MA101: MATHEMATICS-I (3-1-0:4)

Differential Calculus of Single Variable

Limit, continuity and differentiation with emphasis on hyperbolic and inverse hyperbolic functions, successive differentiation; a brief idea of power series and its convergence; radius and interval of convergence; Taylor's and Maclaurin's series; L' Hospital's rule; radius of curvature of a curve; curve tracing.

Integral Calculus of Single Variable

Definite integral as the limit of a sum; applications of definite integral in finding area between curves, length of a plane curve, surface area of revolution, volume of solids of revolution; beta and gamma functions.

Ordinary Differential Equation of First Order

Linear and nonlinear first order ODEs; exact differential equations; first order ODEs in some real world problems.

Linear Algebra (Matrices)

Elementary row and column operations; echelon form; normal form; rank of a matrix; system of linear equations; eigen values and eigen vectors; Cayley-Hamilton theorem; diagonalization; vector space over R and C, subspaces, bases and dimension.

Text Book

1. J. Stewart, "*Calculus*", Cengage Learning India Pvt. Limited.
2. E. Kreyszig, "*Advanced Engineering Mathematics*", John Wiley & Sons.

References

1. R. K. Jain and S. R. K. Iyengar, "*Advanced Engineering Mathematics*", Narosa Publishing House.
2. B. S. Grewal, "*Higher Engineering Mathematics*", Khanna Publications.