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10MCA34

Third Semester MCA Degree Examination, June/July 2016
Database Management Systems

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. What is DBMS? Explain the advantages of DBMS approach. **(10 Marks)**

b. What is Data Independence? Explain 3 – schema architecture with neat diagram, different types of it. **(10 Marks)**

2 a. Define the following terms with example : i) Entity type ii) Degree of relationship iii) Total participation iv) Role Names. **(08 Marks)**

b. What are Integrity constraints in Relational made? Also differentiate between a sub query and correlated sub query with an example. **(12 Marks)**

3 a. Construct an E-R diagram for Library database. Make appropriate assumptions and also specify structured constraints. **(10 Marks)**

b. Write ER – to – Relation mapping algorithm. **(10 Marks)**

4 a. Consider the following relations :
Employee (Name, Street, City)
Works (Ename, Cname, Salary)
Company (Cname, City)
Manager (Ename, Mname)
Write the following queries in SQL
i) Find the name and city of employees who work for 'Galaxy corporation'.
ii) Find the names of employees who live in the same city of the company for which they work.
iii) Find the second highest salary paid.
iv) For each company, find the total number of employees. **(10 Marks)**

b. What is Embedded SQL? Explain stored procedures and function in database with an example. **(10 Marks)**

5 a. Define Relational Algebra. Explain different types of Join operation with definition and example. **(10 Marks)**

b. For the database schema in Q.4(a), write the following queries in relational algebra :
i) Find the names of employees located in a particular city. **(06 Marks)**
ii) Get the total number of employees who works under Manager, for each manager.

c. Explain triggers is SQL. **(04 Marks)**

6 a. Define Functional dependency. Discuss in brief the informal design guidelines for database design. **(05 Marks)**

b. Define Minimal cover and Closure. Write an algorithm to find minimal cover 'F' for set of FD's 'E'. **(10 Marks)**

c. Define Normalization. Explain 1NF and 2NF. **(05 Marks)**

7 a. Compare 3NF and BCNF with an example. **(10 Marks)**

b. What are ACID properties? Describe two – phase locking protocol. **(10 Marks)**

8 Write a short note on :

a. Aggregate functions in relational algebra.

b. DBA functionality.

c. Views.

d. Client / Server architecture. **(20 Marks)**

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