Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/MCA/SEM-5/MCA E501A/2012-13

2012

DISTRIBUTED DATABASE MANAGEMENT

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10

   i) The unit of data transfer to and from disk is

   a) Information b) Block

   c) Pages d) File.

   ii) In how many ways m rows and n attributes can be represented ?

   a) $m * n$ b) $n! * m$

   c) $n * m!$ d) $m! * n!$

   iii) Granularity means

   a) Size of memory b) Size of data

   c) Locks d) Transaction.

   iv) Replication of attributed violate which of the following conditions of fragmentation ?

   a) Completeness b) Reconstruction

   c) Disjointness d) Both (b) and (c).

v) Two phase commitment protocol is used for

a) Concurrency control b) Integrity control

c) Recovery d) Redundancy.

vi) Atomicity of transaction demands

a) all the transaction's operations will be performed

b) none of the transaction's operations will be performed

c) no stable state

d) none of these.

vii) Which of the following is not a benefit of site autonomy ?

a) Global catalog is not necessary to access local data

b) Node can upgrade software independently

c) Administrators can recover from isolated system failure independently

d) No need for backup and recovery.

viii) Timestamp mechanism is used for

a) Concurrency control

b) Integrity control

c) Recovery

d) Redundancy.

ix) Which of the following refers to the operation of copying and maintaining database object in multiple database belonging to a distributed system ?

a) Backup b) Replication

c) Recovery d) None of these.

x) Which of the following is the recovery management technique for distributed system ?

a) Deferred update b) Immediate update

c) Two phase commit d) None of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. What are correctness rules of fragmentation ? Explain each rule.

3. What is the difference between parallel database and distributed database ?

4. What is the difference between reliability and availability ? What is local autonomy ?

5. What is the difference between tightly coupled and loosely coupled architecture ?

6. What is the false deadlock in DDBMS ?

7. Explain the different types of transparency in DDBMS.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

8. Explain reference architecture with diagram. Define different level of transparency. Discuss best fit, all beneficial site and additional beneficial site strategy for allocation of fragments.

6 + 3 + 6

9. a) Discuss the reasons of select distributed database instead of centralized DBMS. What are the possible disadvantages of such decision ?

   b) What are the additional threat to handle deadlock from centralized to distributed DBMS ? Explain centralized and hierarchical deadlock detector. Discuss the effect of replication to create deadlock. 3 + 2 + 3 + 5 + 2

10. Write short notes of the following : 5 × 3

    a) Cold restart

    b) Distributed wait for graph

    c) Wound wait protocol

    d) Conservative timestamp ordering protocol

    e) False deadlock.

11. a) What are the uses of catalogs in DDBMS ? What are the contents of catalog ? How catalogs are allocated to different site in DBMS ?

    b) Discuss 2 phase locking protocol in DDBMS.

    3 + 3 + 5 + 4

12. Justify the following statements : 5 × 3

    a) 3-phase commitment protocol overcome limitation of 2-phase commitment protocol.

    b) Unique timestamp generation is difficult in DDBMS than centralized DBMS.

    c) Query graph identifies redundant relation in an SQL.

    d) Cold restart is very hard in distributed database.

    e) Bottom up approach of distributed data distribution is applicable for integrating existing databases.