MT-156 Discrete Mathematics

Mathematical logic, sets, functions, algorithms, complexity of algorithms, mathematical reasoning, induction, recursion, sequences and sums, recursive definitions, recursive algorithms, counting, the pigeonhole principal, permutations and combinations, binomial coefficients, discrete probability, expected value and variance, recurrence relations, solving recurrence relations, divide-and-conquer relations, generating functions, inclusion-exclusion relations and their properties, representing relations, closures of relations, equivalence relations, partial ordering, introduction to graphs, graph terminology, representing graphs and graph isomorphism, connectivity, Euler and Hamilton paths, shortest path problems, introduction to trees, applications of trees, tree traversal, spanning trees and minimum spanning trees.

Recommended Books:

1. "Discrete Mathematics and its Applications", Kenneth H. Rosen, McGraw Hill, Science/Engineering/Math, 6th Edition, 2006.

2. "Mathematical Structures for Computer Science", Judith L. Gersting, W. H. Freeman, 6th Edition, 2006.