

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

PAPER ID : 2713

Roll No.

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B.Tech.

(SEM. VII) ODD SEMESTER THEORY
EXAMINATION 2012-13
DISTRIBUTED DATABASE

Time : 3 Hours

Total Marks : 100

Note :—Attempt **all** questions. All questions carry equal marks.

1. Attempt any **two** questions :

- (a) (i) Define recoverable schedule. Why is recoverability of schedules desirable ? Explain it with suitable example.
- (ii) Discuss the cascading abort with suitable example. How will you avoid it ?
- (b) (i) Discuss the view serializable schedule with suitable example.
- (ii) Explain conflict operation and conflict equivalence.
- (c) Write short notes on the following :
 - (i) Distributed serializability
 - (ii) Objectives of data distribution.

2. Attempt any **two** questions :

- (a) Discuss the Multi-Version Timestamp Ordering algorithm. What are the advantages and disadvantages of this algorithm ?

- (b) (i) Define granularity of a lock. Explain up gradation and down gradation of locking.
- (ii) Describe Quorum based protocol for distributed concurrency control.
- (c) (i) Discuss how a unique global timestamp is generated in a distributed system.
- (ii) Discuss the lost update and dirty read anomaly.

3. Attempt any **two** questions :

- (a) Consider the following schemas :

Global schema : Guest (guest-id, name, block-loc, room-no.)

Fragment schema : Guest 1 (having guest-id ≤ 20) and Guest 2 (having guest-id > 20)

Allocation schema : Guest 1 at site 1, 2 and Guest 2 at site 3, 4.

Write SQL statement for query "retrieve the names and room no. of all guests whose block location is south" that must show following transparencies :

- (i) Location but not replication transparency
 - (ii) Replication but not location transparency
 - (iii) Both location and replication transparency.
- (b) (i) Under which situation, will it be beneficial to have replication or fragmentation of data ?
 - (ii) Describe the correctness rules that must be considered during data fragmentation.
- (c) (i) Differentiate between short duration and long duration transaction with suitable example.

- (ii) Explain Homogeneous and Heterogeneous distributed database system.

4. Attempt any **two** questions :

- (a) Describe 2-Phase Commit Protocol with the state transition diagram for it. What are the demerits of this protocol?
- (b) Generate an algorithm for synchronous checkpointing in a Distributed Database System.
- (c) Discuss the following with suitable example :
 - (i) Orphan messages
 - (ii) Inconsistent messages.

5. Attempt any **two** questions :

- (a) With the help of suitable example, justify the following statement :
 - (i) "Semi join can be used to reduce the cost of a join operation in a distributed environment".
 - (ii) "Join operation should be done after selection, projection, and union operations for distributed database systems".
- (b) Discuss the objectives of distributed query processing. Explain the various phrases in distributed query processing in detail.
- (c) Explain Ho-Ramamoorthi algorithm for deadlock detection. What are the phantom deadlocks ? Does this algorithm detect the phantom deadlock ?