

Printed Pages: 4

375

MCAE 23

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

Paper ID : 214583

Roll No.

MCA

**THEORY EXAMINATION 2015-16**

**Advanced Database Management Systems**

[Time:3 hours]

[Total Marks:100]

Note:- Attempt ALL the Sections.

SECTION-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. [10 × 2 = 20]
  - a. List any FIVE applications of DBMS.
  - b. Define Replication techniques.
  - c. What is transaction?
  - d. Define upgrade and downgrade in locking protocol?
  - e. Define instance and schema?
  - f. When is a transaction rolled back?

- g. What is meant by normalization of data?
- h. What do you mean by the term serializability?
- i. What is the use of Moss concurrency control algorithm?
- j. What is deadlock?

### SECTION-B

Attempt any FIVE of the following. [5 × 10 = 50]

2. What are serializable schedules of transactions? Differentiate between conflict and view serializability.
3. How do we enforce serializability by locks? Discuss whether preparing a serializable schedule is preferable over enforcement of serializability by locks.
4. What are the problems that can arise during concurrent execution of two or more transactions? Discuss methods to prevent or avoid these problems.
5. What is the importance of selection of granularity of data items in lock based protocols? What is the effect of granule size over the performance of transaction processing? Explain in detail.

6. Discuss the time stamp based protocols to maintain serializability in concurrent execution.
7. What is the purpose of fragmentation in a distributed database? Describe the various types of fragmentation methods.
8. How is transaction management in distributed database different from transaction management in a standalone database? Describe distributed transaction management.
9. Describe the process of recovery in a distributed database system. What are the various issues in recovery?

#### SECTION-C

Attempt any TWO of the following. [2 × 15 = 30]

10. Describe cost estimation of query in a distributed database. How does replication in a distributed database effects update query?
11. Describe following :
  - (i) Distributed deadlock detection
  - (ii) Eager replication technique

12. (i) Discuss the rules to be followed while preparing a serializable schedule. Why should we prefer serializable schedules instead of serial schedules?
- (ii) What are cascadeless schedules? Discuss.

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