

UNIT – I

Introduction: Definition Of The Operating System, Functions Of An Operating System, Different Types Of Systems - Simple Batch System, Multi-Programmed Batched System, Time Sharing System, Personal Computer Systems, Parallel Systems, Distributed Systems, Real Time Systems, Computer System Structure- operation, I/O structure, storage structure, hardware protection, Operating System Services.

UNIT – II

Process Management: Process- Process Concept, Process Scheduling, Operation On Processes, Cooperating Processes, Threads, Inter-Process Communication, CPU Scheduling–scheduling criteria, scheduling algorithms – FCFS, SJF, priority scheduling, round robin scheduling, multilevel queue scheduling, multilevel feedback queue scheduling, multiple processor scheduling, real time scheduling.

Process Synchronization: The Critical Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Critical Regions.

Deadlocks: Deadlock Characterization, Methods For Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery From Deadlock.

UNIT – III

Memory Management: Logical & physical address space, Swapping, Continuous Allocation (single partition, multiple partition), internal , external fragmentation, Paging, Segmentation, Segmentation With Paging, Virtual Memory, Demand Paging, Performance Of Demand Paging, Page Replacement, Page Replacement Algorithms– FIFO, optimal, LRU, LRU approximation algorithms, counting algorithms Thrashing, Demand Segmentation.

File System Interface: File Concept, Access Methods–sequential, direct, index, Directory Structure–single-level, two-level, tree-structured, acyclic-graph, general graph.

UNIT – IV

File System Implementation: File System Structure, Allocation Methods–contiguous allocation, linked allocation, indexed allocation, Free Space Management–bit vector, linked list, grouping, counting, Directory Implementation–linear list, hash table, Efficiency And Performance, Recovery – consistency checking, backup and restore.

Secondary Storage Structure: Disk Structure, Disk Scheduling, FCFS, SSTF, SCAN, C-SCAN, Look Scheduling, Selection of A Scheduling Algorithm, Disk Management–disk formatting, boot block, bad blocks.

Security: problem, authentication–passwords, program threats, system threats- worms, viruses, threat monitoring, encryption.