Fifth Semester B.E. Degree Examination, Dec.08/Jan.09
Database Management Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. List advantages of DBMS over traditional file systems. Briefly explain them. **(08 Marks)**
  b. Define and explain the importance of database catalog. Explain the internal storage format of a catalog with an example. **(06 Marks)**
  c. Describe the three schema architecture. What are the problems associated with three schema architecture. **(06 Marks)**

2 a. Discuss concepts related to structural constraints of a relationship type with examples. **(10 Marks)**
  b. Design an E-R diagram for keeping track of information about a hospital database taking into account at least entities. **(10 Marks)**

3 a. Explain the need of primary and foreign keys with suitable examples. **(04 Marks)**
  b. Explain the division operator with an example. How can a division operator be implemented using other relational algebraic operators? **(04 Marks)**
  c. Consider the following schema for a company database:
      Employee (Name, SSN, Salary, DNo, SuperSSN)
      Department (DName, DNos, MGRSSN)
      Project (Pname, Pnumber, DNum)
      Works ON (ESSN, PNo, Hours)
      Dependent (ESSN, Dependent-name, Sex)
   Write the queries in relational algebra to
      (i) List the name of all employees with at least two dependents.
      (ii) Find the name of employees who work on all the projects controlled by department 5
      (iii) Retrieve the name of managers who do not have female dependents. **(12 Marks)**

4 a. Explain the ALTER TABLE command. Explain how a new constraint can be added and also an existing constraint can be removed using suitable examples. **(08 Marks)**
  b. Using the same tables given in Q.NO.3(c), write SQL queries to:
      (i) Retrieve the name of employees who are paid the same salary as that of RAJ.
      (ii) Retrieve the name of employees who have two or more dependents.
      (iii) Retrieve the name of employees and their SuperSSN name. **(12 Marks)**

PART – B

5 a. How are triggers and assertions defined in SQL? Explain with examples. **(10 Marks)**
  b. Give an example of declaring a C language data type in SQL and explain it. **(10 Marks)**

6 a. Which normal form is based on the concept of full functional dependency? Explain the same with an example. **(08 Marks)**
  b. A relation R has four attributes ABCD. For each of the following sets of FD, identify the candidate key and the highest normal form:
      (i) $C \rightarrow D, C \rightarrow A, B \rightarrow C$ (ii) $B \rightarrow C, D \rightarrow A$ (iii) $ABC \rightarrow D, D \rightarrow A$ **(12 Marks)**

7 a. Define multivalued dependency. Explain 4NF with an example. **(10 Marks)**
  b. Explain all the phases involved in ARIES algorithm with an example. **(10 Marks)**

8 Write short notes on: **(20 Marks)**
  a. Two phase locking protocol
  b. Write ahead log protocol
  c. Time stamp ordering algorithm
  d. Transaction support in SQL.

* * * * *