Name :	
Roll No. :	An Printing Of Exercising and Excellent
Invigilator's Signature :	

CS / BCA / SEM-6 / BCAE-602C / 2011

2011

ADVANCED 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

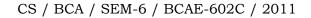
(Multiple Choice Type Questions)

- 1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) Autonomy refers to the distribution of
 - a) data b) control
 - c) function d) none of these.
 - ii) The global query optimizer and decomposer are used to
 - a) check user query process
 - b) minimize execution strategy of cost function
 - c) interpret user command
 - d) distribute execution of the user request.
 - iii) The local query optimizer acts
 - a) as access path selector
 - b) to manage local database remain constant
 - c) to interpret user command
 - d) none of these.

a)

- iv) Distributed database is basically placement of
 - data and function b) program and control
 - c) data and program d) data and control.

[Turn over



- v) Which of the following rules must be followed when defining fragments ?
 - a) Completeness condition
 - b) Reconstruction condition
 - c) Disjointness condition
 - d) All of these.
- vi) Processing locality conflicts with
 - a) availability and reliability of distributed data
 - b) workload distribution
 - c) storage and cost availability
 - d) none of these.
- vii) Local mapping schema depends on the
 - a) global relations b) fragments
 - c) types of local DBMS d) none of these.
- viii) A multiprocessor system where two or more processors share the same primary memory is called
 - a) homogeneous system b) loosely coupled system
 - c) tightly coupled system d) none of these.
- ix) Which of the following is the recovery management technique in case of distributed system ?
 - a) Deferred update b) Immediate update
 - c) Two-phase commit d) None of these.
- x) The simplest way to reconstruct a global consistent state in a distributed database is to use
 - a) local dumps b) local logs
 - c) global check points d) all of these.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

- 2. Explain cascading rollback.
- 3. What is loss update problem and how can it be overcome ?

1 + 4

- 4. Discuss the relative advantages and disadvantages of a temporal database.
- 5. Explain the basic principle of Multiversion technique.
- 6. Discuss 4NF with suitable example.



		CS / BCA / SEM-6 / BCAE-602C 2011 GROUP - C
		(Long Answer Type Questions) Answer any <i>three</i> of the following. $3 \times 15 = 45$
7.	a)	Explain in brief, the ACID properties of a transaction. 4
1.	а, b)	When are two operations said to be at conflict ? 3
	c)	What is two-phase locking ? Discuss it.5
	d)	Define foreign key with example. 3
8.	a)	What is the difference between DDL and DML? 4
) b)	Define 5NF with an example. 4
	c)	What do you mean by Data Dictionary ? What is its use ? $3+2$
	d)	What is primary key ? 2
9.	Wha	at is transaction ? Describe the properties of a
	trar	saction. What is interleaving in transaction ? Explain the
	diffe	erent anomalies in interleaving operation. $3 + 4 + 4 + 4$
10.	a)	What are the methods to prevent unauthorized users in remote accessing in distributed database ?
	b)	Explain the concurrency control mechanisms.
	c)	Suppose that 2 PC with Presumed Abort is used as the commit protocol. Explain how the system recovers from failure and deals with a particular transaction T in each of the following cases :
		i) A subordinate site for <i>T</i> fails before receiving a <i>prepare</i> message.
		ii) A subordinate site for T fails after receiving a <i>prepare</i> message but before making a decision.
		 iii) A subordinate site for T fails after receiving a prepare message and force-writing an abort log record but before responding to the prepare message.

[Turn over



- iv) A subordinate site for T fails after receiving a *prepare* message and force-writing a prepare log record but before responding to the *prepare* message.
- v) A subordinate site for *T* fails after receiving a *prepare* message, force-writing an abort log record, and sending a no vote.
- vi) The coordinator site for *T* fails before sending a *prepare* message.
- vii) The coordinator site for T fails after sending a *prepare* message but before collecting all votes.
- viii) The coordinator site for T fails after writing an *abort* log record but before sending any further messages to its subordinates.
- ix) The coordinator site for T fails after writing a *commit* log record but before sending any further messages to its subordinates.
- x) The coordinator site for *T* fails after writing an *end* log record. Is it possible for the recovery process to receive an inquiry about the status of *T* from a subordinate ? 2 + 3 + 10
- 11. What is the blocking problem in 2-phase commit protocol ? Explain how 3-phase commit overcomes this problem. Describe the distributed deadlock detection algorithm with an example. 3 + 6 + 6

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