Department Of Electrical Engineering
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Syllabus for the written examination

Engineering Mathematics: Linear algebra: Matrices, determinants, Vector spaces, Linear transformations and their matrix representations, rank and nullity; systems of linear equations, eigenvalues and eigenvectors, Cayley-Hamilton Theorem, diagonalization, symmetric, skew-symmetric, Hermitian, skew-Hermitian, orthogonal and unitary matrices; Finite dimensional inner product space; Differential equations: First order equations (linear and nonlinear), Higher order linear differential equations, Initial and boundary value problems; Laplace transforms, Numerical solutions of linear and non-linear algebraic equations, Probability and Random variables; Numerical analysis: Newton-Raphson method, fixed point iteration; Interpolation: error of polynomial interpolation, Lagrange and Newton interpolations; Numerical differentiation; Numerical integration: Trapezoidal and Simpson's rules; Numerical solution of a system of linear equations: direct methods, iterative methods;