

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0192

Roll No.

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**B.Tech.**

(SEM. VIII) THEORY EXAMINATION 2010-11

**DISTRIBUTED SYSTEMS**

TCS801

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0147

Roll No.

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**B.Tech.**

(SEM. VIII) THEORY EXAMINATION 2010-11

**DISTRIBUTED SYSTEMS***Time : 3 Hours**Total Marks : 100***Note :—Attempt ALL questions.**

1. Attempt any two parts :— (10×2=20)
- (a) What are the inherent limitations of distributed system ?  
What could be the impact of absence of global clock and shared memory ?
- (b) Describe Causal ordering of messages and explain with a suitable example how it can be implemented by a system of vector clocks.

- (c) Define the problem of distributed mutual exclusion. What are the performance matrices for distributed mutual exclusion algorithms ? Explain with a suitable example.
2. Attempt any two parts :— (10×2=20)
- (a) What are the deadlock handling strategies in distributed system ? What are control organizations for distributed deadlock detection ? Discuss a algorithm which can remove the possibility of Phantom deadlock detection.
- (b) What do you mean by agreement protocol ? What are differences between Byzantine Agreement Problem, the consensus problem and the interactive consistency problem ? Discuss impossibility results for Byzantine Agreement.
- (c) What are the differences in resources and communication deadlock ? Discuss salient feature of a path pushing algorithm and explain how wait for dependencies are propagated in the form of paths.
3. Attempt any two parts :— (10×2=20)
- (a) Explain the RPC mechanism for communication among distributed objects and also discuss different design issues in RPC.
- (b) (i) Give the architecture of Sun Network file system.  
(ii) Discuss the mechanisms for building distributed file system.
- (c) Discuss the Kerberos with its steps towards achieving the authentication.

4. Attempt any two parts :— (10×2=20)
- (a) Give the classification of distributed concurrency control techniques.
  - (b) "Three-phase is a non-blocking protocol." Justify the statement with its working and state transition diagram.
  - (c) Explain following with suitable example :
    - (i) Flat and Nested transaction
    - (ii) 2PL and strict 2PL
5. Attempt any two parts :— (10×2=20)
- (a) Discuss the All Pair Shortest Path (APSP) problem with its application. Discuss the complexity of this algorithm.
  - (b) What are wave algorithm ? Discuss the usage and application of wave algorithm. What are the requirements of wave algorithm ?
  - (c) Write short notes on :—
    - (i) CORBA and its services
    - (ii) Election based algorithm.