

AMIT-04 OPERATING SYSTEM

UNIT-1 INTRODUCTION TO OPERATING SYSTEMS

- 1.1 Operating system concepts, System calls, Operating System Structure.
- 1.2 Processes, Interprocess Communication, Race Conditions
- 1.3 Critical Sections, Mutual Exclusion, Busy Waiting, Sleep and Wakeup,
- 1.4 Semaphores, Monitors, Message Passing.
- 1.5 Process Scheduling, First come First Served, Shortest Job First, Priority scheduling
- 1.6 Round Robin Scheduling, Multiple queues scheduling,
- 1.7 Guaranteed scheduling, Two- level scheduling.

UNIT-2 MEMORY MANAGEMENT

- 2.1 Multiprogramming and memory usage, Swapping,
- 2.2 Multiprogramming with fixed and variable partitions.
- 2.3 Memory management with bit maps, linked lists, Buddy system,
- 2.4 Allocation of swap space.
- 2.5 Virtual memory, paging and page tables,
- 2.6 Associative memory, Inverted page tables.
- 2.7 Page replacement algorithms, Segmentation.

UNIT-3 FILE SYSTEMS AND INPUT/OUTPUT.

- 3.1 Files, Directories, File system implementation,
- 3.2 Security and Protection mechanisms.
- 3.3 Principles of I/O hardware, I/O devices, Device controllers, DMA.
- 3.4 Principles of I/O software, Interrupt handlers,
- 3.5 Device drivers, Disk scheduling
- 3.6 Clocks and terminals. I/O Buffering, RAID, Disk Cache.

UNIT-4 DEADLOCKS

- 4.1 Conditions for deadlock.
- 4.2 Deadlock detection and recovery.
- 4.3 Deadlock avoidance, resource trajectories, safe and unsafe states, Banker's algorithms.
- 4.4 Deadlock prevention.
- 4.5 Two phase locking, Non- resource deadlocks, Starvation.

Case Study: UNIX / LINUX operating system

References Books:

1. Andrew S Tanenbaum, "Modern Operating Systems", 3rd Edition, Prentice Hall, 2011. ISBN 978- 81-203-3904-0.
2. William Stallings, "Operating systems", 6th Edition, Pearson Education, 2011. ISBN 978- 81317- 2528-3.
3. Garry Nutt, Nabendu Chaki, Sarmistha Neogy, "Operating Systems", Third