25/7/23.

Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (W), Mumbai : 400058, India

(Autonomous College of Affiliated to University of Mumbai)

End Semester Examination

July 2023

Maxi Marks: 100
Class: M.Tech.
Duration: 3 hours
Semester: II
Branch: COMP

Name of the course: Distributed Computing Systems

Q No		Max Marks	CO	BL
Q.1 (a)	Explain the models of distributed execution with the help of space-time diagram.	10	1	3
(b)	Explain primitives for distributed communication with the help of examples.	10	1	3
Q. 2 (a)	What is the vector clock? Explain strong consistency, event ordering and efficient implementation using vector clock. OR Why physical clock synchronization is required? How the time, frequency, offset, skew drift rate, offset delay estimations are measured in physical clocks?	10	2	4
(b)	What good is a distributed snapshot when the system was never in the state represented by the distributed snapshot? Give an application of distributed snapshot.	10	2	4
Q.3 (a)	What are the requirements of mutual exclusion algorithms? What are the performance matrices for mutual exclusion algorithm? How Lamport's algorithm is used in mutual exclusion algorithm?	10	3	3
(b)	Explain the models of distributed deadlocks? Explain the Chandy-Misra-Haas algorithm for OR model.	10	3	3
Q.4 (a)	What are the advantages of unstructured overlays? Explain different search strategies are used in unstructured overlays.	10	4	3
(b)	Explain the graph structure and complex networks.	10	4	3
Q5. (a)	Explain benefits and limitations of blockchain.	10	5	3
(b)	Explain decentralization framework example of blockchain.	10	5	3