# PGQP26

**Entrance Test for the Course(s):** M.Sc. (Computer Science and Information Technology) [CUHAR], (Computer Science) [CURAJ], [CUKER], [CUTND], [CUSBR], (Computer Science (Big Data Analytics)) [CURAJ], (Computer Application) [CUKNK]

**1. PART-A** will consist of **25 objective questions** (MCQs) and will include English, General Awareness, Mathematical Aptitude and Analytical Skills.

**2. PART-B** will consist of **75 objective questions** (MCQs) from the following syllabus:

**Basic Mathematics**
Set theory: Venn diagram, set operations, mathematical induction, functions and relations Algebra and linear algebra: Theory of equations, complex numbers, matrices and Determinants.

Real and complex analysis: Basics of limit, continuity, differentiation, integration, elementary differential equations, series and sequences and their convergence, Analytic functions, Cauchy-Riemann equations, complex integration, Cauchy's theorem and formula, power series and their convergence, Taylor and Laurent series, beta and gamma functions, Laplace and Fourier transforms.

Combinatorics: Sum and product rules, permutation, combination, recurrence relations, pigeon-hole principle, principle of inclusion and exclusion Probability and statistics: Mean, median, mode, basic notion of probability, expectation, variance and standard deviation, discrete and continuous probability distributions, binomial, Poisson and normal distributions, conditional probability and Bayes theorem

**Digital Logic**
Switching theory: Boolean algebra, logic gates, and switching functions, truth tables and switching expressions, minimization of switching functions, Karnaugh map.
Combinational logic circuits: Realization of Boolean functions using gates and multiplexers Sequential m/c model: Flip-flops, basic design of counters.

**Basics of Programming**
The student should be familiar with the basic concepts of programming and should be able to write programs involving the following concepts in any one of the following languages: C, C++ or Java. Conditional constructs, iteration (loops), function or method call, recursion, recursive decomposition of a problem.Basic notions of space and time complexity Parameter passing mechanism, scope, binding

**Data Structure:** Arrays, lists, stacks, queues, binary tree, binary search tree, Basics of searching and sorting, Graph and its representation
**Database Management System**: ER Diagram, SQL queries

**Computer networks:** Network Fundamentals and Communication

**Operating system**: Memory management and Scheduling

**Design analysis and Algorithm:** Divide and Conqure, Greedy Approach, Dynamic Programing, Branch and Bound

**Software Engineering:** Models