



# STANLEY

**COLLEGE OF ENGINEERING & TECHNOLOGY FOR WOMEN**  
( Approved by AICTE , New Delhi | Affiliated to Osmania University ,Hyderabad )  
Address : Chapel Road, Abids ,Hyderabad

## Department of Mathematics

### MATHEMATICS -1)(MT101

Unit	Details
I	Infinite series Sequence - Infinite Series - Convergence and divergence - Comparison test - Ratio test, Cauchy's test - Raabe's test - Logarithmic series test - Alternating series - Absolute convergence - Conditional convergence.
II	Differential calculus Rolle's theorem - Mean value theorems - Taylor's series - expansion of functions on power series - curvature - radius of curvature (Cartesian, polar and parametric co-ordinates) Envelopes - Evolutes and Involutives.
III	Functions of Several Variables Tracing of curves in Cartesian and polar coordinates - Limits and continuity of functions of two variables - partial derivatives - Total differentials and derivatives - Approximation by total differential - Derivatives of composite and implicit functions - Higher order partial derivatives - Homogeneous functions - Taylor's theorem for functions of two variables - Maxima and minima of functions of two variables with constraints - Lagrange's method Jacobian - change of variables.
IV	Vector Analysis Multiple Integrals : Double and triple integrals - change of order of integration - scalar and vector fields - Vector differentiation - Directional derivative - Gradient of a Scalar field - Divergence - Curl of vector field - Line - Surface and volume integrals - Green's theorem - in a plane - Gauss's divergence theorem - Stoke's theorem (without proofs) and their applications.
V	Linear Algebra Elementary row and column operations on a matrix - Rank

of a matrix Solution of system of linear equations - Linear dependence and independence of vectors - Characteristic equation - Characteristic roots and vectors - Caley - Hamilton theorem - Reduction to diagonal form and normal form - Reduction of a quadratic form into canonical form.
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<b>Book Title/Authors/Publication</b>
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R.K.Jain and S.R.K.Iyengar , "Advanced Engineering Mathematics", Narosa Publications
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Dr.B.S,Grewal "Higher Engineering Mathematics", Khanna Publications
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Erwin Kreyszig, "Advanced Engineering Mathematics", Wiley-India.
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