**IT 1107: Differential and Integral Calculus**

Matrices: Introduction, Determination, Inverse of a matrix, Rank of a Matrix, Eigen value Problems.

Differential Calculus: Limits, continuity and differentiablity; Successive differentiation of various types of

functions; Leibnitz’s Theorem; Roole’s Theorem; Mean valueTheorem in finite and infinite forms;

Lagrange’s form of remainders; Cauchy’s form of remainder; Expansion of functions; Evaluation of

indeterminate forms by L’Hospitals rule; Patial differentiation; Euler’s Theorem; Tangenet and Normal,

Subtangent and subnormal in Cartesian and polar co-ordinates; Maximum and minimum values of

functions of single variable.

Integral Calculus: Definitions of integration; Integration by the method of substitutions; Integration by

parts; Standard integrals; Integration by the method of successive reduction; Definite integrals and its

properties and use in summing series; Walli’s formula, Improper integrals, Beta function and Gamma

function; Area under a plane curve in Cartesian and polar co-ordinates; Trapezoidal rule, simpson’s rule.

arc lengths of curves in Cartesian and polar co-ordinates, parametric and pedal equations.

***Suggested Texts:***

1. Differential and Integral Calculus, Vol. 2 by Richard Courant, Edward James McShane and

Sam Sloan

2. Schaum's Outline of Theory and Problems of Differential and Integral Calculus (Schaums

Outline Series) by Frank Ayres and Elliott Mendelson

3. Calculus by Howard Anton, Irl C. Bivens and Stephen Davis

4. Differential and Integral Calculus by C. E. Love, E. D. Rainville - The MacMillan Company