

MTH110:REMEDIAL MATHEMATICS

L:3 T:1 P:0 Credits:4

Course Outcomes: Through this course students should be able to

CO1 :: recall trigonometric ratios and functions of sum and difference of two angles.

CO2 :: understand the concepts of functions, limits, and continuity.

CO3 :: apply differentiation techniques to find derivatives of various functions, including standard, implicit, and composite functions.

CO4 :: understand the concept of integration as the inverse of differentiation.

CO5 :: interpret matrix operations and their applications to linear equations, including determinants and inverses.

Unit I

Fundamentals of trigonometry : trigonometric ratios, trigonometric ratios of some specific angles, trigonometric identities, trigonometric functions, relation between radian and real numbers, domain and range of trigonometric functions, trigonometric functions of sum and difference of two angles

Unit II

Functions, limit and continuity : functions, some specific types of functions, algebra of real functions, limits, algebra of limits, limits of polynomials and rational functions, limits of trigonometric functions, continuity, algebra of continuous functions

Unit III

Differentiability of function : derivatives by first principle, algebra of derivative of functions, differentiability, derivatives of composite functions, chain rule, derivatives of implicit functions, derivatives of inverse trigonometric functions, derivatives of exponential and logarithmic functions, logarithmic differentiation, derivatives of functions in parametric forms, second order derivatives

Unit IV

Integration I : integration as an inverse process of differentiation, integration by substitution, integration using trigonometric identities, integrals of some particular functions, integration by partial fractions

Unit V

Integration II : integration by parts, definite integral, definite integral as the limit of a sum, some properties of definite integrals

Unit VI

Matrices and determinants : types of matrices, matrix operations (addition, subtraction, multiplication and transpose of matrices), determinant of second and third order, adjoint and inverse of non-singular matrices of second and third order, solution of system of linear equations using inverse of a matrix, application of determinant to solve simultaneous equations by cramer's rule

Text Books:

1. MATHEMATICS FOR CLASS XI by NCERT, NCERT
2. MATHEMATICS FOR CLASS XII PART II by NCERT, NCERT
3. MATHEMATICS FOR CLASS XII PART I by NCERT, NCERT

References:

1. HIGHER ENGINEERING MATHEMATICS by B.S. GREWAL, KHANNA PUBLISHERS
2. MATHEMATICS FOR CLASS X by NCERT, NCERT

