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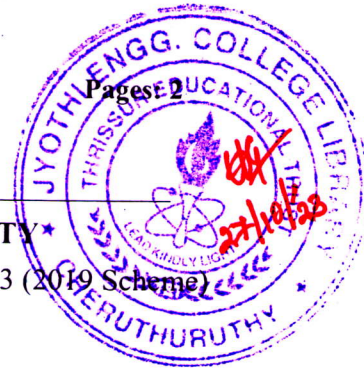
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Reg No.: \_\_\_\_\_

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

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree Supplementary Examination October 2023 (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. | Discuss about the transparency requirements of distributed system. | (3)   |
| 2  | What do you mean by load balancing in a distributed environment.   | (3)   |
| 3  | Define Termination Detection.                                      | (3)   |
| 4  | What are the basic properties of scalar time.                      | (3)   |
| 5  | Explain the issues in Deadlock Detection.                          | (3)   |
| 6  | List the requirements of Mutual Exclusion Algorithm.               | (3)   |
| 7  | List any three advantages of using Distributed Shared Memory.      | (3)   |
| 8  | Explain no orphans consistency condition.                          | (3)   |
| 9  | Define Byzantine agreement problem.                                | (3)   |
| 10 | Write the features of SUN Network File System.                     | (3)   |

**PART B**

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

**Module I**

- 11 a) Explain the design issues of a distributed system. (8)  
b) Discuss about various primitives for distributed communication. (6)

**OR**

- 12 a) Explain the applications of distributed computing. (8)  
b) Explain the models of communication networks. (6)

**Module II**

- 13 a) Illustrate bully algorithm for electing a new leader. Does the algorithm meet liveness and safety conditions? (7)  
b) Discuss the method of termination detection by weight throwing in detail. (7)

**OR**

- 14 a) Illustrate the working of spanning tree-based termination detection algorithm. (8)  
b) Explain in detail about Chandy Lamport algorithm. (6)

**Module III**

- 15 a) Explain how wait for graph can be used in Deadlock Detection. (7)  
b) Explain and Illustrate Ricart-Agrawala algorithm for achieving mutual exclusion. (7)

**OR**

- 16 a) Compare various models of deadlock. (7)  
b) Illustrate Suzuki – Kasami’s Algorithm. (7)

**Module IV**

- 17 a) Show that Lamport’s Bakery algorithm for shared memory mutual exclusion, satisfy the three requirements of critical section problem. (8)  
b) What are the issues in failure recovery? Illustrate with suitable examples. (6)

**OR**

- 18 a) Differentiate consistent and inconsistent state with example. (4)  
b) Explain check point based rollback recovery. (10)

**Module V**

- 19 a) Explain consensus algorithm for crash failures under synchronous systems. (8)  
b) Discuss the requirements of a distributed file system. (6)

**OR**

- 20 a) Explain google file system architecture. (7)  
b) Explain SUN -NFS Architecture. (7)

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