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MBA 3rd Semester Examination

Relational Database Management System (N.S.)

IT-01

Time : 3 Hours **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

SECTION - A

All Compulsory.

1. (a) List and explain four applications that most likely employed a database system to store persistent data.

   (b) List four significant differences between a file processing system and DBMS.

   (c) What are the SQL built-in functions? How do you use them in an SQL query?

   (d) What are five main functions of a database administrator?

   (e) Discuss the relative merits of procedural and non-procedural language.

   (f) What is multivalued Dependencies?

   (g) Describe the circumstances in which you would choose to use embedded SQL rather than SQL alone.

   (h) State the three integrity rules. Indicate the reasons for enforcing each rule.

   (i) What is relational database?

   (j) List two reasons why null values might be introduced into the database. **(2×10=20)**

SECTION - B

Attempt any four.

2. Explain how database management system can be secured.

3. Why data independence is important? Explain the difference between logical and physical data independence.

4. How do you group data in SQL? When you group data in SQL, are there any restrictions on the items that you can include in the SELECT clause? Explain.

5. Explain functional dependencies.

6. Give the comparison of OOD and ORD of DBMS.

7. Explain DDL, DML and DCL. **(4×5=20)**

SECTION - C

Attempt any two.

8. For a Training and Placement office of an educational institute determine the entities of interest and the relationships that exists between these entities. Draw an ER diagram for the system. Assume that Training and Placement office of an educational institute offer many short term modular courses to students, meeting the demands of the recruiting companies visiting institute for recruiting students. These short term courses lead to medium to long term specialized courses.

9. Consider the following collection of relations and dependencies. Assume that each relation is obtained through decomposition from a relation with attributes *ABCDEFGHI* and that all the known dependencies over relation *ABCDEFGHI* are listed for each question. (The questions are independent of each other, obviously, since the given dependencies over *ABCDEFGHI* are different.) For each (sub) relation:

   (a) State the strongest normal form that the relation is in.

(b) If it is not in BCNF, decompose it into a collection of BCNF relations.

1. R1 (A, C, B, D, E), A $\rightarrow$ B, C $\rightarrow$ D
2. R2 (A, B, F), AC $\rightarrow$ E, B $\rightarrow$ F
3. R3 (A, D), D $\rightarrow$ G, G $\rightarrow$ H
4. R4 (D, C, H, G), A$\rightarrow$I, I$\rightarrow$A
5. R5 (A, I, C, E)

10. Explain relational algebra. You are given the following relational schema for family relations:

Person (PID, PersonName, Sex, Cityofbirth)

Parent (ParentID, ChildID) // both ParentID and ChildID are foreign keys referring to Person.PID Write the following queries in relational algebra using only selection, projection, join, Cartesian product, set union, intersection and difference.

(a) Find the name of grandparents of all people who were born in New York city.

(b) Find the name of all people who were born in the same city as their father.

11. What is Data Mining? What are its various applications? Explain techniques involved in Data Mining. **(2×10=20)**