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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belgaum)
Fifth Semester, B.E. - Information Science and Engineering
Semester End Examination; Dec. - 2015
Data Base Management System

Time: 3 hrs   *Max. Marks: 100*

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

UNIT - I

1 a. Explain in detail three-schema architecture and data independence.   6

 b. With help of an example, explain ER diagram containing four entities and all different notations used in writing ER diagram along with cardinality ratio description.   8

 c. Compare DBMS approach with regular flat file processing with their advantages and disadvantages.   6

2 a. What is a weak entity? How it is represented in ER diagram? Give an example for the same.   8

 b. Explain characteristics of Database approach.   6

 c. Explain in brief relationship types.   6

UNIT - II

3 a. Explain the concept of ER-to-Relational mapping for entities and unary 1:1, 1: N, M: N and binary 1:1, 1: N and M: N relations.   10

 b. Consider the following relational database schema for a company database;

   Employee (Name, <u>SSN</u>, BDate, Address, Salary, SSSN, DNO)

   Department (Dname, <u>DNO</u>, mgrssn, mgrsdate)

   Project (pname, <u>PNo</u>, Ploc, Dnum)

   Dependent (ESSN, <u>Dep-name</u>, BDate, Relship)

   Dept_Loc(<u>DNO, Dloc</u>)

   Works_ON (<u>ESSN</u>, <u>PNo</u>, Hours)   10

   Write the queries in relational algebra for the following :

   (i) Retrieve the name and address of all employees who work for "Research" department

   (ii) Retrieve the names of employees who have no dependents.

   (iii) Find the names of employees who work on all the projects controlled by department number 5.

   (iv) List the names of managers who have at least one dependent.

4 a.   For the company schema given in 3(b) write the SQL Queries for the following:

(i) Retrieve the salary of every employee with distinct salary values.

(ii) Retrieve all employees is department 5 whose salary is between $30,000 and $ 40,000.

(iii) Retrieve all employees whose address is in Houston.   10

(iv) List the names of managers who have at least one dependent.

(v) Retrieve the name of each employee who works as all the projects controlled by department number.

  b.   Explain with example the following relational operations:
       (i) SELECT   (ii) PROJECT   (iii) DIVISION   6

  c.   Explain group by clause with example.   4

UNIT - III

5 a.   Explain with example Assertions and triggers in SQL.   8

  b.   Explain Schema change statements in SQL.   6

  c.   Illustrate the use of update and delete command with example.   6

6. a. Explain with example views in SQL.   5

  b.   Explain EXISTS and UNIQUE functions in SQL.   6

  c.   Give an example for renaming of attributes in SQL.   4

  d.   Differentiate between Nested and Correlated Queries with an example.   5

UNIT - IV

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

AB→C, CD→E, DE→B   10

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

  b.   Explain second and third normal form with example.   10

8 a.   What is multi-valued Dependencies? Explain 4NF with example.   10

  b.   Explain Boyce-Codd normal form with example.   5

  c.   Explain update anomalies with an example.   5

UNIT - V

9 a.   Explain in brief desirable properties of transactions and transaction states with neat diagram.   10

  b.   Illustrate shadow paging in detail with example.   10

10 a. What is Two-phase locking Techniques for concurring control and explain.   10

  b.   What are serial, Non-serial and conflict serializable schedule. Give example for each.   10

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