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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Seventh Semester B.Tech Degree Supplementary Examination June 2022 (2015 Scheme)



**Course Code: CS407**

**Course Name: DISTRIBUTED COMPUTING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 4 marks.*

Marks

- 1 What are the challenges faced in developing a scalable distributed system? (4)
- 2 Explain the various communicating entities in distributed system. (4)
- 3 Which model examines the aspects of interaction, failure and security of distributed systems? Describe. (4)
- 4 Differentiate between Synchronous and Asynchronous communication. (4)
- 5 Explain the failure model of UDP datagrams? (4)
- 6 Explain the working of directory services. Also mention any 4 interface operations in a file service architecture. (4)
- 7 What is the difference between two-phase locking and strict two-phase locking in transactions? (4)
- 8 Evaluate the performance of Maekawa's voting algorithm. (4)
- 9 Mention the essential requirements for mutual exclusion. (4)
- 10 Explain about Lost update problem with suitable example. (4)

**PART B**

*Answer any two full questions, each carries 9 marks.*

- 11 a) Compare and contrast Workstation model and Workstation-Server model. (6)  
b) With a neat diagram, explain Minicomputer model. (3)
- 12 a) Explain the term Network transparency. (3)  
b) Discuss any 4 challenges in designing a distributed system. (4)  
c) Explain how publish-subscribe system works? (2)
- 13 a) Identify and explain the architecture model of applet programs in web pages. (5)  
b) Discuss any 2 models in system architecture that deals with the roles and responsibility of computers in distributed systems. (4)

**PART C**

*Answer any two full questions, each carries 9 marks.*

- 14 a) Explain the steps involved in group membership management with diagram. (5)  
b) Which are the different types of groups in group communication? (4)
- 15 a) Describe NFS architecture with diagram. (6)  
b) Explain the working of multicast routers and address allocation. (3)
- 16 a) Draw the structure of the given example "www.transit.sub.org" and explain the Domain Naming Hierarchy. (5)  
b) Explain the two main classes of Uniform Resource Identifier. (2)  
c) What is Vice and Venus in Andrew File System? (2)

**PART D**

*Answer any two full questions, each carries 12 marks.*

- 17 a) Identify and explain the data integrity and consistency problems that occurs due to simultaneous execution of transactions in a shared database. (6)  
b) How two version locking and hierarchic locking improves concurrency? (6)
- 18 a) What do you mean by deadlocks? What are the necessary conditions for deadlocks? Explain the strategies to fight deadlocks. (6)  
b) Explain central server algorithm using 4 processes. (6)
- 19 a) Which algorithm was developed to implement mutual exclusion between N peer processes which is based on multicast. Illustrate the concept with a diagram using three processes P1, P2, P3. (6)  
b) Compare Ring and Bully algorithms with suitable examples. (6)

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