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

PAPER ID : 2715 Roll No. | | | | | | | | | | |

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)**

(a) What is Distributed System ? What are the various threats of Distributed System ?

(b) What is a process ? Explain the various states of a process through state transition diagram.

(c) What is Logical clock ? Explain. What are the limitations of Lamport clock ?

(d) Explain the Shared Address Space Architecture with their requirements and working methodology.

(e) What are Semaphore, Monitors and Serializers ? Also give the advnatages, disadvantages and limitation for the same.

(f) Write short notes on the following :—

(i) Total Causal Order

(ii) Synchronous *Vs.* Asynchronous Computations.

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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 requirments 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.