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Fifth Semester B.E. Degree Examination, June/July 2014

Database Management Systems

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1
 - a. List and explain the important characteristics that distinguish the database approach from that of traditional file processing system. (05 Marks)
 - b. Discuss the roles of different actors on the scene. (10 Marks)
 - c. What do you mean by data independence? Explain with a neat diagram the three-schema architecture. (05 Marks)

- 2
 - a. What are the concepts used in ER modeling? Explain each of them with an example. (06 Marks)
 - b. Distinguish:
 - i) Entity type,
 - ii) Entity instance and
 - iii) Entity set with an example. (04 Marks)
 - c. Define: i) Recursive relationship, ii) Weak entity
 iii) Role iv) Cardinality ratio. (04 Marks)
 - d. Draw the ER diagram for BANK database application. (06 Marks)

- 3
 - a. What is a relation? List the important characteristics of a relation. Explain the relational model constraints. (08 Marks)
 - b. Discuss the relational algebra operations with an example for each. (08 Marks)
 - c. Write the queries in relational algebra for a company database for the following:
 - i) List the names of all employees with two or more dependents.
 - ii) Retrieve the name and address of all employees who work for 'Research' Dept. (04 Marks)

- 4
 - a. List the data types and data definition statements in SQL. (06 Marks)
 - b. Give the complete syntax of SELECT statement in SQL and explain each clause with an example. (06 Marks)
 - c. Write the queries in SQL for the company database for the following:
 - i) Retrieve the names of employees who have no dependent.
 - ii) For each Dept, retrieve the dept number, Number of employees in the dept, and their average salary.
 - iii) Retrieve all employees who were born during the 1990s.
 - iv) Retrieve the No. of employees working on each project. (08 Marks)

PART – B

- 5
 - a. Explain the update statements in SQL. (06 Marks)
 - b. What are views in SQL? List their advantages. (06 Marks)
 - c. Write notes on:
 - i) embedded SQL
 - ii) dynamic SQL. (08 Marks)

- 6 a. Discuss the informal guidelines for relational databases. (06 Marks)
b. Define:
i) functional dependency
ii) 1NF
iii) 2NF
iv) 3NF and
v) BCNF. (10 Marks)
c. List the inference rules for FDs. (04 Marks)
- 7 a. What do you mean by multivalued dependency? Explain the HNF with an example. (06 Marks)
b. Define 5NF along with the join dependency. (06 Marks)
c. Give the algorithm to find the 'Key' of the relation and compute the key for
 $F = \{SSN \rightarrow E \text{ name}$
 $Pnum \rightarrow P \text{ name}$
 $SSN, Pnum \rightarrow hrs\}$ (08 Marks)
- 8 a. Explain the desirable properties of a transaction. (04 Marks)
b. Discuss the different concurrency control techniques. (10 Marks)
c. Write a note on database recovery. (06 Marks)

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