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Question Paper Code:U6F03

B.E./B.Tech. DEGREE EXAMINATION, APRIL / MAY 2025

Sixth Semester

Computer Science and Design

21UCD603– DISTRIBUTED COMPUTING

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Distinguish between buffering and coaching. CO1- U
2. Outline the simplest shared memory system using a shared bus system. CO2- App
3. Write the application of causal order. CO1- U
4. If the two events e1 and e2 of two different processes occur at the same time, independently. What kind of relationship exists between e1 and e2? CO2- App
5. What are the conditions for deadlock? CO1- U
6. A network consists of 5 nodes and 7 links. Implement the ChandyMisra Haas algorithm to compute the snapshot of the network at a given point in time. CO2- App
7. What is the purpose of using a checkpoint? CO1- U
8. Define consistent cut. CO1- U
9. What is a Digital Signature? CO1-U
10. Outline a basic cloud deployment model and cloud service model. CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Explain how a parallel system differs from a distributed system? CO1- U (16)
Or
(b) Summarize the applications of distributed computing and challenges. CO1- U (16)

12. (a) Provide a real-world example illustrating the application of logical time and discuss its significance. Brief logical time in distributed systems CO2- App (16)
- Or
- (b) The Chandy-Lamport algorithm can be integrated into a distributed supply chain management system to capture a consistent snapshot of inventory levels, order statuses, and logistics data across distributed warehouses and distribution centers. Discuss how the algorithm can facilitate real-time inventory management and order tracking. CO2- App (16)
13. (a) Explain in detail about Richard Agarwala algorithm with an example. CO1- U (16)
- Or
- (b) Discuss the Lamport algorithm with an example. CO1- U (16)
14. (a) Solve the Byzantine Agreement problem with an example. CO2- App (16)
- Or
- (b) A large e-commerce platform experienced a significant outage due to a database failure during peak shopping hours. Customers were unable to access the website, resulting in lost sales and damaged reputation. CO2- App (16)
15. (a) Explain any two cloud service models with necessary illustrations. CO1- U (16)
- Or
- (b) Explain in detail about full-virtualization and pre-virtualization and differentiate between these two virtualization. CO1- U (16)