LPCET LIBRARY BANGALORE-49

CBCS SCHEME

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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.

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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 INF , 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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