**Syllabus for Computer Science Engineering**

**Courses Offered by Career Avenues - GATE Coaching by IITians.**

**Mathematical Logic:**

Propositional Logic; First Order Logic.

**Probability:**

Conditional Probability; Mean, Median, Mode and Standard Deviation; Random Variables; Distributions;

**Set Theory & Algebra:**

Sets; Relations; Functions; Groups; Partial Orders; Lattice; Boolean Algebra.

**Combinatorics:**

Permutations; Combinations; Counting; Summation; generating functions; recurrence relations; asympto

**Graph Theory:**

Connectivity; spanning trees; Cut vertices & edges; covering; matching; independent sets; Colouring; Pl

**Linear Algebra:**

Algebra of matrices, determinants, systems of linear equations, Eigen values and Eigen vectors.

**Numerical Methods:**

LU decomposition for systems of linear equations; numerical solutions of non-linear algebraic equations

**Calculus:**

Limit, Continuity & differentiability, Mean value Theorems, Theorems of integral calculus, evaluation of d

Computer Science and Information Technology

**Digital Logic:**

Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number re

**Computer Organization and Architecture:**

Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface

**Programming and Data Structures:**

Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arra

**Algorithms:**

Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis;

**Theory of Computation:**

Regular languages and finite automata, Context free languages and Push-down automata, Recursively

**Compiler Design:**

Lexical analysis, Parsing, Syntax directed translation, Runtime environments, Intermediate and target co

**Operating System:**

Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU sche

**Databases:**

ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, n

**Information Systems and Software Engineering:**

information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, in

**Computer Networks:**

ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing alg

**Web technologies:**

HTML, XML, basic concepts of client-server computing.

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