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0400CST402082401



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S8 (S) / S8 (PT) (S) Examination August 2024 (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  | What do you mean by a distributed system?   | (3) |
| 2  | What are the various features of distributed system?  | (3) |
| 3  | Define termination detection.   | (3) |
| 4  | What are the rules used to update clocks in scalar time representation?   | (3) |
| 5  | What are the requirements of mutual exclusion algorithm?  | (3) |
| 6  | Calculate the rate at which a system can execute the critical section requests if the synchronization delay and average critical section execution times are 3 and 1 second respectively. | (3) |
| 7  | State the advantages of distributed shared memory   | (3) |
| 8  | Differentiate between coordinated checkpointing and uncoordinated checkpointing   | (3) |
| 9  | Explain the components of Google File System  | (3) |
| 10 | List distributed file system requirements   | (3) |

**PART B**

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

**Module I**

- |    |   |     |
|----|---|-----|
| 11 | a) Relate a computer system to a distributed system with the aid of neat sketches | (8) |
|    | b) Discuss about various primitives for distributed communication                 | (6) |

**OR**

- |    |  |     |
|----|--|-----|
| 12 | a) Explain the applications of distributed computing.    | (7) |
|    | b) Discuss about the global state of distributed systems | (7) |

**Module II**

- 13 a) What is meant by a consistent global state? (4)  
b) Explain ring based election algorithm with an example. (10)

**OR**

- 14 a) What are the properties of vector time (4)  
b) Discuss the method of termination detection using weight throwing in detail (10)

**Module III**

- 15 a) Explain various models of deadlocks (6)  
b) Illustrate Suzuki kasami's broadcast algorithm (8)

**OR**

- 16 a) Describe how quorum-based mutual exclusion algorithms differ from the other categories of mutual exclusion algorithms. (6)  
b) Explain Maekawa's algorithm for mutual exclusion in detail with example (8)

**Module IV**

- 17 a) Explain log based roll back recovery (10)  
b) What is meant by no orphan's consistency condition? (4)

**OR**

- 18 a) Explain different types of messages in roll back recovery (7)  
b) What are the issues in failure recovery? (7)

**Module V**

- 19 a) Explain Andrew File System in detail (8)  
b) Differentiate whole file serving and whole file caching (6)

**OR**

- 20 a) Explain in detail Network File System Architecture (8)  
b) Which are the assumptions made in Consensus and Agreement Algorithm (6)

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