Fifth Semester B.E. Degree Examination, June–July 2009

Database Management System

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions*
choosing at least two from each part.

Part A

1 a. Define the following terms:
   i) Database   ii) Canned transaction   iii) Data model
   iv) Metadata   v) Database designer.   (10 Marks)
   b. Explain characteristic of the database approach.   (05 Marks)
   c. What are the responsibilities of database administrators?   (05 Marks)

2 a. List the summary of the notations for ER diagrams. Include symbols used in ER diagrams and their meanings.   (10 Marks)
   b. With respect to ER model, explain with examples,
   i) Strong entity   ii) Weak entity   iii) Participation constraints
   iv) Cardinality ratio   v) Recurring relationships.   (10 Marks)

3 a. Define the following terms with an example for each,
   i) Super key   ii) Domain   iii) Tuple   iv) Nulls
   v) A relational database schema S.   vi) The Entity integrity constraint.   (12 Marks)
   b. Explain : i) Domain constraints   ii) Semantic integrity constraints
   iii) Functional dependency constraint with examples.   (08 Marks)

4 a. Given the schema
   EMP (Fname, Lname, SSN, Bdate, Address, Sex, Salary, SuperSSN, DNo)
   DEPT(Dname, Dnumber, MgrSSN, Mgrstartdate)
   DEPT LOC(Dnumber, Dloc), Project(Pname, Pnumber, Ploc, Dnum)
   WORKS-ON(ESSN, PNO, Hours)
   Give the relation algebra expression for the following:
   i) List female employees from DNo = 20 earning more than 50000.
   ii) List 'CSE' department details.
   iii) Retrieve the first name, last name and salary of all employees who work in department number 50.
   iv) Retrieve the name of the manager of each department.
   v) Retrieve the name and address of all employees who work for the sports department.
   vi) Retrieve the names of employees who have no dependents.   (12 Marks)
   b. With respect to SQL, explain with example
   i) The drop command
   ii) The alter command.   (08 Marks)

Part B

5 a. Explain Insert, Delete and Update statements in SQL with example.   (08 Marks)
   b. Write a note on Aggregate functions in SQL with examples.   (12 Marks)

6 a. What is the need for normalization? Explain the first, second and third normal forms with examples.   (14 Marks)
   b. Explain informal design guidelines for relation schemas.   (06 Marks)

7 a. Explain multivalued dependency and fourth normal form (4NF) with examples.   (10 Marks)
   b. Explain i) Inclusion dependencies   ii) Domain key normal form.   (10 Marks)

8 a. Explain properties of a transaction with state transition diagram.   (10 Marks)
   b. What is a schedule? Explain with examples serial, nonserial and conflict serializable schedules.   (10 Marks)

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