Name : ....

Roll No. : ....

Invigilator's Signature : ....

CS/B.TECH (CSE) (Separate Supple)/SEM-7/CS-704A/2011

2011
DISTRIBUTED DATABASE

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.
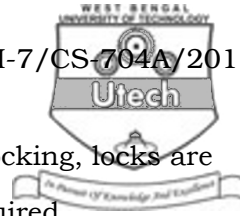
GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

    $10 \times 1 = 10$

    i)   Which of the following in a component of a distributed database system ?

    a) Server   b) Client

    c) Network   d) All of these.

    ii) Which of the following computing models is used by distributed database system ?

    a) Mainframe computing model

    b) Disconnected, personal computing model

    c) Client/Server computing model

    d) None of these.

    iii) Which of the following refers to the operation of copying and maintaining database objects in multiple databases belonging to a distributed system ?

    a) Backup   b) Recovery

    c) Replication   d) None of these.

SS-167   [Turn over

iv) What is data about data called ?

    a) Metadata   b) Data catalog

    c) Information   d) None of these

v) Which of the following is a function of a DDBMS!

    a) Distributed query processing

    b) Replicated data Management

    c) Distributed data recovery

    d) All of these.

vi) Which of the following is the recovery management technique in the case of distributed system ?

    a) Deferred update   b) Immediate update

    c) Two-phase commit   d) None of these

vii) Which of the following strategies is designed to ensure that either all the databases are updated or none of them are ?

    a) two-phase commit   b) two-phase locking

    c) two-phase update   d) None of these.

viii) Local mapping schema depends on the

    a) global relation   b) fragments

    c) type of local DBMS   d) None of these

ix) Distributed Database is basically placement of

    a) data and function   b) program and control

    c) data and program   d) data and control.

x) During growing phase of two-phase locking, locks are

    a) released   b) acquired

    c) both (a) and (b)   d) None of these.

GROUP – B

(Short Answer Type Questions)

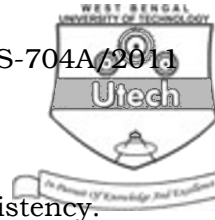Answer any *three* of the following.   3 × 5 = 15

2. Discuss the reason why an organization with a centralised database system might like to move to a distributed database environment.   5

3. Discuss the replication and its advantages and disadvantages.   5

4. Comment on distributed database administration.   5

5. What is false deadlock ? How is it overcome ?   2 + 3

6. Explain 3-phase commit protocol. Why is it non-blocking ?

                                                3 + 2

GROUP – C

(Long Answer Type Questions)

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

7. a) Comment on the information required for Data allocation.   4

    b) State the advantages and disadvantages of Distributed Database.   6

    c) Design an allocation model that will attempt to minimize the total cost of processing and storage while trying to meet response time restrictions.   5

8. a) Explain quorum based protocol.   6

    b) Discuss the different degrees of consistency.   4

    c) Discuss different levels of distribution transparancy. 5

9. Write short notes on any *three* of the following :   3 × 5

    a) Check points

    b) Primary copy locking

    c) Loosely and Tightly coupled system

    d) Distributed Data Dictionary Management

    e) Catalogue Management in distributed database system.

10. a) Describe 2-phase commit protocol. What are the
        demerits of this protocol ?   6 + 3

    b) Simplify the following query using the idempotency
        rules :   6

        SELECT ENO

        FROM ASG

        WHERE (NOT (TITLE : 'PROGRAMMER')

        AND (TITLE = 'PROGRAMMER' OR

         TITLE = 'ELECT.ENG')

        AND NOT (TITLE = 'ELECT. ENG'))

        OR ENAM = 'J. DAS'

11. What is concurrency control ? What is lock based protocol ?
    Explain what is validation based protocol ? Write insert and
    delete operations. What is coalscene ? 1 + 3 + 4 + (2 + 2) + 3