*Name* : .....

*Roll No.* : .....

*Invigilator's Signature :* .....

**CS/BCA/SEM-6/BCAE-602C/2012**

**2012**

# ADVANCED 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 : $10 \times 1 = 10$

   i) The timestamp schedule which accepts view serializable schedules is
      a) basic timestamp b) Thomas Write Rule
      c) both (a) & (b) d) neither (a) nor (b).

   ii) Consider the SQL query :
      select * from emp group by deptno
      Which of the following is true ?
      a) 1 row output b) Error
      c) 0 row output d) Cannot say.

   iii) Isolation is ensured by
      a) Transaction Manager
      b) User
      c) Recovery Manager
      d) Concurrency Control System.

iv) A Trigger is

a) a statement that enables to start any DBMS

b) a statement that is executed by the user when debugging an application program

c) a condition the system tests for the validity of the database user

d) a statement that is executed automatically by the system as a side effect of a modification to the database.

v) Locking all data item before beginning of transaction is part of

a) Basic 2PL Protocol

b) Strict 2PL Protocol

c) Rigorous 2PL Protocol

d) Conservative 2PL Protocol.

vi) In which of the following schedules, all the instruction of a transaction execute consecutively ?

a) Serial Schedule b) Serializable Schedule

c) Recoverable Schedule d) Cascadeless Schedule.

vii) Which is Shadowing paging ?

a) UNDO/REDO b) UNDO/No REDO

c) No UNDO/REDO d) No UNDO/No REDO.

viii) Either all operations of the transaction are reflected properly in the database or none is called

a) durability b) consistency

c) isolation d) atomicity.

ix) If a transaction $T1$ has obtained a shared-mode lock on item $Q$, than $T1$ can ....., but cannot ..... .

a) output, read b) write, read

c) output, write d) read, write.

x) There are 2 approaches in storing a data in distributed database Fragmentation and .....

a) availability b) replication

c) transparency d) none of these.

xi) Transitive dependency is not allowed in

a) 1NF b) 2NF

c) 3NF d) all of these.

xii) In Public Key Encryption is a process where data is encrypted using

a) Receiver's Public Key

b) Sender's Public Key

c) A Global Public Key

d) A User Generated Public Key.

## GROUP – B

### ( Short Answer Type Questions )

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

2. What is Fragment ? How many types are there ? Briefly explain each of them with suitable example.
3. Discuss the advantages and disadvantages of Distributed Database.
4. Explain Multivalued dependency with an example.
5. Discuss the ACID properties of database.
6. What is a view ?
   View does not take any memory space. Justify.

## GROUP – C

### ( Long Answer Type Questions )

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

7. a) Explain Wound-Wait and Wait Die Technique for deadlock prevention. 4

   b) Explain why deferred update technique is called NO UNDO/REDO technique. 3

c) Explain different transaction states with diagram. 4

d) What is Two-Phase Locking ? Discuss. 4

8. a) Why concurrency control techniques are required ? 5

b) When are two operations said to be at conflict ? 3

c) Explain foreign key with example. 3

d) What is Data Dictionary ? What is its use ? 2 + 2

9. a) What is the advantage of Shared/Exclusive Locking Technique over Basic ? 3

b) Write the read_lock ( x ), write_lock ( x ) and unlock ( x ) functions in the Shared and Exclusive Locking Technique. 8

c) State the algorithm for determining conflict serializability using precedence graph. 4

10. a) Explain 5th normal form with an example. 3

b) What is Full replication ? What are its advantages ? 2 + 2

c) What is multi-database system ? 2

d) What is critical section ? 2

e) What is Live Lock ? 2

f) What is super key ? Give example. 2

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

a) Embedded SQL

b) Triggers

c) 3-phase commit

d) Thomas' Write Rule

e) Shadow paging.

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