USN | | | | | | | | | | | **10CS54**

Fifth Semester B.E. Degree Examination, Dec.2014/Jan.2015
Database Management System

Time: 3 hrs.   Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

1 a. Explain the typical components module of a DBMS, with a neat diagram. **(10 Marks)**
   b. Define the following with examples :
      i) Value set. ii) Complex attribute   iii)   Data model iv)   Schema construct
      v) Metadata   **(10 Marks)**

2 a. What are structural constraints on a relation type? Explain with examples.   **(05 Marks)**
   b. What is a weak entity type? Explain the role of partial key in design of weak entity type.
                                                                         (05 Marks)
   c. Design an ER diagram for the mail order Database considering the following requirements.
      Here employee takes order for parts from customers.
      i)   The mail order company has employees each identified by a unique employee ID, first
           and last name, Address, Gender, Zip code.
      ii) Each customer of the company is identified by a unique customer ID, first and last name,
           Address, Location & Zip code.
      iii) Each part sold by the company is identified by a unique part number, part name , price
           & quantity in stock.
      iv) Each order placed by a customer taken by an employee and is given a unique order
           number. Each order contains specified quantities of one or more parts. Each order has a
           date of receipt as well as an expected ship date. The actual ship date is also recorded.
      v)   Each customer can place number of orders & each order placed by one customer only.
      vi) Each Employee can take any number of orders but each order belongs to only one
           employee.
      vii) Each part placed by number of customers and each customer can place order for number
           of parts.
      viii) Write assumptions made.   **(10 Marks)**

3 a. Discuss the entity integrity and referential integrity constraints. Why is each considered
      important?   **(05 Marks)**
   b. Discuss the various types of JOIN operations. Why is Theta Join required?   **(05 Marks)**
   c. Give the schema :
      Student (USN, NAME, BRANCH, PERCENTAGE)
      Faculty (FID, FNAME, DEPT, DESIGNATION, SALARY)
      Course (CID, CNAME, FID)
      Enroll (CID, USN, GRADE)
      Give the relation algebra expression for the following :
      i)   Retrieve the name and percentage of all students for the course 10CS54.
      ii) List the Departments having a average salary of the faculties above Rs 30,000.
      iii) List name of the course having students grade 'A' maximum.   **(10 Marks)**

4 a. Explain the different constraints that can be applied during table creation in SQL, with an example. **(08 Marks)**

   b. Write the SQL query for the following Database Schema :
   Works (Pname, Cname, Salary)
   Lives (Pname, Street, City)
   Located_in (Cname, City)
   Manager (Pname, Mgrname)
   i) Find the names of all persons who live in the city "Bangalore".
   ii) Retrieve the names of all person of "Infosys" whose salary is between Rs 50,000 and Rs 90,000.
   iii) Find the names of all persons who lives and work in same city.
   iv) List the names of the people who work for "Tech M" along with the cities they live in.
   v) Find the average salary of "Infosys" persons. **(12 Marks)**

PART - B

5 a. Explain the syntax of SELECT statement in SQL. **(04 Marks)**

   b. How is view created and dropped? What problems are associated with updating views? **(06 Marks)**

   c. Explain the following i) Embedded SQL   ii) Database stored procedure. **(10 Marks)**

6 a. What is a functional dependency and who specifies the functional dependency that hold among the attributes of a relation schema? **(05 Marks)**

   b. Consider R = {A, B, C, D, E, F}. FDS are {A → BC, C → E, CD → EF}. Show that AD → F. **(05 Marks)**

   c. Find the key and normalize
   Book tittle | Auth_name | Book_type | List_Price | Affiliation | Publication.
   FDs are { Book tittle → Book type, Publication
             Auth_name → Affiliation
             Book_type → List_Price }. **(10 Marks)**

7 a. Which normal form is based on the concept of multi value functional dependency? Explain the same with example. **(10 Marks)**

   b. Given relation R with 4 attributes R = (A, B, C, D) and following FDs. Identify the candidate keys for R and highest normal form.
   i) C → D, C → A, B → C   ii) B → C, D → A. **(10 Marks)**

8 Write short notes on the following :
   a. Two phase locking protocol.
   b. Transaction support in SQL.
   c. Time stamp ordering algorithms.
   d. Acid properties. **(20 Marks)**

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