Roll No. .....

Subject Code—6799

M.C.A. (Second Year) EXAMINATION

(5 Years Integrated Course)

(Main Batch 2009)

MCA-202

DATABASE MANAGEMENT SYSTEM

Time : 3 *Hours* *Maximum Marks* : 70

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

1. (a) Define the following terms :

   Data Dictionary, Data independence, Data sublanguage, Data schema, DDL.

   (b) Discuss the main categories of data models.

2. Explain Network data model in detail.

3. (a) What is Union Compatibility ? What do the union, intersection and difference operations require that the relations on which they are applied be union compatible ?

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

4. Differentiate the following :

(a) Primary key and Candidate key

(b) Outer join and Equijoin

(c) Weak and Strong entity type

(d) Total and Partial participation constraints.

5. (a) What is meant by the closure of a set of functional dependencies ? Illustrate with an example.

(b) Consider a relation R(A, B, C, D, E) with the following dependencies :

$AB \rightarrow C$, $CD \rightarrow E$, $DE \rightarrow B$

Is AB a candidate key of this relation ? If not, is ABD ? Explain your answer.

6. (a) What is meant by the term heuristic optimization ? Discuss the main heuristics that are applied during query optimization ?

(b) Discuss the reasons for converting SQL queries into relational algebra queries before optimization is done.

7. (a) How does the granularity of data items affect the performance of concurrency control ? What factors affect selection of granularity size for data items ?

(b) Discuss the time stamp ordering protocol for concurrency control. How does strict time stamp ordering differ from basic time stamp ordering ?

8. (a) Explain the architecture of client-server computing.

(b) What is meant by data allocation in distributed database design ? What typical units of data are distributed over sites ?