# END TERM EXAMINATION

SECOND SEMESTER [MCA] MAY – 2011

| Paper Code: MCA108 | Subject: Data Base Management |
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Time: 3 hours Maximum Marks: 60

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

**I** (a) Differentiate between physical data independence and logical data independence. (2)

(b) Identify the candidate key & foreign keys for each table in the following bank database: (2)

Deposit_sch(br_name,account_no,cust_name,amt)

Branch(br_name,assests,city)

Customer(cust_name,street,city)

(c) With reference to oracle, define cursor and its uses. (2)

(d) In oracle, we should use triggers and when should we not? Explain through examples. (2)

(e) Differentiate between serial and serializable schedule. (2)

(f) How object-oriented DBMS differs from relational DBMS? Briefly describe at least two differences. (2)

(g) Explain at least two problems to be handled by DBMS for distributed databases, which do not exist with centralized databases. (2)

(h) How do you specify constraints in SQL? Explain at least two different methods with syntax. (2)

(i) For which type of queries, DIVIDE BY operator of Relational Algebra is useful? Give example of a query and example by using some sample of data. (2)

## UNIT – I

**II** (a) What are the responsibilities of DBA? (3)

(b) Draw the various types of a database system & explain role of each these levels. (7)

**III** (a) List various types of relations & their notation, which can be shown in an ER-diagram? (3)

(b) Briefly describe hierarchical and network DBMS. (7)

## UNIT –II

**IV** Consider the database (10)

Employee (e-name,street,city)

Company (c-name,city,c-loan)

Works (e-name,c-name,salary)

Manages(e-name,manager-name)

Using SQL answer following queries:

(a)Find employee names who live in same city & on same street as do their managers.

(b)Find count of employees staying in Delhi.

(c)Give all mangers working in company “ABC”,10% increase in salary.

(d)Find all those company names, in which all Delhi employees work.

(e)Find those companies in which at least one employee of Delhi based companies works.

**V** student (SID, name, branch, marks, age) (10)

Enrollment (student-id, class-name, position-no)

Class (name, time, room, max-allowed-students)

Using SQL, answer following queries:

(a)Find all unique numbers of classes attended by student having id S403.

(b)Get student names having marks greater than that of S201.

(c)Find time & room of those classes, in which at least one student with age above than 15, attends the classes.

(d)Find students not enrolled in MET-473 class.

(e)Foe each hour, find total number of students who can possibly attend a class during that hour. Assume that every hour is identified by a distinct name.

## UNIT – III

**VI** (a) Explain the logical and physical data structures of Oracle. (8)

(b) Write the command in Oracle, to increase the tablespace for a specific user. (2)

**VII** (a) Explain internal memory structure of Oracle. (5)

(b)What are stored procedures in Oracle? Briefly describe. (3)

(c)Differentiate between varchar and char data type in Oracle. (2)

## UNIT – IV

**VIII** Consider the following table consisting of details about branches, customers, and different loans given to them. (10)

BANK_LOANS(branch-code, branch city, branch-assets, loan-number, loan-amount, customer-name, cust-address, cust-status, cust-proffesion)

Assumption are:

(i) NO two branches will have same branch-code.

(ii) No two customers will have same name.

(iii) Within same branch, no two loans will have same loan-number.

(iv) Every customer profession has got unique status.

(v) One loan cannot be in name of more than one customer. However one customer can have more than one loan from the same branch also.

**Step by step, bring this relation to 1NF, 2NF, 3NF, BCNF. Explain each step.**

**IX** (a) Using S-lock and X-lock protocol, show how following interleaved execution will complete its execution. Make suitable assumptions, if needed. If A=20, B=40, C=50 initially, what will be final values of A, B, C as per your proposed execution (5)

| **Transaction T0** | **Time** | **Transaction T1** |
|---|---|---|
| Read A | t1 | |
| | t2 | Read A |
| | | Read B |
| | | UPD A: A=A+10 |
| | | Read C |
| Read C | t3 | |
| UPD C: C=C*1.2 | | |
| Read B | | |
| UPD B: B=B*0.8 | | |
| | t4 | Read B |

(b) What are various recovery techniques in databases? Briefly describe. (5)

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