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10CS54

**Fifth Semester B.E. Degree Examination, June/July 2014**  
**Database Management Systems**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

1.
  - a. What is database? Explain the implicate properties of database. (08 Marks)
  - b. With neat diagram, explain “three schema architecture”. (08 Marks)
  - c. Define the following terms:
    - i) Data model    ii) Schema    iii) Metadata    iv) Snapshot. (04 Marks)
2.
  - a. Explain with sketch the different phases of database design. (10 Marks)
  - b. Write an ER diagram of hospital management system. Assume your own entities (minimum 4), attributes and relations. (10 Marks)
3.
  - a. What is constraint? Give the detailed explanation of key constraints. (10 Marks)
  - b. Consider the following schema and write the relational algebra expressions for the queries given below:
 

Suppliers (sid : integer, sname : string, address : string)  
 Parts (pid : integer, pname : string, color : string)  
 Catalog (sid : integer, pid : integer, cost : real)

    - i) Find the names of suppliers who supply some red parts.
    - ii) Find the sids of suppliers who supply some red parts or at 221 packer street.
    - iii) Find the sids of suppliers who supply some red part and some greenpart. (10 Marks)
4.
  - a. Consider the same data given in question 3(b) and write the following queries in SQL:
    - i) Find the sids of suppliers who supply some red and some green parts.
    - ii) Find the pairs of sids such that the supplier with first sid charges more for some part than the supplier with second sid.
    - iii) Find the pids of parts supplied by at least two different suppliers. (10 Marks)
  - b. Write a note on NULL and three valued logic. (10 Marks)

**PART – B**

5.
  - a. Explain insert, delete and update statements in SQL, with example. (09 Marks)
  - b. How is a view created and dropped? What problems are associated with updating of views? (11 Marks)
6.
  - a. State the informal guidelines for relational schema design. Illustrate how violation of these guidelines may be harmful. (12 Marks)
  - b. What is normalization? Explain third normal form with example. (08 Marks)

- 7 a. Define multi valued dependency. Explain 4NF with an example. (10 Marks)
- b. Let  $R = \{Ssn, Ename, Pnumber, Pname, Plocation, Hours\}$  and  $D = \{R_1, R_2, R_3\}$ , where  
 $R_1 = EMP = \{Ssn, Ename\}$   
 $R_2 = PROJ = \{Pnumber, Pname, Plocation\}$   
 $R_3 = WORKS\_ON = \{Ssn, Pnumber, Hours\}$ .  
The following functional dependencies hold on relation R.  
 $F = \{Ssn \rightarrow Ename; Pnumber \rightarrow \{Pname, Plocation\}; \{Ssn, Pnumber\} \rightarrow Hours\}$ . Prove that the above decomposition of relation R has the lossless join property. (10 Marks)
- 8 Write a short note on:
- Two phase locking protocol.
  - Transaction support in SQL.
  - Write ahead log protocol.
  - Time stamp ordering algorithm.
- (20 Marks)

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