USN ☐☐☐☐☐☐☐☐☐☐   **13MCA25**

Second Semester MCA Degree Examination, June/July 2017
Database Management Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Define database. Explain the characteristics of database approach.   **(10 Marks)**
   b. Discuss in detail the component modules of DBMS and their interactions with DBMS.
                                                                                   (10 Marks)

2 a. Explain the 3-schema architecture.   **(06 Marks)**
   b. Explain the classification of database management systems.   **(10 Marks)**
   c. What is data model? Explain.   **(04 Marks)**

3 a. Explain the several types of attributes in ER-model. Give example for each. **(06 Marks)**
   b. Construct an ER-diagram for company database with proper assumptions.   **(10 Marks)**
   c. What is cardinality ratio? Explain cardinality ratio for binary relationship. **(04 Marks)**

4 a. List any five relational algebra operators along with their purpose and syntax of using them.
                                                                                   (10 Marks)
   b. Discuss the algorithm of ER-to-relational mapping.   **(10 Marks)**

5 a. What is relation? Explain the characteristics of relations.   **(10 Marks)**
   b. Explain the anomalies due to interleaved execution.   **(10 Marks)**

6 a. Consider the following spare parts company relation schema.
       CUSTOMER (Custno, Custname, City)
       ORDER (Orderno, Custno, date)
       ITEM (Itemno, Itemname, price)
       Ord-item (Orderno, Itemno, Quantity)
       Write the SQL queries for the following:
       i)   Create the above tables by properly specifying constraints.
       ii) Enter atleast five tuples for each relation.
       iii) List all the items orderby customer "aaa".
       iv) List all the customer who have ordered the item "hard disk".
       v)   List all the customers living in specific city.   **(10 Marks)**
   b. Explain the role of DBA.   **(06 Marks)**
   c. Explain data independence in detail.   **(04 Marks)**

7 a. Define functional dependency and give the six inference rules for functional dependency.
                                                                                   (10 Marks)
   b. What is normalization? Explain 1NF, 2NF and 3NF.   **(10 Marks)**

8 a. Explain conditional statement, iteractive statements in PL/SQL.   **(10 Marks)**
   b. What is stored procedure? Write the syntax for creating stored procedure.   **(10 Marks)**

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