R20

Code No: R20A0509

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, June 2025

Database Management Systems

(B.Tech-AIML)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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			BCLL	CO(s)	Marks
		SECTION-I			
1	***A***	Explain how DBMS supports data independence with an example.	**L2**	**CO-I**	**[7M]**
	B	Construct an ER diagram for banking enterprise.	**L3**	**CO-I**	**[7M]**
		OR			
2	***A***	What are the benefits with Database approach? Explain briefly?	**L2**	**CO-I**	**[7M]**
	B	Draw and explain major DBMS functions and components?	**L2**	**CO-I**	**[7M]**
		SECTION-II			
3	***A***	What are the standard set operations available in relational algebra? Explain with suitable examples?	**L2**	**CO-II**	**[7M]**
	B	Consider following schemas: Sailors (sid: Integer, sname: string, rating: Integer, age: real) Boats(bid: Integer, bname: string, color: string) Reserves (sid: Integer, bid: Integer, day: date) Write queries for the following: (i) Find the names of sailors who have reserved boat 106. (ii) Find the name of sailors who have reserved at least two boats. (iii) Find the name of sailors who have reserved all boats.	**L3**	**CO-II**	**[7M]**
		OR			
4	***A***	What are the aggregate operations used in SQL? Explain with suitable queries?	**L2**	**CO-II**	**[7M]**
	B	Explain TRC (Tuple Relational Calculus) and DRC (Domain Relational Calculus).	**L2**	**CO-II**	**[7M]**
		SECTION-III			
5	***A***	Define BCNF. How does BCNF differ from 3NF? Explain with an example.	**L2**	**CO-III**	**[7M]**
	B	Explain the properties of Decomposition.	**L2**	**CO-III**	**[7M]**
		OR			
6	***A***	What is normalization? Explain 1NF, 2NF and 3NF with suitable example?	**L2**	**CO-III**	**[7M]**
	B	Given a Relation R=(X,Y,Z) and Functional Dependencies are F={ {X,Y}→{Z}, {Z}→{X} } Determine all Candidate keys of R and the normal form of R with proper explanation.	**L3**	**CO-III**	**[7M]**

SECTION-IV

7	***A***	Explain various anomalies that arise due to interleaved execution of transactions with suitable examples.	**L2**	**CO-IV**	**[7M]**
	B	Explain the Two-Phase Locking protocol and its variants.	**L2**	**CO-IV**	**[7M]**
		OR			
8	***A***	Explain the need of commit, rollback and save point operations in transaction management.	**L2**	**CO-IV**	**[7M]**
	B	How to use time stamp ordering for Concurrency control? Explain the Wait/Die and Wound/Wait Schemes of concurrency control.	**L3**	**CO-IV**	**[7M]**

SECTION-V

9	***A***	Explain the following: 1. Recovery and atomicity 2. Buffer management	**L2**	**CO-V**	**[7M]**
	B	Illustrate recovery with concurrent transactions using check points.	**L2**	**CO-V**	**[7M]**
		OR			
10		Explain failure with loss of non-volatile storage .	**L2**	**CO-V**	**[14M]**

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