Syllabus for Admission Test

Section 1: General Aptitude

Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables. Analytical Aptitude: Logic: deduction and induction Analogy, Numerical relations and reasoning and Spatial Aptitude: Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 Dimensions.

Section 2: Mathematics and Statistics

Calculus: Elementary set theory, finite, countable and uncountable sets, integers, real, and complex numbers, polynomials, functions of one and two variables, , limits, continuity, differentiation, integration, analytical geometry of two dimensions, sequence and series of real numbers , partial derivatives, line, surface and volume integrals, vector identities, Fourier series.

Linear Algebra: vector space, subspaces, linear dependence and independence, basis, dimensions, algebra of matrices, rank and determinant of matrices, Eigen value, Eigen vectors, system of linear equations.

Differential equations: First order equation (linear and nonlinear), second-order linear differential equations with constant coefficients, Method of variation of parameters, Cauchy's and Euler's equations, Initial and boundary value problems, solution of partial differential equations: variable separable method.

Probability and Statistics: Descriptive Statistics: Measure of central tendency, measure of dispersion, moments, correlation, linear regression, probability, conditional probability, Bayes theorem,
independence, random variables, discrete and continuous probability distributions, point estimation: population, sample, parameter, statistic, unbiasedness, consistency, methods of estimation(method of moments, method of maximum likelihood), testing of hypothesis, tests of significance: t, F, Z and chi square tests, Index Numbers.

Numerical Methods: Matrix inversion, solutions of non-linear algebraic equations, iterative methods for solving differential equations, numerical integration, regression and correlation analysis.

Section 3: Computational Methods

Branching and Iteration, String Manipulation, Decomposition, Abstractions, Functions, Tuples, Lists, Aliasing, Mutability, Cloning, Object Oriented Programming, Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, graphs, searching, sorting.

The pattern of Marks Distribution:

A candidate appearing in the admission test has to answer the following:

Section 1: GA – General Aptitude carrying a total of 20 marks. There will be 20 MCQ type Questions of 1 mark each (without negative marking)
Section 2: Mathematics and Statistics – This section contains 20 questions carrying a total of 40 marks: each question carrying 2-mark. Some questions will be of MSQ (Multiple Selection Questions) and some are of numerical answer type. These questions carry 1 negative marks for each wrong answer.
Section 3: Computational Methods: This section contains 20 questions carrying a total of 40 marks: each question carrying 2-mark. Some questions will be of MSQ (Multiple Selection Questions) and some are of numerical answer type. These questions carry 1 negative marks for each wrong answer.