O.P.Code: 23CS0512   **R23**   H.T.No. [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. II Year II Semester Supplementary Examinations December-2025
DATABASE MANAGEMENT SYSTEMS
(Common to CAD, CSM, CAI, CSIT, CSE, CCC & CIC)

Time: 3 Hours   Max. Marks: 70

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

1	a	What is an entity? Give an example.	CO1	L1	2M
	b	Define DBMS. List two differences between a file system and a database system.	CO1	L1	2M
	c	What is the importance of null values in a database?	CO3	L1	2M
	d	What is the purpose of the WHERE clause in SQL?	CO3	L1	2M
	e	Explain the purpose of the CHECK constraint with an example.	CO4	L2	2M
	f	Name any two SQL functions used to work with date and time.	CO4	L1	2M
	g	Why do we convert tables to 1NF?	CO5	L4	2M
	h	Give an example of a functional dependency.	CO5	L1	2M
	i	What are the different states of a transaction?	CO6	L1	2M
	j	What is the Two-Phase Locking (2PL) protocol?	CO6	L1	2M

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

UNIT-I

2	a	Define and explain Specialization in ER Model with examples.	CO2	L2	5M
	b	Distinguish between Relationship and Relationship set.	CO2	L2	5M

OR

3	a	What are Superclass and Subclass in DBMS? Illustrate with an ER diagram.	CO2	L3	5M
	b	Define Generalization in ER Model. How is it different from Specialization?	CO2	L1	5M

UNIT-II

4	a	Illustrate different operations in Relational algebra with an example.	CO3	L3	5M
	b	Develop the DML Commands – Insert, Select Commands, update & delete Commands.	CO3	L6	5M

OR

5	a	Create the DDL Commands – Table Creation, Altering the table structures, truncating a table and dropping a table.	CO3	L6	5M
	b	Classify various types of constraints in the relational model with suitable examples.	CO3	L2	5M

UNIT-III

6	a	Differentiate between Nested Queries & Sub queries with examples.	CO4	L2	5M
	b	Evaluate Order by, Group by and Having Clauses with example.	CO4	L4	5M

OR

7	a	Compare an Arithmetic and Logical Operations with examples.	CO4	L2	6M
	b	Using a table EMPLOYEES(emp_id, name, salary, department_id), develop SQL queries to:	CO4	L6	4M

i) Increase each employee's salary by 15% and display the new salary.
ii) Display employees who earn more than 5000 and belong to department 20.
iii) Display employees whose salary is not equal to 6000 and department is not 30.

UNIT-IV

8	a	Consider the schema: R (A, B, C, G, H, I) and the set of FD''s $(A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H)$. Prove the members of F^+: $A \rightarrow H, CG \rightarrow HI, AG \rightarrow I$ with axioms is true.	CO5	L5
	b	Discuss about preserving Decomposition.	CO5	L2

OR

9	a	Explain in detail about 1NF, 2NF, 3NF and BCNF with example.	CO5	L2
	b	Differentiate between about 4NF/MVD with example.	CO5	L2

UNIT-V

10	a	Explain recoverability in transaction schedules. Differentiate between Recoverable, cascade less, and strict schedules.	CO6	L2
	b	Describe the different types of failures in database systems.	CO6	L2

OR

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

*** END ***