

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

PAPER ID : 2715

Roll No.

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**B. Tech.**

(SEM. VIII) THEORY EXAMINATION 2011-12.

**DISTRIBUTED SYSTEMS**

Time : 3 Hours

Total Marks : 100

Note :— (i) Attempt all questions.

(ii) Be precise in your answer.

1. Attempt any four parts of the following :— (5×4=20)
- What is Distributed System ? What are the various threats of Distributed System ?
  - What is a process ? Explain the various states of a process through state transition diagram.
  - What is Logical clock ? Explain. What are the limitations of Lamport clock ?
  - Explain the Shared Address Space Architecture with their requirements and working methodology.
  - What are Semaphore, Monitors and Serializers ? Also give the advantages, disadvantages and limitation for the same.
  - Write short notes on the following :—
    - Total Causal Order
    - Synchronous Vs. Asynchronous Computations.

2. Attempt any four parts of the following :— (5×4=20)

- (a) Explain the concept of Processes and Threads in detail.
- (b) What is distributed mutual exclusion and briefly explain the requirements of mutual exclusion algorithm.
- (c) What are the different types of workflow management architecture ? How does workflow scheduler manage transactional workflows ?
- (d) Explain the difference between data migration computation migration and distributed scheduling.
- (e) Explain the various hierarchical deadlock detection algorithms with the help of suitable examples. Also compare the performance of the various algorithms.
- (f) What is the importance of different types of graph in deciding deadlock ? What is the interactive consistency problem ?

3. Attempt any two parts of the following :— (10×2=20)

- (a) What are agreement protocols ? Discuss the general system model where agreement protocols are used. Give the applications of Agreement problem.
- (b) Caching is one of the techniques used to improve access to naming data. What are the benefits of caching and what assumptions must hold for it to be useful ?
- (c) What do you mean by Atomic commit in Distributed Database System ? Also explain the two phase commit protocol used for realizing atomicity in distributed system.

4. Attempt any two parts of the following :— (10×2=20)

- (a) Fault tolerance can be achieved by “error processing”. Describe and give examples of forward recovery, backward recovery and compensation.
- (b) What is Voting Protocols ? Compare and contrast Static and Dynamic Vote protocols.
- (c) What do you mean by Failure ? Give the classification of Failure with illustrating the examples.

5. Attempt any two parts of the following :— (10×2=20)

- (a) Optimistic Concurrency Control.
- (b) Timestamp Ordering for Transaction Management.
- (c) Transactions with Replicated Data.