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13MCA25

**Second Semester MCA Degree Examination, June/July 2018**  
**Database Management Systems**

Time: 3 hrs.

Max. Marks:100

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

- 1
  - a. Discuss on the characteristics of database approach. (10 Marks)
  - b. What are the advantages of DBMS approach? Explain briefly. (10 Marks)
- 2
  - a. Describe the three schema architecture. How does it contribute to data independence? (10 Marks)
  - b. Explain Centralized and client / server architecture of DBMS. (10 Marks)
- 3
  - a. Explain the following examples : i) Degree relationship ii) Multivalued attribute iii) Derived attributes iv) Weak entity type v) Recursive relationship. (10 Marks)
  - b. Professors have a profile id , a name , an age , a rank and a research speciality. Project have a project number , a sponsor name , starting date , an ending date , and a budget. Graduate students have an USN , a name , an age and a degree program, Each project is managed exactly by one professor (known as the project's principal investigator). Each project is worked one by one (or) more professors (known as the project's co-investigators). Professors can manage / work. On multiple projects. Each projects is worked one by one (or) more graduate students (known as the project's Research Assistents). Graduate students can work on multiple projects. Each professor can supervise many students. A student who is working on a project can be supervised by only one professor. Provide a detailed ER diagram for the above given and specify cardinality. Constraints and keys. (10 Marks)
- 4
  - a. Explain Update operations, Transaction and dealing with constraints. (10 Marks)
  - b. Explain Relational model constraints and Relations database schemas. (10 Marks)
- 5
  - a. Explain JOIN and DIVISION using Relational algebra, with an example. (10 Marks)
  - b. Consider the following relational schema. Answer the following queries using relational algebra.
    - Emp (SSn , name , age , address , sal , dnum)
    - Dept (dname , dno , mssn)
    - Proj (pname , pno , ploc , dnumber)
    - i) Retrieve the name and address of all employees who works for "Research" department.
    - ii) For every project located in "Stafford" list the project number, controlling department number, department manager name, address.
    - iii) Retrieve the average salary of all employees.
    - iv) Retrieve name and salary of employee whose age is less than 30 years. (10 Marks)
- 6
  - a. Explain Nested query and correlated query with an example. (10 Marks)
  - b. Explain views with examples. (06 Marks)
  - c. Write a short note on Dynamic SQL. (04 Marks)
- 7
  - a. Discuss Informal design guidelines for Relational schema. (08 Marks)
  - b. Define Functional dependency. Explain 1NF , 2NF , 3NF and BCNF, with an example. (12 Marks)
- 8 Write short notes on the following :
  - a. Triggers
  - b. Functions
  - c. Procedure
  - d. Exception handling. (20 Marks)

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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.