Digital Electronics

Programming Languages
Structured programming and object oriented programming. Abstraction, encapsulation, data hiding, Polymorphism, Scope rules, Parameter passing, run time environment, Static and dynamic storage management, garbage collection, exception handling, task and concurrency in programming language like C, C++, JAVA. Concepts of 4GL

Data Structure And Algorithms
Elementary and structured data types, Linear Structures: Arrays and Records, Stacks, Queues and Linked Lists, Strings Prefix, Postfix, infix expressions. Non linear structures: generalized linked list, trees, graphs and their traversals, trie and dictionary. Built in Data structures such as Records, Files Sets, Graphs and Pointers. Recursion, Sorting-Internal and External, Searching, Hashing, Symbol Tables. Problem solving and algorithms development and analysis.

Computer Architecture
Processor Organization, Instruction fetch and execute cycles, information representation, Number formats and their representation in memory. Common addressing techniques, instruction types, Arithmetic operations and their implementations. Memories: types, characteristics and organization. System modeling, Design levels. Register level design, Description language, Processor level design, Design Techniques. Instruction Sequencing and interpretation hardwired controls and its implementation concepts, microprogrammed control Conversional and unconventional microprogrammed control computers.

V. Data Base Management System
Need, Purpose and Goals of DBMS. Physical and Logical data bases, data abstraction and data independence, data aggregation, data models: ER and object Oriented Models, Introduction to relational model, relation algebra, theory of normalization. SQL. Physical data organization in sequential, Indexed, Random and Hashed files. Inverted and multilist structures, B+ Trees. Transaction processing, concurrency control, recovery management and database security, Transaction model properties and state serializability, Lock based protocols. Deadlock prevention and detection. Introduction to Distributed DBMS

PART-II

System Programming and Operating System
Security, Introduction to multiprocessors and distributed operating systems. Case studies of UNIX and WINDOWS operating systems.

**Theory of Computation and Compile Design**
Introduction to Automata Theory, Language, regular expression, finite automata, transition graph, nondeterminism, Push Down Automata Theory, context free grammars, trees, regular grammars, context-free languages.

**Computer Networks**

**Software Engineering**

**Computer Graphics**

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