

SHANTILAL SHAH ENGINEERING COLLEGE, BHAVNAGAR  
MID SEM EXAM SYLLABUS  
**SUBJECT: Mathematics-1 (3110014)**

- (1) Indeterminate Forms and L'Hôpital's Rule Improper Integrals, Convergence and divergence of the integrals
- (2) Convergence and divergence of sequences, The Sandwich Theorem for Sequences, The Continuous Function Theorem for Sequences, Bounded Monotonic Sequences
- (3) Functions of several variables, Limits and continuity, Test for non existence of a limit, Partial differentiation, Mixed derivative theorem, differentiability, Chain rule, Implicit differentiation, tangent plane and normal line, total differentiation, Local extreme values, Method of Lagrange Multipliers
- (4) Elementary row operations in Matrix, Row echelon and Reduced row echelon forms, Rank by echelon forms, Inverse by Gauss-Jordan method, Solution of system of linear equations by Gauss elimination and Gauss-Jordan methods. Eigen values and Eigen vectors, Cayley-Hamilton theorem, Diagonalization of a matrix.