Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/BCA/SEM-6/BCAE-602C/2013

2013

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) Which of the following is a DDL ?

   a) Commit b) Roll back

   c) Drop d) None of these.

   ii) Which of the following is a DML ?

   a) Update b) Truncate

   c) Grant d) Revoke.

   iii) Which of the following logically represents subsets of data from one or more tables ?

   a) Sequence b) Synonym

   c) Index d) View.

   iv) The table on which a view is made is called

   a) Parent table b) Base table

   c) Child table d) none of these.

v) Which of the following keywords creates view regardless of whether or not the base table exists ?

a) OR REPLACE

b) CREATE

c) FORCE

d) WITH CHECK OPTION.

vi) Which of the following aggregate functions is valid on the date column ?

a) Sum b) Max

c) Avg d) Count.

vii) A view cannot be modified if the view contains

a) Select b) Group by

c) Replace d) none of these.

viii) Database that stores information about states of the real world across time is called

a) OODBMS b) RDBMS

c) Temporal DBMS d) none of these.

ix) Fragment $r_i = \delta_{pl}(r)$ yields a

a) horizontal fragment b) vertical fragment

c) mixed fragment d) cannot be said.

x) Autonomy of the local computers is not preserved in

a) homogeneous distributed database

b) heterogeneous distributed database

c) multi-database

d) none of these.

GROUP – B

(Short Answer Type Questions)

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

2. What do you mean by data dictionary ? What is its use ?
3. What is 2PL ? Discuss.
4. Discuss Thomas' write rule.
5. Explain the shadow copy method of implementation of Atomicity and Durability.
6. Consider the tables :

   `employee (emp_code, emp_name, designation, DOJ, basic_sal, dept_code`

   and

   `dept (dept_code, dept_name)`

   Create a view `employee_dept` with following attributes :

   `(emp_name, designation, dept_name)`.

GROUP – C

(Long Answer Type Questions)

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

7. a) Explain in detail how basic time stamp ordering algorithm is used for concurrency control. Explain the advantage of a shared and exclusive locking technique over binary locking technique.

   b) Differentiate between 3NF and BCNF. 9 + 3 + 3

8. What is Transaction ? What is interleaving in Transaction ? Describe the properties of transaction. Explain different transaction states with diagram. How is distributed transaction different from centralized transaction ?

   4 + 4 + 4 + 3

9. a) What is blocking in 2PC ? Explain how 3PC overcomes this problem.

   b) What is Assertion ?

   c) What is DKNF ? Explain with an example.

   d) Explain in brief Public key encryption technique.

   2 + 4 + 3 + 3 + 3

10. a) Draw the precedence graph for the following schedule and determine whether the schedule is conflict serializable or not.

T1	T2	T3
	Read (Z) Read (Y) Write (Y)	
		Read (Y) Read (Z)
Read (X) Write (X)		
		Write (Y) Write (Z)
	Read (X)	
Read (Y) Write (Y)		
	Write (X)	

b) What are the conditions for View Serializability ? Explain with example.

c) What do you mean by cascading rollback ? Give an example of a schedule where a single transaction failure leads to cascading rollbacks. 5 + (3 + 2) + (2 + 3)

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

a) 4NF

b) Timestamp Based Locking Protocol

c) Embedded SQL

d) Distributed Database

e) Object Oriented Database.

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