SECTION-I (Compulsory For all Branches)

Engineering Mathematics:

Linear Algebra*:* Matrix algebra; Systems of linear equations; Eigen values and eigenvectors.

Calculus*:* Functions of single variable; Limit, continuity and differentiability; Mean value theorems; Evaluation of definite and improper integrals; Partial derivatives, Total derivative, Maxima and minima, Gradient, Divergence and Curl, Vector dentities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.

Differential equations*:* First order equations (linear and nonlinear); Higher order linear differential equations with constant coefficients; Cauchy's and Euler's equations; Initial and boundary value problems, Laplace transforms; Solutions of one dimensional heat and wave equations and Laplace equation.

Complex variables*:* Analytic functions; Cauchy's integral theorem; Taylor and Laurent series; Residue theorem.

Probability and Statistics*:* Definitions of probability and sampling theorems; Conditional probability; Mean, median, mode and standard deviation; Random variables; Poisson, Normal and Binomial distributions.

Numerical Methods*:* Numerical solutions of linear and non-linear algebraic equations; Integration by trapezoidal and Simpson's rule; Single and multi-step methods for differential equations.