**PVP 23**

Code: 23CS3402, 23IT3402, 23AM3402, 23DS3402

# II B.Tech - II Semester – Regular / Supplementary Examinations APRIL 2026

# DATABASE MANAGEMENT SYSTEMS
# (Common for CSE, IT, AIML, DS)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

## PART – A

| | | BL | CO |
|---|---|---|---|
| 1.a) | Give one example of a database application used in banking. | L2 | CO1 |
| 1.b) | Identify the component responsible for data security in DBMS**.** | L2 | CO1 |
| 1.c) | Predict the attributes to describe an Employee entity. | L2 | CO2 |
| 1.d) | Give an example of a relationship type with degree greater than two**.** | L2 | CO2 |
| 1.e) | Write an SQL statement to create a table named Employee with attributes EmpID, Name and Salary. | L2 | CO2 |
| 1.f) | Distinguish between DELETE and UPDATE commands in SQL. | L2 | CO2 |
| 1.g) | Describe Partial Dependency. | L2 | CO3 |

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| 1.h) | Discuss the need for normalization. | L2 | CO3 |
| 1.i) | Distinguish Commit and Rollback operations. | L2 | CO1 |
| 1.j) | Identify the type of lock required for read and write operations in a database. | L2 | CO1 |

## PART – B

| | | | BL | CO | Max. Marks |
|---|---|---|---|---|---|
| **UNIT-I** | | | | | |
| 2 | a) | Compare Database Systems and File Systems in terms of data redundancy, security and data sharing. | L2 | CO1 | 5 M |
| | b) | Illustrate how three-tier architecture provides data independence**.** | L2 | CO1 | 5 M |
| **OR** | | | | | |
| 3 | a) | Explain the difference between Controlled and Un-controlled Redundancy. | L2 | CO1 | 3 M |
| | b) | Explain the working of different types of client-server architectures with neat diagrams. | L2 | CO1 | 7 M |
| **UNIT-II** | | | | | |
| 4 | a) | Apply ER-to-relational mapping to convert a simple ER diagram into relational tables. | L3 | CO2 | 5 M |
| | b) | Analyze the differences between strong entities and weak entities with examples. | L4 | CO4 | 5 M |
| **OR** | | | | | |
| 5 | a) | Develop an ER diagram for a hospital management database with appropriate keys. | L3 | CO2 | 5 M |
| | b) | Evaluate the importance of structural constraints in maintaining data integrity**.** | L4 | CO4 | 5 M |

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| | | **UNIT-III** | | | |
| 6 | a) | Apply the relational model concepts to explain domain, attribute, tuple and relation with examples. | L3 | CO2 | 5 M |
| | b) | Consider the following tables and write queries in SQL.<br>Customer (Cust_ID, Name, Email, Address)<br>Product (Prod_ID, PName, Category, Unitprice)<br>Order (Ord_ID, Cust_ID, Prod_ID, ODate)<br>i) List all the customers staying in 'London' or 'Africa' or 'Dallas'.<br>ii) Find all the orders placed between "01-12-2025" to "31-03-2026".<br>iii) Change the PName of 'P105' product to "Jeans".<br>iv) Count all the orders placed by the Customer "John".<br>v) List the Products with unit price greater than the average unit price of all the products. | L3 | CO2 | 5 M |
| | | **OR** | | | |
| 7 | a) | Demonstrate the implementation of different types of joins (Inner Join, Left Join, Right Join)**.** | L3 | CO2 | 5 M |
| | b) | Apply SQL queries to create and use views in a relational database**.** | L4 | CO4 | 5 M |
| | | **UNIT-IV** | | | |
| 8 | a) | Apply normalization techniques to convert a relation from unnormalized form to 3NF. | L3 | CO3 | 6 M |

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| | b) | Analyze the importance of Fourth Normal Form in eliminating redundancy. | L4 | CO4 | 4 M |
| **OR** | | | | | |
| 9 | a) | Determine the candidate keys of the following relation R(A,B,C,D,E) with given dependencies and decompose the relation into suitable normal form.<br>AB→C, CD→E, DE→B. | L3 | CO3 | 5 M |
| | b) | Apply normalization rules to convert a relation containing join dependencies into 5NF. | L3 | CO3 | 5 M |
| **UNIT-V** | | | | | |
| 10 | a) | Illustrate how concurrency control protocols ensure database consistency. | L3 | CO1 | 5 M |
| | b) | Apply ACID properties to explain how a database transaction maintains reliability in real-world applications such as banking systems. | L3 | CO1 | 5 M |
| **OR** | | | | | |
| 11 | a) | Demonstrate the role of conflict serializable schedules in concurrent execution of transactions. | L3 | CO1 | 5 M |
| | b) | Interpret how immediate update recovery differs from deferred update recovery. | L3 | CO1 | 5 M |