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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Second Semester, Master of Computer Applications (MCA)
Semester End Examination; June - 2016
Database Management System

Time: 3 hrs   *Max. Marks: 100*

Note: Answer **FIVE** full questions, selecting **ONE** full question from each unit.

UNIT - I

1 a.	Explain the advantages of using a Database Management System.	10
b.	Explain the actors on the scene and workers behind the scene.	10
2 a.	What is data independence? Explain its types.	7
b.	Explain, when not to use a DBMS?	5
c.	Explain the main characteristics of the database approach.	8

UNIT - II

3 a.	Explain the different attribute types with example.	10
b.	Draw an ER diagram for the company database system by assuming the suitable entities, attributes and relationships.	10
4 a.	Explain the following with an examples :	10

i) Entity type   ii) Entity sets   iii) Relationship instance

iv) Domain of attributes   v) Weak entity set.

b.	What is cardinality ratio? Explain different types of cardinality ratios with suitable example.	8
c.	Compare String entity set with weak entity set.	2

UNIT - III

5 a.	Explain the relational algebra operations UNION, INTERSECTION, MINUS, SET DIFFERENCE and Cartesian product with examples.	10
b.	Explain ER to relational mapping algorithm with suitable example.	10
6 a.	Describe left outer join, right outer join and full outer join with example.	10
b.	Consider the following relational schema and answer the following queries using relational algebra.	10

   Employee (<u>SSN</u>, Name, DOB, Addr, Sex, Salary, Super_SSN, DNo)

   Dept (<u>DNo</u>, Dname, SSN, mgrstartdate)

   Projects (<u>PNo</u>, Pname, Plocation, DNo)

   i) Retrieve the name and salary of all employees working for department 6

   ii) Find the name and address of the employees who earn more than 25000 rupees

   iii) List the name and location of the projects not controlled by department 2

   iv) Find the employees who work for department 4 and salary is greater than 25,000 rupees.

   v) Select the tuples for all employees who either work in dept 2 and make over

      ` 10,000 or work in dept 3 and make over ` 29,000.

UNIT - IV

7 a. Explain all options of SELECT statement in SQL, give examples for each. 10

   b. Explain the additional features of SQL. 10

8 a. Explain the following with examples :

   i) Views in SQL   ii) Embedded SQL. 10

   b. By considering the Relation schema of 6b, Solve the following queries :

   i) Retrieve the birth date and address of the employees whose name is 'John B smith'.

   ii) Retrieve the name and address of all employees who work for the 'Research' department

   iii) For each employee, retrieve the employee's first and last name and the first and last name 10
   of his/her immediate supervisor.

   iv) Retrieve all employees whose address is in Houston Texas

   v) Retrieve all employees in Department 5 whose salary is between $30,000 and $40,000.

UNIT - V

9 a. Briefly explain Informal design guidelines for Relation schema. 10

   b. What is normalization? Explain First, Second and Third normal forms with suitable example. 10

10 a. Describe the locking techniques for concurrency control. 10

   b. Briefly explain the ACID properties. 5

   c. What are WR, RW and WW conflicts? Explain. 5

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