O.P.Code: 25MC9105	R25	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

MCA I Year I Semester Regular Examinations December-2025

DATABASE MANAGEMENT SYSTEMS

Time: 3 Hours **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

		UNIT-I			
1	a	Define database system and list any five applications.	CO1	L1	6M
	b	Explain the advantages of using a DBMS.	CO1	L2	6M
		OR			
2	a	Analyze the importance of primary key and foreign key constraints with suitable examples.	CO1	L4	6M
	b	Explain Union and Set Difference Operations with example.	CO1	L2	6M
		UNIT-II			
3	a	What are different Alter Commands in SQL? Explain with example.	CO2	L2	6M
	b	Explain the basic structure of an SQL Query with a suitable example.	CO2	L2	6M
		OR			
4	a	Write the syntax of SQL stored procedure. Explain with an example.	CO2	L2	6M
	b	Explain how an Outer Join works. Write an example Query and its expected output.	CO2	L2	6M
		UNIT-III			
5		Design an ER model for a banking system that manages customers, accounts, transaction, and branches. Clearly define entity sets, attributes, and relationship constraints.	CO3	L3	12M
		OR			
6	a	Discuss different types of functional dependencies with examples.	CO3	L2	6M
	b	Apply the definition of Third Normal Form (3NF) to determine whether the following relation is in 3NF: R(Employee_ID, Department, Manager, Location) with dependencies {Employee_ID → Department, Department → Manager, Manager → Location}. Explain your reasoning.	CO3	L3	6M
		UNIT-IV			
7	a	Explain the external merge sort technique used in query processing and analyze its efficiency for large datasets.	CO4	L4	6M
	b	Compare hash join and sort-merge join in terms of cost, memory usage, and data requirements.	CO4	L4	6M
		OR			
8		Analyze different types of estimation in optimizing a query.	CO4	L4	12M
		UNIT-V			
9	a	Discuss how a transaction ensures the ACID properties	CO5	L2	6M
	b	Explain what a schedule is in transaction processing with an example.	CO5	L2	6M
		OR			
10	a	List and describe the different types of system failures in a database system.	CO6	L1	6M
	b	Define log-based recovery in database systems.	CO6	L1	6M

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