

Sample Competitive Exam Study Material (Computer Science)

Operating System

An Operating System (OS) is system software that manages computer hardware and software resources. Deadlock is a situation where two or more processes are unable to proceed because each is waiting for the other. Paging is a memory management scheme that eliminates the need for contiguous allocation of physical memory. Virtual memory allows execution of processes that may not be completely in main memory.

Database Management System

A Database Management System (DBMS) is software that interacts with users to store and retrieve data. Normalization is the process of organizing data to reduce redundancy. ACID properties ensure reliable database transactions: Atomicity, Consistency, Isolation, Durability. Primary Key uniquely identifies a record in a table.

Computer Networks

The OSI Model has seven layers: Physical, Data Link, Network, Transport, Session, Presentation, Application. TCP is connection-oriented while UDP is connectionless. DNS translates domain names into IP addresses. HTTP is used for web communication; HTTPS is secure HTTP.

Data Structures

A Stack follows LIFO (Last In First Out). A Queue follows FIFO (First In First Out). A Binary Search Tree is a binary tree where left child is smaller and right child is larger. Time complexity measures the efficiency of an algorithm.

Software Engineering

SDLC stands for Software Development Life Cycle. Agile model focuses on iterative development. Waterfall model is a linear sequential approach. Software testing ensures that the software is defect-free.