

Sub Code: CST-308

ROLL NO.

Model Question Paper

COURSE: M.TECH.

BRANCH: COMPUTER SCIENCE ENGINEERING

SEMESTER: 1 .

SUBJECT: DISTRIBUTED SYSTEMS

Duration: 3:00 hrs

Max marks: 100

Note: Attempt all questions.

1. **Attempt any four parts of the following.**

5x4 = 20

- A. Describe client- server communication and group communication.
- B. Explain briefly the main characteristics of distributed system.
- C. Write short notes on processes and threads in distributed systems.
- D. Explain token based algorithms.
- E. Discuss the working of routing overlays.
- F. Explain in brief the communication between distributed objects.

2. **Attempt any two parts of the following.**

10x2=20

- A. Explain Distributed system models with diagram.
- B. How is recovery important in distributed transactions?
- C. Discuss different security techniques available in distributed systems.

3. **Attempt any two parts of the following.**

10x2=20

- A. Compare and contrast various methods in concurrency control.
- B. Discuss the working of 2 phase and 3 phase commit protocol along with their advantages and disadvantages.
- C. With the example of Java RMI code explain the concepts of events and notifications.

4. **Attempt any two parts of the following.**

10x2=20

- A. What are Lamport's logical clocks? Discuss the important conditions to be satisfied by Lamport's logical clocks along with its advantages.
- B. Discuss a general model of public digital signature system. Also explain the role of public and private keys in cryptographic system.
- C. Describe mechanism of building distributed file system. Also explain data access actions in distributed file systems.

5. **Attempt any two parts of the following.**

10x2=20

- A. Discuss mutual exclusion in distributed systems.

- B. What do you understand by Byzantine agreement problem? Discuss how consensus problem is different than other problems in distributed systems.
- C. Explain distributed transactions. Discuss the functionality of flat and nested distributed transactions.