Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : **40400**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Sixth Semester

Computer Science and Engineering

CS 8603 — DISTRIBUTED SYSTEMS

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Name the primitives for distributed communication.

2.   Compare message passing systems and shared memory systems.

3.   Write simple example for message ordering.

4.   Identify the purpose of snapshot recording algorithm.

5.   What is the purpose of associating timestamp with events in Lamport's algorithm?

6.   Define deadlock.

7.   List the benefits of recovery.

8.   Why coordination is required in distributed systems?

9.   Outline the benefits of peer-to-peer systems

10. What is the need for memory consistency models?

PART B — (5 × 13 = 65 marks)

11. (a)   Why global states are essential in distributed computing systems? Elaborate with an example.   (13)

Or

(b)   Elaborate any two logical dock categories in distributed systems with an example.   (13)

12. (a) Discuss the purpose of message ordering paradigms and provide example for asynchronous execution communication in detail. (13)

Or

(b) Describe the snapshot algorithms which could be applied for FIFO channels with diagrammatic representation. (13)

13. (a) Outline Lamport's algorithm with an example. (13)

Or

(b) How we can achieve deadlock detection in distributed systems? Provide various models to carry out the same. (13)

14. (a) Write about the issues in failure recovery and discuss about any two recovery mechanisms. (13)

Or

(b) Describe the role of consensus and agreement algorithms in distributed, system along with its underlying structure , benefits and an example. (13)

15. (a) Elaborate the role of data indexing and overlays with an example. (13)

Or

(b) Detail the structure of distributed shared memory along with real time challenges in implementing the same. (13)

PART C— (15 × 1 = 15 marks)

16. (a) Consider an e-shopping system capable of handling more user requests at a time from various geographic locations. The system will fail as it is designed to handle only minimal count of requests at delayed time intervals. Propose at least 3 design constraints for enhancing the current system and discuss 3 associated challenges. (15)

Or

(b) Elaborate the design issues and challenges in building distributed system. (15)

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