

# CBCS SCHEME

21CS53

## Fifth Semester B.E./B.Tech. Degree Examination, June / July 2026 Database Management Systems

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define Database and DBMS with examples. (04 Marks)
- b. Describe 3 schema architecture. (06 Marks)
- c. List and explain advantages of using DBMS. (10 Marks)

OR

- 2 a. List and explain types of attributes in ER – Model. (10 Marks)
- b. Explain Cardinality ratio in detail. (05 Marks)
- c. Define weak entity and Identifying relationship with an example. (05 Marks)

### Module-2

- 3 a. Explain Relational Model Constraints in detail. (06 Marks)
- b. Explain the characteristics of Relational model. (06 Marks)
- c. Explain Join operation and Division operation with an example. (08 Marks)

OR

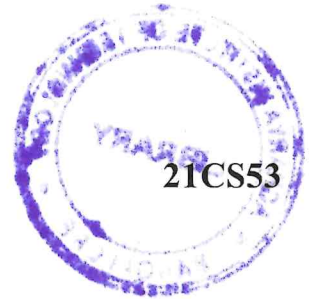
- 4 a. Explain the different types of update operations on relational Database. How basic operation deals with constraint Violation. (06 Marks)
- b. Explain UNION and Intersection operation with an example. (04 Marks)
- c. List and explain steps in ER to Relational mapping algorithm with an example for each step. (10 Marks)

### Module-3

- 5 a. Write a note on data types in SQL. (06 Marks)
- b. Explain INSERT, DELETE, UPDATE and ALTER statements in SQL. (08 Marks)
- c. Explain Substring Pattern Matching and use of Arithmetic Operators in SQL. (06 Marks)

OR

- 6 a. Write a note on Views. (06 Marks)
- b. Explain trigger with an example. (06 Marks)
- c. What is cursor? With simple program, explain how tuples are retrieved using cursor. (08 Marks)



**Module-4**

- 7 a. Write a note on Insertion and Deletion Anomalies. (06 Marks)  
b. Explain in detail the 4 informal design guidelines to determine the quality of relation schema design with example. (08 Marks)  
c. What is Functional Dependency? Explain inference rules of functional dependency. (06 Marks)

**OR**

- 8 a. What do you mean by a normalization of a relation? With suitable example, explain 1NF, 2NF and 3NF. (10 Marks)  
b. Write an algorithm to find the closure of Functional dependency 'F'. (05 Marks)  
c. What is Equivalence of sets of functional dependencies? Explain with an example. (05 Marks)

**Module-5**

- 9 a. Define Transaction. Discuss ACID properties. (06 Marks)  
b. With the neat diagram explain state transition diagram of transaction. (06 Marks)  
c. Explain 2 phase locking mechanism with suitable example. (08 Marks)

**OR**

- 10 a. Write a note on :  
i) Deadlock prevention protocols  
ii) Basic timestamp ordering algorithm. (10 Marks)  
b. Explain Binary locks and shared locks with algorithms. (10 Marks)

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