PCA [First Half, MCQ Type]

Analytical Reasoning.

Elementary Number Theory: Divisibility, Congruence, Primality.

Elementary Algebra: Arithmetic, Geometric and Harmonic Progression. Inequalities involving Arithmetic, Geometric and Harmonic Mean. Binomial Theorem and Multinomial theorem, Theory of Polynomials.

Linear Algebra: Matrices, Determinant, Rank and Inverse, Properties of Symmetric and Idempotent Matrices, Vectors, Eigenvalues and Eigenvectors, Quadratic Forms. System of Linear Equations.

Euclidean and Coordinate Geometry: Straight Line, Circle, Triangles.

Calculus: Sequences and their Properties. Series, Power Series, Taylor Series and Maclaurin Series, Convergence. Limits, Continuity, Differentiation and Integration of Functions, Rolle's Theorem and Mean Value Theorem. Maxima and Minima.

Discrete Mathematics: Elementary Set Theory, Permutations and Combinations, Functions and Relations, Recurrences,

Basic Graph Theory: Paths and Cycles, Connected Components, Trees, Digraphs.

Elementary Discrete Probability Theory: Combinatorial Probability, Conditional Probability, Bayes Theorem.

Mathematical Logic: Boolean Algebra, Propositional Logic, Predicate Logic.

Basic Automata Theory: Strings, Languages, Finite State Automata, Regular Expressions.

Basic Algorithmic Concepts: Interpreting Simple Pseudocodes Written with Sequential, Conditional, Iterative, Recursive Constructs.