

Linear Algebra: Vector algebra; Matrix – Matrix operations, Determinant, Rank of a matrix, Eigen values and Eigen vectors; System of linear equations.

Calculus: Functions of a single variable and plots; Limit, continuity and differentiability; Mean value theorem; Local / Global maxima and minima; Sequences and Series; Taylor and Maclaurin series; Indefinite and definite integrals; Application of definite integral to find area and volume; Partial and total derivatives. Functions of complex variables – Roots, Analytic functions (Cauchy-Riemann equation).

Differential Equations: First order linear and nonlinear ordinary differential equations (ODE); Higher order linear ODEs with constant coefficients; Cauchy-Euler equation.

(It is presumed that the candidate is knowledgeable with high-school mathematics such as basic geometry, trigonometry, coordinate geometry and algebra, which are fundamental to the given syllabus for the mathematics test)