Code: 23AM3503

III B.Tech - I Semester - Regular Examinations - NOVEMBER 2025

OPERATING SYSTEMS
(CSE - AIML)

Duration: 3 hours   Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level   CO – Course Outcome

PART – A

		BL	CO
1. a)	What is multiprogramming?	L2	CO1
b)	How does the fork() system call work?	L2	CO1
c)	What is turnaround time?	L2	CO1
d)	What is interprocess communication?	L2	CO1
e)	Define monitor.	L2	CO1
f)	What is the critical section in process synchronization?	L2	CO1
g)	Define thrashing.	L2	CO1
h)	What is virtual memory?	L2	CO1
i)	What are the key components of a file system structure?	L2	CO1
j)	Define protection rings.	L2	CO1

PART – B

			BL	CO	Max. Marks
		UNIT-I			
2	a)	What are system programs? Give two examples.	L2	CO1	5 M
	b)	List and explain the major categories of system calls.	L2	CO1	5 M
		OR			
3	a)	Discuss the various computing environments in which operating systems work.	L2	CO1	5 M
	b)	Demonstrate the various types of user interfaces provided by operating systems.	L2	CO1	5 M
		UNIT-II			
4	a)	What are the main goals of CPU scheduling in operating systems?	L2	CO1	5 M
	b)	Illustrate multithreading models.	L3	CO2	5 M
		OR			
5	a)	Demonstrate the First-Come First-Served (FCFS) scheduling algorithm with an example.	L3	CO2	5 M
	b)	Explain about Process Concept and queuing diagram.	L2	CO1	5 M
		UNIT-III			
6	a)	Provide an example of implementing mutual exclusion using semaphores.	L3	CO2	5 M

	b)	List the four necessary conditions for deadlock occurrence.	L2	CO1	5 M
OR					
7	a)	Demonstrate the Producer-Consumer Problem and how can it be solved using semaphores.	L3	CO3	5 M
	b)	Explain in detail about deadlock avoidance.	L4	CO4	5 M

UNIT-IV

8	a)	Demonstrate the First-In-First-Out (FIFO) page replacement algorithm with example.	L3	CO3	5 M
	b)	Illustrate the allocation of frames in virtual memory.	L3	CO3	5 M
OR					
9	a)	Analyze the Least Recently Used (LRU) algorithm work with example.	L4	CO4	5 M
	b)	Analyze FCFS and SCAN disk scheduling algorithms for I/O requests on cylinders 98, 183, 37, 122, 14, 124, 65, 67 in that order. The disk head is initially at 53.	L4	CO4	5 M

UNIT-V

10	a)	Illustrate the contiguous and linked allocations with neat diagram.	L3	CO3	5 M
	b)	Compare and contrast sequential and linked access methods.	L4	CO4	5 M

		OR			
11	a)	Explain about bit vector and linked list in free space management.	L4	CO4	5 M
	b)	Explain the principles of protection with examples.	L2	CO1	5 M