

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
III B. Tech I Semester Supplementary Examinations, April/May -2025
OPERATING SYSTEMS
(CSE (Artificial Intelligence and Machine Learning))

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**

All Questions Carry Equal Marks

		<u>UNIT-I</u>	
1.	a)	Explain the various types of system calls with examples.	[7M]
	b)	Describe the structure of modern operating systems. Discuss monolithic and layered approaches.	[7M]
		(OR)	
2.	a)	Explain the different functions of an operating system.	[7M]
	b)	What is system boot? Describe the steps involved in the booting process.	[7M]
		<u>UNIT-II</u>	
3.	a)	Describe process scheduling and explain the various scheduling criteria.	[7M]
	b)	Compare preemptive and non-preemptive scheduling algorithms with examples.	[7M]
		(OR)	
4.	a)	What are race conditions? Explain mutual exclusion using semaphores.	[7M]
	b)	Explain the working of any one classical IPC problem (e.g., Readers-Writers or Dining Philosophers).	[7M]
		<u>UNIT-III</u>	
5.	a)	Describe paging and segmentation. Compare the two memory management schemes.	[7M]
	b)	What is demand paging? Explain the page replacement algorithms used in virtual memory.	[7M]
		(OR)	
6.	a)	Define thrashing. What are the causes and how can it be avoided?	[7M]
	b)	Explain the concept of memory-mapped files and kernel memory allocation.	[7M]
		<u>UNIT-IV</u>	
7.	a)	Explain the conditions that lead to deadlocks. Discuss the ostrich algorithm.	[7M]
	b)	Describe the structure and implementation of file systems.	[7M]
		(OR)	
8.	a)	What are the different disk scheduling algorithms? Explain with examples.	[7M]
	b)	Write notes on RAID levels and their use in secondary storage.	[7M]
		<u>UNIT-V</u>	
9.	a)	Explain the concept of access matrix and its implementation.	[7M]
	b)	Discuss various user authentication techniques in operating systems.	[7M]
		(OR)	
10.	a)	Explain the common system and network threats in computer security.	[7M]
	b)	Write a short note on security features of Linux and Windows operating systems.	[7M]

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