

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Computer Science and Engineering - NOC:Discrete Mathematics (IIITB)

Subject Co-ordinator - Prof. Ashish Choudhury

Co-ordinating Institute - IIIT - Bangalore

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

Lecture 1 - Introduction to Mathematical Logic
Lecture 2 - Logical Equivalence
Lecture 3 - SAT Problem
Lecture 4 - Rules of Inference
Lecture 5 - Resolution
Lecture 6 - Tutorial 1 - Part I
Lecture 7 - Tutorial 1 - Part II
Lecture 8 - Predicate Logic
Lecture 9 - Rules of Inferences in Predicate Logic
Lecture 10 - Proof Strategies - I
Lecture 11 - Proof Strategies - II
Lecture 12 - Induction
Lecture 13 - Tutorial 2 - Part I
Lecture 14 - Tutorial 2 - Part II
Lecture 15 - Sets
Lecture 16 - Relations
Lecture 17 - Operations on Relations
Lecture 18 - Transitive Closure of Relations
Lecture 19 - Warshall's Algorithm for Computing Transitive Closure
Lecture 20 - Tutorial - 3
Lecture 21 - Equivalence Relation
Lecture 22 - Equivalence Relations and Partitions
Lecture 23 - Partial Ordering
Lecture 24 - Functions
Lecture 25 - Tutorial 4 - Part I
Lecture 26 - Tutorial 4 - Part II
Lecture 27 - Countable and Uncountable Sets
Lecture 28 - Examples of Countably Infinite Sets
Lecture 29 - Cantor's Diagonalization Argument

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Lecture 30 - Uncomputable Functions
Lecture 31 - Tutorial - 5
Lecture 32 - Basic Rules of Counting
Lecture 33 - Permutation and Combination
Lecture 34 - Counting Using Recurrence Equations
Lecture 35 - Solving Linear Homogeneous Recurrence Equations - Part I
Lecture 36 - Solving Linear Homogeneous Recurrence Equations - Part II
Lecture 37 - Tutorial 6 - Part I
Lecture 38 - Tutorial 6 - Part II
Lecture 39 - Solving Linear Non-Homogeneous Recurrence Equations
Lecture 40 - Catalan Numbers
Lecture 41 - Catalan Numbers - Derivation of Closed Form Formula
Lecture 42 - Counting Using Principle of Inclusion-Exclusion
Lecture 43 - Tutorial - 7
Lecture 44 - Graph Theory Basics
Lecture 45 - Matching
Lecture 46 - Proof of Hall's Marriage Theorem
Lecture 47 - Various Operations on Graphs
Lecture 48 - Vertex and Edge Connectivity
Lecture 49 - Tutorial - 8
Lecture 50 - Euler Path and Euler Circuit
Lecture 51 - Hamiltonian Circuit
Lecture 52 - Vertex and Edge Coloring
Lecture 53 - Tutorial 9 - Part I
Lecture 54 - Tutorial 9 - Part II
Lecture 55 - Modular Arithmetic
Lecture 56 - Prime Numbers and GCD
Lecture 57 - Properties of GCD and Bézout's Theorem
Lecture 58 - Linear Congruence Equations and Chinese Remainder Theorem
Lecture 59 - Uniqueness Proof of the CRT
Lecture 60 - Fermat's Little Theorem, Primality Testing and Carmichael Numbers
Lecture 61 - Group Theory
Lecture 62 - Cyclic Groups
Lecture 63 - Subgroups
Lecture 64 - Discrete Logarithm and Cryptographic Applications
Lecture 65 - More Applications of Groups
Lecture 66 - Rings, Fields and Polynomials
Lecture 67 - Polynomials Over Fields and Properties
Lecture 68 - Finite Fields and Properties - I

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Lecture 69 - Finite Fields and Properties - II
Lecture 70 - Primitive Element of a Finite Field
Lecture 71 - Applications of Finite Fields
Lecture 72 - Goodbye and Farewell