



Name :

Roll No. :

Invigilator's Signature :

**CS/MCA/SEM-5/MCAE-501A/2010
2010**

DISTRIBUTED DATABASE MANAGEMENT SYSTEM

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 any *ten* of the following :

10 ∞ 1 = 10

i) DDBMS provide better, and
over centralized DBMS.

- | | |
|----------------|------------------|
| a) Reliability | b) Availability |
| c) Security | d) Transparency. |

ii) One of the popular DDBMS product is

- | | |
|--------|-----------|
| a) DB2 | b) Oracle |
| c) ZZQ | d) R* . |



iii) "Fragmentation transparency cannot be achieved without location transparency." The statement is

- a) True
- b) False
- c) Unknown
- d) None of these.

iv) Global Schema, Fragmentation Scheme and Allocation Schema reside

- a) in one of the machine elected as a coordinator of the DDBMS
- b) virtually in the system
- c) in all the machines of the DDBMS network
- d) all of these.

v) Which component has the right to communicate distributed information with another component of different machine for running distributed transaction correctly ?

- a) Root agent
- b) DTM
- c) LTM
- d) None of these.



vi) Heterogeneous data source need design for designing D-DBMS.

- a) Bottom-up
- b) Top-down
- c) Flat
- d) None of these.

vii) 3PC protocol ensures non-blocking in case of failure.

- a) Site
- b) Network
- c) Partition
- d) Co-ordinator.

viii) The horizontal fragmentation of a relation cannot be based on a property of its own attributes, but is derived from the horizontal fragmentation of another relation is called fragmentation.

- a) horizontal
- b) vertical
- c) mixed
- d) derived horizontal fragmentation.



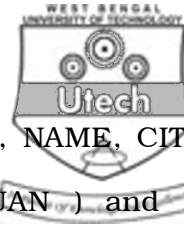
4. "2PL protocol only ensure that the schedule is conflict serializable or not ; but it cannot generate all possible combination of valid serializable schedule." Comment critically with example.
5. Explain unilateral abort capability in the context of 2-phase commitment protocol.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

6. a) Discuss drawbacks of 2PC protocol in distributed system with an example. 4
- b) Is 3PC protocol resolves all the problems ? Discuss 3PC protocol with the help of state transition diagram. 8
- c) Is 3PC will work in case of partition (type of failure) of network ? If not, discuss an algorithm that work in case of partition ? 3
7. a) Draw the ANSI/SPARC reference architecture of Distributed Database System and discuss about the site independent schemas. 6
- b) Show with the help of a diagram that replicated copy of R2 of fragment R1 allocated into different sites as R_1^2 and R_2^1 . 2
- c) When Bottom-up approach of distributed database design preferable over Top-down approach ? 3
- d) Explain advantage of Remote access via an auxiliary program in case of heterogeneous distributed database system with the help of a diagram. 4



8. a) Consider the schema SUPPLIER (SNO, NAME, CITY) and SUPPLY (SNO, PNO, DNO, QUAN) and the following transaction :

Read (tty, \$PNO)

Select Name into \$Name

From SUPPLIER, SUPPLY

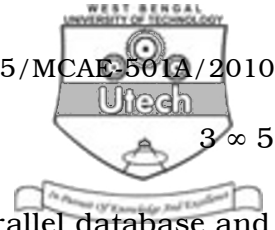
Where SUPPLIER.SNO=SUPPLY.SNO

AND SUPPLY.PNO=\$PNO

Write (tty,\$Name)

What is the level of transparency of the above transaction and why ? 3

- b) Discuss best-fit approach for a non-replicated allocation of horizontal fragmentation. 5
- c) Is any directory file system provides the network transparency ? If yes, explain how the transparency is achieved. 3
- d) What is the most complex effect of update operation in distributed database system ? Explain with the help of update subtree. 4



9. Answer any *three* of the following :

- a) Difference among multi-database, parallel database and distributed database
- b) Federated Database
- c) iDM or iMeMx model
- d) Serializability in a distributed database
- e) OO4O.

