TCS-404   172-A   Printed Pages : 4

Roll No. to be filled in your Answer Book

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B. Tech. Computer Science Engineering
(4TH Semester) Examination, 2015
Database Management System

Time: 3.00 Hrs]   [Max. Marks: 100

Note: All questions are compulsory.

1. Attempt any four parts-   5*4 = 20

    a)   Explain advantages and disadvantages of database system over conventional file system.

    b)   Draw an ER diagram for a small marketing company database, assuming your own data requirements.

    c)   Explain the distinctions among the term primary key, candidate key and super key with example?

    d)   What are the mapping cardinality constraints and participating constraints?

    e)   Explain the database management system architecture with neat diagram.

    f)   Who is a DBA? What are the responsibilities of a DBA?

2. Attempt any four parts-   5*4 = 20

   a) Write the tuple relational calculus expression to find the number of employees working in sales department in the given relation employee

      Employee (SSN-no, NAME, DEPARTMENT)

   b) Define a NULL value? How do you retrieve null values from the database?

   c) Consider the following relation

      Employee(Employee-Name,Company-Name,Salary)

      I. Find the Total salary of each company

      II. Find the employee name that is getting lowest salary.

   d) Given R(A, B, C, D, E) with the set of FDs F {AB -> CD, ABC -> E, C-> A}

      I. Find any two candidate key of R

      II. What is the normal form of R? Justify

(2)

e) Consider the following schema:

SUPPLIER (SUPPLIER_ID, SUPPLIER_NAME, SUPPLIER _ADDRESS)

PARTS (PART_ID, PART_NAME, COLOR)

CATALOG (SUPPLIER_ID, PART_ID, COST)

Write the following queries in relational algebra and SQL:

I. Find the name of supplier who supply yellow parts.

II. Find the name of suppliers who supply both blue and green parts.

f) Write short notes on:

I. DDL

II. DML

3. Attempt any TWO parts-   10*2 = 20

a) What is normalization? Explain 2NF with insertion, deletion and updation anomalies with an appropriate example?

b) When is a functional dependency said to be trivial?

c) What do you mean by Natural join? Differentiate between Cartesian product and natural join with example.

(3)   TCS-404 / 1880 / 4

4.   Attempt any TWO parts-   10*2 = 20

    a)   What is Transaction? List and discuss ACID
         properties of a Transaction. Define Transaction Log
         and what its function is.

    b)   What is a view? How can it be created? Explain
         with an example.

    c)   When is a transaction said to be deadlocked?
         Explain the deadlock prevention methods with an
         example.

5.   Attempt any two parts-   10 * 2 =20

    a)   Explain the various ways in which concurrency
         control can be implemented in a database.

    b)   Discuss in detail about transaction concept and two
         phase commit protocol.

    c)   What are deferred modification and immediate
         modification techniques for recovery? How recovery
         does takes place in case of failure in these
         techniques.

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