NPTEL Video Course - Computer Science and Engineering - NOC:Discrete Mathematics (Prof. Sajith Gopalan)

Subject Co-ordinator - Prof. Benny George K

Co-ordinating Institute - IIT - Guwahati

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Boolean Functions
Lecture 2 - Propositional Calculus
Lecture 3 - First Order Logic
Lecture 4 - First Order Logic
Lecture 5 - Proof System for Propcal
Lecture 6 - First Order Logic
Lecture 7 - Soundness and Completeness of the First Order Proof System
Lecture 8 - Sets, Relations, Functions
Lecture 9 - Functions, Embedding of the theories of naturals numbers and integers in Set Theory
Lecture 10 - Embedding of the theories of integers and rational numbers in Set Theory; Countable Sets
Lecture 11 - Introduction to graph theory
Lecture 12 - Trees, Cycles, Graph coloring
Lecture 13 - Bipartitie Graphs
Lecture 14 - Bipartitie Graphs; Edge Coloring and Matching
Lecture 15 - Planar Graphs
Lecture 16 - Graph Searching; BFS and DFS
Lecture 17 - Network Flows
Lecture 18 - Counting Spanning Trees in Complete Graphs
Lecture 19 - Embedding of the theory of ral numbers in Set Theory; Paradoxes
Lecture 20 - ZF Axiomatization of Set Theory
Lecture 21 - Partially ordering relations
Lecture 22 - Natural numbers, divisors
Lecture 23 - Lattices
Lecture 24 - GCD, Euclid's Algorithm
Lecture 25 - Prime Numbers
Lecture 26 - Congruences
Lecture 27 - Pigeon Hole Principle
Lecture 28 - Stirling Numbers, Bell Numbers
Lecture 29 - Generating Functions

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Lecture 30 - Product of Generating Functions
Lecture 31 - Composition of Generating Function
Lecture 32 - Principle of Inclusion Exclusion
Lecture 33 - Rook placement problem
Lecture 34 - Solution of Congruences
Lecture 35 - Chinese Remainder Theorem
Lecture 36 - Totient; Congruences; Floor and Ceiling Functions
Lecture 37 - Introduction to Groups
Lecture 38 - Modular Arithmetic and Groups
Lecture 39 - Dihedral Groups, Isomorhphisms
Lecture 40 - Cyclic groups, Direct Products, Subgroups
Lecture 41 - Cosets, Lagrange's theorem
Lecture 42 - Rings and Fields
Lecture 43 - Construction of Finite Fields
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