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Second Semester MCA Degree Examination, June/July 2014 Database Management Systems

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions.

1 a. Explain the characteristics of a DB approach. (10 Marks)

b. Discuss on the different types of people who work in a database system environment.

(10 Marks)

- 2 a. Describe the three-schema architecture for database systems. Also explain the concept of data independence with this architecture. (12 Marks)
 - b. With a neat diagram, explain the interactions of DBMS component modules with database system environment. (08 Marks)
- 3 a. Define a attribute. What are the various types of attributes? Give examples and explain each.
 (04 Marks)
 - b. With examples, explain the following:
 - i) Recursive relationship
- ii) Weak-entity
- ii) Participation constraint
- iv) Key attributes

(10 Marks)

- c. Draw an E.R. structure for representing the relation between a strong entity and a weak entity with an example. (06 Marks)
- 4 a. How does the various update operations deal with constraint violations? (10 Marks)
 - b. Discuss on the characteristics of relations.

(10 Marks)

5 a. Consider the following database schema:

Department (dno, dname, location, manager)

Project (pno, projname, projlocation, controlling-department)

Employee (ename, ssn, sex, address, salary, dept)

Solve the following queries using relational algebra:

- i) List the employee number, names, salary of all employees who work in department number 5.
- ii) List the project number (pno), controlling department, department's manager name for the project located in 'Noida'.
- iii) Count the total number of employees in each department and their average salary.

(06 Marks)

- b. Considering the above database schema, explain the usage of following algebraic relations:
 - i) Natural join

v) Union

- ii) Equi joinvi) Division
- iii) Outer join

vii) Set difference

iv) Outer union

(14 Marks)

- 6 a. For the database schema of question number 5(a), solve the following queries using SQL.
 - i) List out the departments which do not have a manager.
 - ii) Find the names of the employees whose salary is greater than the average salary of all employees.
 - iii) Find the department which has more than 200 employees.
 - iv) Find the project that is controlled by the department located in 'Pune'.
 - v) Find the number of employees who are earning more than 10000/- as salary and belong to the department that has more than 10 employees. (10 Marks)
 - b. Write a short note on creating, updating and implementing a view.

(10 Marks)

- 7 a. Discuss on the four informal measures of quality for relation schemas.
 - (10 Marks)
- b. Define functional dependency. Explain 1Nf, 2NF, 3Nf with an example.
- (10 Marks)

- Write short notes on: a. Exception handling
 - a. Exception hand c. Functions
- b. Triggersd. Procedures

(20 Marks)

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