Course Code: 23AM5D02

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

III - B.Tech I-Semester Regular Examinations (BR23), Nov/Dec - 2025

OPERATING SYSTEMS (AI&ML)

Time: 3 hours Max. Marks: 70

Question Paper consists of Part-A and Part-B
*Answer **ALL** the question in **Part-A and Part-B***

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	Define operating system?	(2M)	CO1	BL1
b)	Classify the types of system calls.	(2M)	CO1	BL4
c)	Explain about process control block.	(2M)	CO2	BL2
d)	Show the states of the process with the help of neat sketch	(2M)	CO2	BL3
e)	What is process synchronization?	(2M)	CO3	BL1
f)	Explain overview of Deadlock?	(2M)	CO3	BL2
g)	What is Thrashing in virtual memory?	(2M)	CO4	BL1
h)	Difference between Internal and External Fragmentation	(2M)	CO4	BL1
i)	Explain the difference between a directory and a file?	(2M)	CO5	BL2
j)	Define seek time and latency time	(2M)	CO5	BL1

PART–B (5X10 = 50M)

2a.	Explain the key functions of an operating system.	5(M)		BL2
b.	Illustrate operating systems structures with neat sketch	5(M)	CO1	BL3
	(OR)			
3a.	Discuss various computing environments. Explain each with examples	5(M)		BL2
b.	Discuss various types of system calls with examples.	5(M)	CO1	BL2

4a.	Discuss how inter-process communication (IPC) is achieved in the operating system.	5(M)	CO2	BL2
b.	Compare the different types of models in threads	5(M)		BL5
	(OR)			
5a.	What is CPU scheduling? Illustrate FCFS scheduling algorithm with example.	5(M)	CO2	BL4
b.	Perform Shortest Job First Scheduling to calculate average waiting time for a schedule which is having five processes with at least 3 should arrive at same time.	5(M)		BL3

6a.	Discuss the mechanism of Semaphores briefly with some examples	5(M)	CO3	BL2
b.	Discuss various methods for handling deadlocks.	5(M)		BL2
	(OR)			
7a.	Discuss different methods for deadlock detection and recovery.	5(M)	CO3	BL2
b.	Implement the Banker's algorithm with a suitable example.	5(M)		BL3

8a.	Illustrate about Memory management and Contiguous memory allocation in operating system	5(M)	CO4	BL3
b.	Discuss in detail the swapping technique. What is its purpose?	5(M)		BL2
	(OR)			
9a.	Discuss the Least Recently Used (LRU) algorithm and Implement the LRU in the calculation of page fault for 4,7,8,9,0,6,5,4,2,1,4,5,6,4,5 with the frame size as 2 by using the Least Recently Used (LRU) page replacement algorithm.	5(M)	CO4	BL3
b.	Discuss FCFS HDD scheduling algorithm used in storage management.	5(M)		BL2

10a.	Compare various file allocation methods such as contiguous, linked, and indexed allocation	5(M)	CO5	BL5
b.	Analyse briefly about file system structure and file system Mounting	5(M)		BL4
	(OR)			
11a	Discuss the Principles of File Protection	5(M)	CO5	BL2
b.	Discuss how file systems handle file sharing in multi-user environments	5(M)		BL2

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Faculty in- charge

Head of the department

Head of the Dept.
Department of CSE - AI & DS
BVCITS - Amalapuram.