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Third Semester MCA Degree Examination, December 2011
Database Management Systems

Time: 3 hrs.

Max. Marks:100

Note: Answer FIVE full questions.

- 1
 - a. Explain briefly the advantages of using the DBMS approach. (08 Marks)
 - b. With a neat diagram, explain the architecture of DBMS. (08 Marks)
 - c. List the actors on the scene and workers behind the scene. (04 Marks)

- 2
 - a. Draw an E-R diagram for the COMPANY scheme with structural constraints specified, using (Min, Max) notation. Assume appropriate entities, attributes and relationships. (10 Marks)
 - b. Define the following terms : i) Role names ii) Partial key. (04 Marks)
 - c. Give the various notation of E-R diagrams with their meaning. (06 Marks)

- 3
 - a. Give a brief note on different types of JOINS. (10 Marks)
 - b. Explain the ER-to-relational mapping algorithm. (06 Marks)
 - c. Explain the INERT operation with examples. (04 Marks)

- 4
 - a. Explain the various DCL and DML commands in SQL, with an example. (10 Marks)
 - b. Bring out the different clauses of SELECT-FROM-WHERE-GROUP-HAVING, with an example for each. (10 Marks)

- 5
 - a. Write a note on : i) Views ii) Stored procedures. (05 Marks)
 - b. Consider the following relational schema and answer the following queries, using relational algebra.
 EMP/ NAME/ ENO/ DOB/ ADDRESS/ SEX/ SALARY/ SUPERNO/ DNO/
 DEPT/ DNAME/ DNUM/ MGRENO/ MGRSTARTDATE/ DEPT_LOC/DNUM/
 DLOCATIN/ PROJECT/ PNAME/ PNUM/ PLOCATION/ DNUM/
 WORKS_NO/ EENO/ PNO/ HOURS/
 DEPENDENT/ EENO/ DNAME/ RELATIONSHIP/ SEX/
 - i) Retrieve the name and address of all employees who work for the "Research" department.
 - ii) Retrieve all the attribute values of any employee who works in DNO = 5
 - iii) Retrieve all employees in DNO = 5, whose salary is between Rs. 30,000 and Rs. 40,000
 - iv) Retrieve the name of employee whose salary is greater than the salary of all the employees in DNO = 5.
 - v) Retrieve the name of each employee, who has a dependent with the same name and sex as the employee. (15 Marks)

- 6
 - a. Define functional dependency and give the six inference rules for functional dependencies. (08 Marks)
 - b. What is normalization? Why normalization is needed? (06 Marks)
 - c. Explain 1NF, 2NF and 3NF. (06 Marks)

- 7
 - a. Define transaction. Explain ACID properties of transaction. (08 Marks)
 - b. With the help of state transition diagram, give the states of transaction execution. (08 Marks)
 - c. Give any four reasons for a transaction to fail in the middle of execution. (04 Marks)

- 8

Write the short notes for the following :

 - a. Client-server architecture
 - b. Types of attributes
 - c. Triggers in SQL
 - d. 2PL protocol. (20 Marks)

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