Year & Sem: P2S1	Course Code: M212	Course Name: Mathematics	No. of Credits: 4	L-T-P: 2-2-0

Syllabus:

UNIT-I: APPLICATIONS OF DERIVATIVES
Extreme values of functions, Finding extreme values, Rolle's Theorem, Mean value theorems, Increasing and Decreasing functions, The First derivative test, Curve Sketching, The second Derivative Test, Strategy for Graphing, Asymptotes, Graphing with Asymptotes and Dominant Terms, Optimization.

UNIT-II: INDEFINITE INTEGRALS
Indefinite integrals, Integration by substitution, Approximation by Finite Sums, Average Value of a Non-negative Function, Algebra of Finite Sums, Limit of Riemann Sums.

UNIT-III: DEFINITE INTEGRALS
Definite Integrals, Properties of Definite Integrals, Mean Value Theorem for Integrals, The Fundamental Theorem, Evaluation of Definite Integrals, Substitution in Definite Integrals.

UNIT-IV: APPLICATIONS OF INTEGRATION
Area using Integrals, Area between Curves, Volumes of Solids by Slicing, Volumes of Solids of Revolution – Disks, Volumes of Solids of Revolution – Washers, Volumes of Solids of Revolution– Shell Method, Length of Curves, Area of Surfaces of Revolution.

UNIT-V: PERMUTATIONS AND COMBINATIONS
Fundamental Principle of Counting Distributions, Permutations, Permutations with Repetitions, Ordered Samples, Combinations.

UNIT-VI: CONIC SECTIONS
Circle, Parabola, Ellipse, Hyperbola, Classifying Conic Sections by Eccentricity.

References:

1. KHAN ACADEMY WEBSITE
2. TELUGU ACADEMI and NCERT First and Second year Textbooks (IA, IB, IIA, IIB)
3. THOMAS' CALCULUS OF EARLY TRANSCENDENTALS 12th Edition, George B. Thomas, Jr, Maurice D. Weir, Joel Hass