Subject Code—4378-X

M.C.S. EXAMINATION

June, 2006

(Third Semester)

(Re-appear)

MS-11

RDBMS

Time : 3 Hours   *Maximum Marks : 100*

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) List major steps that would take in setting up a database for particular organization. 10

   (b) Identify the main components in a DBMS and briefly explain what they do.   10

2. (a) Discuss the entity integrity and referential integrity constraints. Why is each considered important ?   10

(b) List two reasons why null values might be introduced into the database ? 5

(c) Why are duplicate tuples not allowed in a relation ? 5

3. (a) What is the need of normalization of data ? What are the various techniques for normalization of a Relational Model ? 10

(b) Consider the universal relation $R = \{A, B, C, D, E, F, G, H, I, J\}$ and set of functional dependencies $F = \{\{A, B\} \rightarrow \{C\}, \{A\} \rightarrow \{D, E\}, \{B\} \rightarrow \{F\}, \{F\} \rightarrow \{G, H\}, \{D\} \rightarrow \{I, J\}\}$. What is the key of R ? Decompose R into 2NF and then 3NF relations. 10

4. (a) Define Query Processing. What are the steps involved in processing a query ? What are the measures of query cost ? 12

(b) How does a query tree represent a relational algebra expression ? What is meant by the execution of a query tree ? 8

5. (a) What is concurrency in databases ? What different problems can occur if it is not controlled ? Give one scheme for controlling concurrency based on time-stamp. 12

   (b) Discuss two multiversion techniques for concurrency control. 8

6. (a) Discuss the deferred update technique of recovery. What are the advantages and disadvantages of this technique ? Why is it called NOUNDO/REDO method ? 10

   (b) What is the difference between the UNDO/REDO and the UNDO/NO-REDO algorithm for recovery with immediate update ? 10

7. (a) What are main software modules of a DBMS ? Discuss the main functions of each of these modules in the context of client-server architecture. 14

   (b) Explain how the following differ : fragmentation transparency, replication transparency and location transparency. 6

8. Differentiate the following :

    (a) Normal form and Normalization

    (b) Physical Schema and Conceptual Schema

    (c) Data Dependence and Data Independence

    (d) Controlled and Uncontrolled Redundancy.