

B2.3-R5 : ADVANCED DATABASE TECHNOLOGIES**NOTE :**

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Total Time : 3 Hours**Total Marks : 100**

1. (a) What is relational model in DBMS? Is relational algebra procedural or non-procedural language ?
 (b) What are DML, DDL & DCL in database ?
 (c) Differentiate between partial functional dependency and full functional dependency with example.
 (d) What are the types of constraints in DBMS. Discuss Domain constraint with example.
 (e) State the difference between Procedural and Non-Procedural query language with example.
 (f) Discuss the lost update and dirty read problem in brief.
 (g) What is Distributed Database? Discuss the features of distributed database. (7x4)
2. (a) A university registrar's office maintains data about the following entities :
 (i) Courses, including number, title, credits, syllabus, and prerequisites; (ii) Course offerings, including course number, year, semester, section number, instructor(s), timings, and classroom; (iii) Students, including student-id, name, and program; and (iv) Instructors, including identification number, name, department, and title. Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar's office. Write all assumptions that you make about the mapping constraints. Construct appropriate tables for the above E-R diagram.
 (b) What is Data warehouse ? Discuss the Components of the Data warehouse in brief.
 (c) How does check point are useful for database recovery ? Explain in brief. (6+6+6)
3. (a) Explain how the database three schema architecture provides data independence.
 (b) What is Mongo DB and Mario DB? Differentiate between them in terms of usability.
 (c) What is OLAP? Discuss the analysis operations using OLAP. (6+6+6)
4. (a) Why database security is required? Discuss the types of database security threats in brief.
 (b) What are the ACID properties of transactions? Explain the data quality issues in database.
 (c) What are spatial databases? How the data is stored and retrieved in spatial databases? (8+6+4)

5. (a) What do you mean by data replication and fragmentation in distributed databases? List the advantages and disadvantages of replication and fragmentation.
- (b) What is the difference between stored procedure and function in SQL? Write a stored procedure to find the sum of two numbers.
- (c) What is Cursor? Discuss the types of cursors with example. **(7+6+5)**
6. (a) What is Deadlock? Explain suitable methods to handle deadlocks in database transactions.
- (b) What are types of Concurrency control protocol? Discuss Two phase locking with suitable example.
- (c) What do you mean by data cleaning? Describe various methods for handling "missing values" in dataset. **(6+6+6)**
7. (a) What is recoverability? What is need of recovery? Discuss the concept of system log in brief.
- (b) Explain the concepts of ORDBMS. Also explain the implementation challenges of ORDBMS.
- (c) What is ETL process? Why is it used in Data warehouse? **(9+5+4)**

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