Roll No ....

MCSE-203

M.E./M.Tech., II Semester

Examination, June 2023

Advance Concept in Data Bases

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) Explain the Three Levels of Abstraction in data modeling and design. 7

   b) Consider the following relational database of college: 7

      Student (RollNumber, StudentName, Address)

      Teacher (TeacherID, TeacherName, Teaching Subject)

      College (RollNumber, TeacherID)

      Write Relational Algebra expression for following requests.

      i) Find the name of student who lives in "New Delhi".

      ii) Find the name of Teacher who teaches "Database Management System" subject.

      iii) Find the Name of teacher who teaches "Computer Organization" to "Mr. Ramakrishna"

      iv) Insert a new tuple into relation Teacher

      v) Delete records of students whose address is "Mumbai".

2. a) What is an SQL Query block? Why is it important in the context of Query optimization. 7

   b) Explain the structure of query evaluation plan. 7

3. a) Explain in detail about special databases and multimedia databases. 7

   b) When does deadlock occurs? Explain two phase commit protocol with an example. 7

4. a) What are the characteristics of Object-Oriented DBMS? List the various open-source object relational mapping tools are available. 7

   b) Write brief note on ORDBMS design and ORDMBS Query Language. 7

5. a) Describe the various components of data warehouse and explain the different data model used to store the data with example. 7

   b) What is Data Mart? How it is different from data warehouse? 7

6. a) Draw an ER Diagram for Week entity set and Strong entity set with an example. 7

   b) Why BCNF is more desirable normal form than lower forms? Give an example of relational schema that is in 3rd normal form but not in BCNF. 7

7. a) What is recovery in Distributed databases? Explain the concurrency problems in distributed databases. 7

   b) What is an object-oriented database management system? What are the building blocks of an object-oriented database? List the advantage and disadvantages of object-oriented databases? 7

8. Write short notes on following:

   a) Describe pipelining and write its advantages 5

   b) How is the cost of a plan estimated? 4

   c) What considerations are involved in designing a data warehouse? 5

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