants in finding the area of triangle. Adjoint and inverse of a square matrix. Solving system of linear equations in two or three variables using inverse of a matrix.	Perform elementary operations. Using elementary row or column operations to find inverse of an invertible matrix. Evaluating determinants. Describing properties of determinants. Applying determinant and its properties in different type of mathematical problems. Defining and finding minor, cofactor and adjoint for a matrix. Checking the consistency of system of linear equations.
4	August	<b><u>Continuity and Differentiability:</u></b> Condition for continuity and differentiability, derivative of composite functions, chain rule derivative of inverse trigonometric functions, derivative of implicit functions. Derivatives of logarithmic and exponential functions, derivative of parametric functions. Second order derivatives. Applications of Derivatives: Increasing/decreasing functions, tangents and normal, maxima and minima and second derivative test.  <b><u>Integrals:</u></b> Integration as inverse process of differentiation. Integration of a variety of functions by substitution, by partial fractions and by parts, Evaluation of special integrals.	Checking the continuity of a function at a point and in an interval. Checking the differentiability of a function. Differentiating parametric, inverse, exponential and logarithmic functions. Finding higher order derivatives. Verify and check applicability of Rolle's and Lagrange's mean value theorems.  Integrating functions by substitution, partial fractions and by parts. Recognising different types of integrals and their solution,