

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. II Year II Semester Regular Examinations July/August-2025

DATABASE MANAGEMENT SYSTEMS

(Common to CAD, CSM, CSIT, CAI, CSE, CCC & CIC)

Time: 3 Hours

Max. Marks: 70

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

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|---|---|---|-----|----|----|
| 1 | a | What is data abstraction? | CO1 | L1 | 2M |
| | b | What is a super class and subclass in ER diagrams? | CO1 | L1 | 2M |
| | c | Differentiate between primary key and candidate key. | CO3 | L2 | 2M |
| | d | Define super key with an example. | CO3 | L1 | 2M |
| | e | What is a view in SQL? | CO4 | L1 | 2M |
| | f | Illustrate about Basic SQL Querying (SELECT & WHERE) with examples. | CO4 | L3 | 2M |
| | g | What is a transitive dependency? | CO5 | L1 | 2M |
| | h | What is a lossless join decomposition? | CO5 | L1 | 2M |
| | i | What is hash-based indexing? | CO6 | L1 | 2M |
| | j | Name two types of serializability. | CO6 | L1 | 2M |

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

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|-----------|---|--|-----|----|----|
| 2 | a | Differentiate between Database users and administrators. | CO1 | L2 | 5M |
| | b | Discuss about various data models. | CO1 | L2 | 5M |
| OR | | | | | |
| 3 | a | Define Environment in DBMS. Explain its components. | CO1 | L2 | 5M |
| | b | Construct a Centralized and Client Server architecture for the database. | CO1 | L6 | 5M |

UNIT-II

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|---|---|--|-----|----|----|
| 4 | a | Classify Database languages with examples. | CO3 | L2 | 5M |
| | b | Design a table student using appropriate SQL data types (like INT, FLOAT, CHAR, VARCHAR, BOOLEAN and DATE) | CO3 | L6 | 5M |

OR

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|---|---|--|-----|----|----|
| 5 | a | Compare and contrast Relational Algebra and Relational Calculus. | CO3 | L2 | 5M |
| | b | Discuss about the operators renaming, division with examples. | CO3 | L2 | 5M |

UNIT-III

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|---|---|---|-----|----|----|
| 6 | a | What are the different types of operators explain with examples. | CO4 | L1 | 5M |
| | b | Given a table STUDENTS(student_id, name, age, department, marks), develop SQL queries to: | CO4 | L6 | 5M |
| | | i) Display the names and departments of all students. | | | |
| | | ii) Display the details of students with marks greater than 75. | | | |
| | | iii) Display students from the 'Computer Science' department. | | | |

OR

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|---|---|---|-----|----|----|
| 7 | a | Classify different join operations and explain with example SQL Joins (INNER, LEFT, RIGHT, FULL). | CO4 | L2 | 6M |
| | b | Create a sub query to establish the WHERE, ANY, AS and ALL sub queries with example. | CO4 | L6 | 4M |

UNIT-IV

- 8 a Explain the following with suitable example. **CO5 L2 6M**
(i) Full functional dependency. (ii) Partial dependency.
b Compare Trivial and Non – Trivial Functional Dependencies with example. **CO5 L2 4M**

OR

- 9 a Illustrate the types of anomalies with example. **CO5 L3 5M**
b What is Normalization? Describe the importance of normalization. **CO5 L2 5M**

UNIT-V

- 10 a Define a Transaction. Illustrate the properties of transaction. **CO6 L3 5M**
b How do you implement Atomicity and Durability? **CO6 L1 5M**

OR

- 11 a Describe the different states of a transaction with a state diagram. **CO6 L2 5M**
b Illustrate Concurrent execution of transaction with examples. **CO6 L3 5M**

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