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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech S8 (R, S) Exam (FT / PT) April 2025 (2019 Scheme)

Course Code: CST402

Course Name: DISTRIBUTED COMPUTING

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1		List the characteristics of distributed system.	(3)
2		Define Causal precedence relation	(3)
3		What are leader election algorithms? Name any two	(3)
4		Define logical clock	(3)
5		What are the performance evaluation metrics of a mutual exclusion algorithm?	(3)
6		List out the strategies for handling deadlocks in a distributed environment	(3)
7		State the disadvantages of distributed shared memory	(3)
8		What are checkpoints?	(3)
9		Define Byzantine agreement problem.	(3)
10		Write the features of Google File System.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	Explain the algorithmic challenges of designing a distributed system.	(7)
	b)	Compare and contrast physical and logical concurrency	(7)

OR

12	a)	Explain in detail about the past and future cones of an event.	(6)
	b)	Explain the applications of distributed computing	(8)

Module II

13	a)	What are the basic properties of scalar time?	(6)
	b)	Illustrate bully algorithm for electing a new leader.	(8)

OR

14	a)	Discuss in detail about chandy lamport algorithm.	(8)
	b)	Illustrate the working of spanning tree based termination detection algorithm	(6)

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Module III

15 a) Explain Lamport's algorithm for mutual exclusion (8)

b) Explain in detail about deadlock handling strategies in a distributed environment (6)

OR

16 a) Explain with example, how wait-for-graphs can be used in deadlock detection. (8)

b) Explain Ricart–Agrawala algorithm with example (6)

Module IV

17 a) Explain pessimistic and optimistic logging (6)

b) Show Lamport's Bakery algorithm for shared memory mutual exclusion, satisfy the three requirements of critical section problem (8)

OR

18 a) Differentiate consistent and inconsistent state with example. (6)

b) Explain check point based rollback recovery (8)

Module V

19 a) Explain consensus algorithm for crash failures under synchronous systems. (7)

b) Explain SUN -NFS Architecture (7)

OR

20 a) Explain file service architecture in detail (8)

b) Discuss the requirements of a distributed file system. (6)

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