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10CS54

Fifth Semester B.E. Degree Examination, June/July 2013
Database Management System

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What are the main characteristics of the database approach over the file processing approach? (08 Marks)
b. Explain the different categories of data models. (06 Marks)
c. Explain the three – schema architecture. (06 Marks)
- 2 a. Explain the different types of attributes that occur in the ER model. Write their corresponding notations. (08 Marks)
b. Write the ER diagram for an employee database. The constraints are as follows :
i) An employee works for a department
ii) Every department is headed by a manager
iii) An employee works on one or more projects
iv) An employee has dependents
v) A department controls the projects. (12 Marks)
- 3 a. Write the relational algebra operations to perform the following queries :
i) Retrieve the name and address of all employees who work for the “Accounts” department
ii) Retrieve the names of employees who have no dependents
iii) Find the names of employees who work on all the projects controlled by department number 2. (12 Marks)
b. Explain the relational algebra operations from set theory, with examples. (08 Marks)
- 4 a. Explain the different constraints that can be applied during table creation in SQL, with a suitable example. (08 Marks)
b. Write the SQL queries for the following database schema
student (USN, NAME, BRANCH, PERCENTAGE)
faculty (FID, FNAME, DEPARTMENT, DESIGNATION, SALARY)
COURSE (CID, CNAME, FID)
ENROLL(CID, USN, GRADE)
i) Retrieve the names of all students enrolled for the course ‘CS – 54’
ii) List all the departments having an average salary of the faculties above Rs 10,000
iii) List the names of the students enrolled for the course ‘CS – 51’ and having ‘B’ grade. (12 Marks)

PART – B

- 5 a. Define views. Give an example to create a view. (08 Marks)
b. Explain the different approaches for database programming. Explain the problem that arise in some of the approaches. (12 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. List the inference rules for functional dependencies. Write the algorithm to determine the closure of X(set of attributes) under F(set of functional dependencies). (08 Marks)
b. Define the 1NF, 2NF and 3NF with a suitable example for each. (12 Marks)
- 7 a. Write the algorithm for testing non additive join property. (10 Marks)
b. Explain the 4NF with a suitable example. (10 Marks)
- 8 a. Explain the ACID properties of a database transaction. (04 Marks)
b. Briefly explain the two phase locking protocol used in concurrency control. (08 Marks)
c. Explain the three phases of the ARIES recovery model. (08 Marks)

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