Code: 20AM3301, 20DS3301

II B.Tech - I Semester – Regular Examinations - DECEMBER 2023

OPERATING SYSTEMS
(Common for AIML, DS)

Duration: 3 hours   Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

BL – Blooms Level   CO – Course Outcome

			BL	CO	Max. Marks
UNIT-I					
1	a)	Explain the purpose of system calls and discuss the calls related to device management and communication in brief.	L2	CO1	7 M
	b)	Discuss about multiprocessor systems in detail with appropriate examples.	L2	CO1	7 M
OR					
2	a)	Explain about operating system structures with neat diagram.	L2	CO1	7 M
	b)	Elucidate the important services of an operating system.	L2	CO1	7 M
UNIT-II					
3	a)	Explain the differences to which FCFS, RR and Non-preemptive SJF scheduling algorithms, discriminate in favour of short process.	L4	CO4	7 M

	b)	Illustrate how scheduling algorithms are selected for a system. What are the criteria considered?	L4	CO4	7 M
		OR			
4	a)	What are threads? Discuss about different types of threads. What resources are used when a thread is created? How do they differ from those used when a process is created.	L3	CO2	7 M
	b)	Show with an example that Shortest Job First scheduling does not necessarily give the minimum waiting time for a set of jobs. If the jobs arrive at different times. Do not Use more than 3 jobs in your answer.	L4	CO4	7 M
		UNIT-III			
5	a)	A dentist has a consultancy room in his residence. The room can accommodate ten patients maximum. The doctor goes to adjacent hall if no patients are waiting. The patients also go back if all ten chairs are occupied. If the doctor is available and there are free chairs the patient occupies one chair. If the doctor is in the adjoining hall, patient calls him for consultancy. Write an algorithm to synchronize both doctor and patient.	L4	CO4	7 M

	b)	What is a monitor? Write a monitor solution to dining philosopher 16 problem and discuss.	L3	CO3	7 M

OR

6	a)	How does a deadlock can be avoided using Banker's algorithms?	L3	CO3	7 M
	b)	Discuss in details the critical section problem and also write the algorithms for Readers – Writers problems with semaphores.	L3	CO3	7 M

UNIT-IV

7	a)	Explain the principles of segmented and paged implementation of memory with a diagram.	L2	CO1	7 M
	b)	Explain about contiguous memory allocation with neat diagram.	L2	CO1	7 M

OR

8	a)	Explain the structure of the page table.	L2	CO1	7 M
	b)	Explain the concept of demand paging and the performance issue of demand paging.	L2	CO1	7 M

UNIT-V

9	a)	Write a detailed note on various file access methods with neat sketch.	L3	CO2	7 M
	b)	Discuss the different file allocation methods with suitable example.	L2	CO1	7 M

		OR			
10	a)	Why disk scheduling is necessary? Explain the different seek optimization techniques.	L4	CO4	7 M
	b)	Explain i) File attributes. ii) File operations.	L2	CO1	7 M