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Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(R), MAY 2024**B. Tech. Computer Science and Engineering****(2020 SCHEME)****Course Code : 20CST402****Course Name : Distributed Computing****Max. Marks : 100****Duration:3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. List and explain the different characteristics of distributed computing.
2. Elaborate the interaction model used in the fundamental model.
3. Explain the major tasks of group membership management.
4. Explain any three issues relating to UDP datagram communication.
5. Explain the reason why should UFID be unique across all possible filesytem? How its uniqueness is ensured.
6. Explain the file system modules in detail.
7. State the rules of committing nested transactions.
8. Discuss different ways to recover from aborts.
9. What is need of safety and livens as a requirement in an election algorithm.
10. Compare and contast the central server algorithm and ring based algorithm. Which is better and Why?

PART B*(Answer one full question from each module, each question carries 14 marks)***MODULE I**

11. Explain the following distributed computing system models with suitable diagrams: 14
- a) Processor- pool model
 - b) Workstation Model
 - c) Workstation Server model

OR

12. Illustrate the concept of Physical model. 14

MODULE II

13. a) Illustrate Multicast communication. 10
b) Explain RPC call semantics. 4

OR

14. a) Describe one example for indirect communication paradigm. 8
b) List and explain different characteristics of IPC. 6

MODULE III

15. a) Illustrate the working of AFS with the help of its architecture diagram. 9
 b) Explain the file attribute record structure. 5

OR

16. a) Explain the working of NFS with architecture diagram. 9
 b) Differentiate Andrew file system and Sun NFS. 5

MODULE IV

17. a) Suppose that there are 100 items currently in a stock. Given two transactions U and V as below. Explain the inconsistent retrievals problem in this scenario and propose a solution for that. 5

U	V
Purchase 200 items Sell 50 items	Read item count in Stock

- b) Explain two phase locking and strict two phase locking. 5
 c) Elaborate on read lock and write lock. 4

OR

18. a) Explain the concept of deadlock-wait for graph with an example. 7
 b) Elaborate on the phases and stages of optimistic concurrency control. 7

MODULE V

19. a) Explain Ricart and Agrawala's multicast based mutual exclusion algorithm. 8
 b) Explain different application-level protocol for executing a critical section and essential requirements for mutual exclusion in distributed system. 6

OR

20. a) Describe Maekawa's Voting Algorithm. 10
 b) Evaluate the performance of Maekawa's Voting Algorithm with respect to fault tolerance. 4
