

**Unit I: Differential Calculus:**

**25 Marks**

Euler's Theorem on homogeneous function, derivatives of Composite functions, total derivatives, Jacobians, Taylor's theorem for a function of two variables, Maxima & Minima, Lagrange's method of undetermined multipliers, Errors and approximations, Tangent Plane and normal to a surface.

**Unit 2: Integral Calculus:**

**25 Marks**

Differentiation under integral sign (Leibniz's rule), multiple integrals, Areas and Volumes by double and triple integrals, Improper integrals, Beta and Gamma functions.

**Unit 3: Vector Calculus:**

**25 Marks**

Differentiation of vector functions, scalar and vector fields, gradient of a Scalar function, directional derivative, Divergence and curl of a vector point function, physical interpretation of gradient, divergence and curl, properties of grad, div & curl; Repeated operation by  $\nabla$ ; Integrations of vector functions, Line, surface and Volume integrals, Theorems of Gauss, Stokes and Green.

**Unit 4: Fourier series:**

**10 Marks**

Fourier series expansion of  $f(x)$  in  $c < x < c + 2\pi$ , Dirichlet's conditions, Fourier series for discontinuous functions, change of intervals, half range series.

**Unit 5: Analytical solid geometry:**

**15 Marks**

Straight lines, coplanar lines and the equations of the common plane, shortest distance between two skew lines, sphere and circle, standard equations cone, cylinder, conicoids.

**Texts/ References:**

1. Advanced Engg Maths	E. Kreyszig	Wiley eastern Ltd
2. ..	Peter V. O'Neil	Thomson Books
3. A Text book on Engg Maths	Bali, Iyenger	Laxmi Publication
4. Higher Engg Maths	B. S. Grewal	Khanna Publishers
5. Calculus	James Stewart	Thomson Books