# END TERM EXAMINATION

**SECOND SEMESTER [MCA] MAY-JUNE 2012**

| *Paper Code: MCA 108* | *Subject: Data Base Management System* |
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*Time : 3 Hours*                                                      *Maximum Marks :60*

*Note: Attempt any five questions including Q.no.1 which is compulsory. Select one question from each unit*

Q1      Answer the following                                                          (2* 10=20)

(a) What is the difference between stored and derived attributes? Explain with an example.
(b) Differentiate between physical data independence and logical data independence.
(c) What is the difference between a candidate key and the primary key for a given relation?
(d) What are the restrictions on the ALTER TABLE command?
(e) What are explicit cursors?
(f) What recovery techniques used to recovery the database?
(g) What is a transaction? What are its properties?
(h) Explain the two major advantages of distributed databases?
(i) Discuss the applications of object oriented databases.
(j) Consider the following relation

| A | B | C |
|---|---|---|
| 10 | b1 | c1 |
| 10 | b2 | c2 |
| 11 | b4 | c1 |
| 12 | b3 | c4 |
| 13 | b1 | c1 |
| 14 | b3 | c4 |

Which of the following functional dependencies may hold in the above relation: $A \rightarrow B$, $B \rightarrow C$, $C \rightarrow B$.

## UNIT-I

Q2 (a) Discuss the architecture of Database Management System .                          (5)

(b) A company database needs to store information about employees (identified by *ssn,* with *salary* and *phone* as attributes), departments (identified by *dno,* with *dname* and *budget* as attributes), and children of employees (with *name* and *age* as attributes). Employees *work* in departments; each department is managed by an employee; a child must be identified uniquely by *name* when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company.

Draw an ER diagram that captures this information.                                      (5)

Q3 (a) Why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system?                          (5)

(b) Differentiate between specialization and generalization.                              (5)

## UNIT-II

Q4    Consider the following schema:
Suppliers(sid: integer, sname: string, address: string)
Parts(pid: integer, pname: string, color: string)
Catalog(sid: integer, pid: integer, cost: real)

Using SQL answer the following queries:

(a) Find the sids of suppliers who supply some red part or are at 221 Packer Street.
(b) Find pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid.
(c) Find the pids of parts supplied by at least two different suppliers.
(d) Find the pids of the most expensive parts supplied by suppliers named Yosemite Sham.
(e) Find the pids of parts supplied by every supplier at less than $200.    (10)

Q5 (a)  What do you mean by relational algebra? Explain all the operations of relational algebra.  (5)

(b)  Write short notes on:

DDL, DML, DQL and DCL.    (5)

## UNIT-III

Q6 (a) Discuss the Oracle Memory Structure.    (5)

(b) Discuss Exception handling in PL/SQL.    (5)

Q7 (a) Explain the physical data structure of Oracle.    (5)

(b) What are stored procedures in Oracle?    (5)

## UNIT-IV

Q8    Suppose you are given a relation R with four attributes *ABCD*. For each of the following sets of FDs, assuming those are the only dependencies that hold for *R*, do the following:

(a)  Identify the candidate key(s) for *R*. (b) Identify the best normal form that *R* satisfies

(1NF, 2NF, 3NF, or BCNF) . (c) If *R* is not in BCNF, decompose it into a set of BCNF relations that preserve the dependencies.    (10)

1.  $C \rightarrow D, C \rightarrow A, B \rightarrow C$
2.  $B \rightarrow C, D \rightarrow A$
3.  $ABC \rightarrow D, D \rightarrow A$
4.  $A \rightarrow B, BC \rightarrow D, A \rightarrow C$
5.  $AB \rightarrow C, AB \rightarrow D, C \rightarrow A, D \rightarrow B$

Q9    Discuss the concurrency control techniques in details.    (10)

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