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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Second Semester, Master of Computer Applications (MCA)
Semester End Examination; June - 2017
Database Management Systems

Time: 3 hrs   *Max. Marks: 100*

Note*: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
  ii) Assume suitable data, if any.

UNIT - I

1 a. Discuss the drawbacks of a Traditional Processing System with an example.	10
b. Explain the three-schema architecture, with a neat diagram.	6
c. List and explain categories of Data models.	4
2 a. Explain DBMS component modules of a DBMS.	10
b. Write short note on:	
i) Data Independent	10
ii) Workers Behind the DBMS scene.	

UNIT - II

3 a. Describe the main phases of the database design process, with a neat diagram.	10
b. Explain the different types of symbols used in the ER- diagram.	10
4 a. Define the following terms with an example with respect to an ER Model:	
i) Entity Set	
ii) Relationship Instance	10
iii) Cardinality Ratio	
iv) Participation.	

b. Construct an ER diagram for COMPANY database. The company keeps track of company's employees, project, and department. A department controls a number of projects and employee can work for any number of projects. The Company keeps track of dependents of each employee for Insurance company.   10

UNIT - III

5 a. Explain the characteristics of Relations.	5
b. List and explain update operations on Relations.	5
c. Discuss with syntax and example, all the unary relational operators used in relational algebra.	10
6 a. Explain the left outer join, Right outer join and Full outer join operators with example.	10
b. Explain the steps for converting an ER model to relational model.	10

UNIT - IV

7 a. Explain on Delete Cascade and on update cascade with example each.   6

  b. Which command is available for removing a table from database? Explain with an example.   4

  c. Explain all options of SELECT statement in SQL. Give example for each.   10

8 a. Consider the Car Insurance Database

   PERSON (driver_id, name, address)

   CAR (Reg_no, model, year)

   ACCIDENT (Report_number, ddate, location)

   OWNS (driver_id, Reg_no)

   PARTICIPATED (driver_id, Reg _no, Report_no, damage_amt)

   write the following queries in SQL: 10

   i) Update the damage amount for car with a specific Reg_no in the accident with Report_no
      12 to 25000.

   ii) Find the owner of the car, which involved in the accident on 11-Mar-03 and damage
       amount, is greater than 10,000.

   iii) Find the number of accidents in which cars belonging to a specific model were involved.

   iv) Find the total number of people who owned cars that were involved in accidents in 2002.

  b. Describe Aggregate functions in SQL.   6

  c. Briefly explain the different domain types used in SQL.   4

UNIT - V

9 a. Define functional dependency. State and prove Armstrong Inference rules.   10

  b. Explain Informal Design guidelines for relational schema.   10

10 a. Define normalization. Explain 1NF, 2NF and 3NF with suitable examples.   10

  b. Discuss the anomalies due to interleaved execution in transactions.   10

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