

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
III B. Tech I Semester Regular/Supplementary Examinations, April/May -2025
DISTRIBUTED SYSTEMS
 (CSE)

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)	Discuss the differences between message-passing systems and shared-memory systems in distributed systems. What are the key features of each,	[7M]
	b)	Illustrate the relationship between distributed systems and the various components of a computer system.	[7M]
		(OR)	
2.	a)	Compare and contrast message-passing systems with shared memory systems.	[7M]
	b)	Discuss the concept of physical clock synchronization in distributed systems.	[7M]
		<u>UNIT-II</u>	
3.	a)	Define the concept of message ordering in distributed systems.	[7M]
	b)	Explain the difference between FIFO ordering, causal ordering, and total ordering.	[7M]
		(OR)	
4.	a)	Examine the impact of network latency on message ordering in asynchronous systems.	[7M]
	b)	Design a comprehensive framework for monitoring and recording global states in a distributed application.	[7M]
		<u>UNIT-III</u>	
5.	a)	Discuss the basic preliminaries required for implementing distributed mutual exclusion algorithms. What assumptions and conditions must be satisfied to ensure correctness in distributed systems?	[7M]
	b)	Compare the Ricart-Agrawala algorithm with Maekawa's algorithm in terms of their approaches to achieving mutual exclusion.	[7M]
		(OR)	
6.	a)	Discuss the Suzuki-Kasami broadcast algorithm for distributed mutual exclusion.	[7M]
	b)	Discuss the various models of deadlocks in distributed systems.	[7M]
		<u>UNIT-IV</u>	
7.	a)	Compare checkpoint-based recovery methods with log-based rollback recovery methods.	[7M]
	b)	Discuss the challenges and issues involved in failure recovery in distributed systems.	[7M]
		(OR)	
8.	a)	Discuss the differences between agreement in failure-free systems versus synchronous systems with failures.	[7M]
	b)	Evaluate the impact of network partitioning on consensus algorithms.	[7M]
		<u>UNIT-V</u>	
9.	a)	Discuss the role of overlay graphs in P2P computing.	[7M]
	b)	Explain how data indexing is implemented in overlay networks. Illustrate your explanation with an example.	[7M]
		(OR)	
10.	a)	Discuss the challenges of implementing distributed shared memory in heterogeneous environments.	[7M]
	b)	Discuss the implications of memory consistency on application development in distributed systems.	[7M]
