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13MCA25

**Second Semester MCA Degree Examination, June/July 2015**  
**Database Management System**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions.**

1. a. Define Database Management System. (04 Marks)  
b. Explain the characteristics of Database Approach. (06 Marks)  
c. Explain in detail, actors on the scene and workers behind the scene. (10 Marks)
2. a. Explain schema and instance with example. (06 Marks)  
b. Explain Three – Schema Architecture. (06 Marks)  
c. Explain the component modules of a DBMS and their interactions, with a diagram. (08 Marks)
3. a. Define the following terms, with an example with respect to ER model :  
i) Entity set    ii) Relationship type    iii) Cardinality ratio    iv) Participation  
v) Weak entity set. (10 Marks)  
b. Explain the different types of attributes, which occur in ER model. (04 Marks)  
c. Give an ER diagram of company database, with a brief explanation. (06 Marks)
4. a. What are Integrity Constraints? Discuss the various update operations on relations and the type of integrity constraints that must be checked for each update operation. (10 Marks)  
b. Explain SELECT and PROJECT operations, with example. (05 Marks)  
c. Write a short note on Relational Model. (05 Marks)
5. a. Explain the following relational algebra operations : (10 Marks)  
i) Join    ii) Division    iii) Cartesian product    iv) Union    v) Set - difference.  
b. Consider the following six relations for an employee database application in a company.  
EMPLOYEE (Name, SSN, Bdate, Address, Sex, Salary, SuperSSN, Dno)  
DEPARTMENT (Dname, Dnumber, MGRSSN, MGR – Start – Date)  
DEPT\_LOCATIONS (Dnumber, Dlocation)  
WORKS\_ON (ESSN, Dno, Hours)  
PROJECT (Pnumber, Pname, Plocation, Dnum)  
DEPENDENT (ESSN, Dep\_name, Sex, Bdate, Relationship)  
Here SuperSSN refers to the social security number of an employee who works as a supervisor. MGRSSN refers to the social security number of an employee who manages a particular department. Hours refers to total number of hours, worked by an employee for a particular project per week.  
i) Retrieve the name and salary of all employees who work for the 'Research' department.  
ii) Retrieve the name of employees from Dno = 20 earning more than \$50,000.  
iii) Retrieve the name of the manager of each department.  
iv) Retrieve the names of the projects on which the employee Smith works.  
v) Retrieve the names of employees, who have no dependents. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 6 a. What is a View? How is view created? Explain with an example. (05 Marks)  
b. Explain additional features of SQL. (05 Marks)  
c. Explain the following commands in SQL, with examples : (10 Marks)  
i) DROP ii) CREATE iii) ALTER iv) UPDATE v) ROLLBACK
- 7 a. Explain the informal design guidelines for the relation schemes. (10 Marks)  
b. Explain first, second third and Boyce – Codd normal form, with example. (10 Marks)
- 8 a. What is a Trigger? Explain DML trigger with an example. (10 Marks)  
b. What are the different types of PL/SQL block? (05 Marks)  
c. Explain procedure, with an example. (05 Marks)

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