OPERATING SYSTEMS

Subject   Code

:

06CS53

IA   Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

UNIT - 1

INTRODUCTION TO OPERATING SYSTEMS, SYSTEM STRUCTURES: What operating systems do; Computer System organization; Computer System architecture; Operating System structure; Operating System operations; Process management; Memory management; Storage management; Protection and security; Distributed system; Special-purpose systems; Computing environments. Operating System Services; User - Operating System interface; System calls; Types of system calls; System programs; Operating System design and implementation; Operating System structure; Virtual machines; Operating System generation; System boot.

6 Hours

UNIT - 2

Process Management: Process concept; Process scheduling; Operations on processes; Inter-process communication. Multi-Threaded Programming: Overview; Multithreading models; Thread Libraries; threading issues. Process Scheduling: Basic concepts; Scheduling criteria; Scheduling algorithms; Multiple-Processor scheduling; Thread scheduling.

7 Hours

UNIT - 3

PROCESS SYNCHRONIZATION: Synchronization: The Critical section problem; Peterson's

solution; Synchronization hardware; Semaphores; Classical problems of synchronization; Monitors.

7 Hours

UNIT - 4

DEADLOCKS: Deadlocks: System model; Deadlock characterization; Methods for handling deadlocks; Deadlock prevention; Deadlock avoidance; Deadlock detection and recovery from deadlock.

6 Hours

PART - B

UNIT - 5

MEMORY MANAGEMENT: Memory Management Strategies: Background; Swapping; Contiguous memory allocation; Paging; Structure of page table; Segmentation. Virtual Memory Management: Background; Demand paging; Copy-on-write; Page replacement; Allocation of

frames; Thrashing.

7 Hours

UNIT - 6

FILE SYSTEM, IMPLEMENTATION OF FILE SYSTEM: File System: File concept; Access methods; Directory structure; File system mounting; File sharing; Protection. Implementing File System: File system structure; File system implementation; Directory implementation; Allocation methods; Free space management.

7 Hours

UNIT - 7

SECONDARY STORAGE STRUCTURES, PROTECTION: Mass storage structures; Disk structure; Disk attachment; Disk scheduling; Disk management; Swap space management. Protection: Goals of protection, Principles of protection, Domain of protection, Access matrix, Implementation of access matrix, Access control, Revocation of access rights, Capability-Based systems.

6 Hours

UNIT - 8

CASE STUDY: THE LINUX OPERATING SYSTEM : Linux history; Design principles; Kernel modules; Process management; Scheduling; Memory management; File systems, Input and output; Inter-process communication.

          6 Hours

TEXT BOOK:

1.   **Operating System Principles –** Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, 7th edition, Wiley-India, 2006.

REFERENCE BOOKS:

   1. **Operating   Systems: A Concept Based Approach** – D.M   Dhamdhere, 2nd Edition, Tata McGraw- Hill, 2002.

   2. **Operating   Systems**   – P.C.P. Bhatt, 2nd Edition, PHI, 2006.
   3. **Operating   Systems** –   Harvey M Deital, 3rd Edition, Addison Wesley, 1990.