BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)
I – MCA II - Semester Regular/Supplementary Examinations (BR23), June/July - 2025
Database Management Systems (MCA)

Time: 3 hours   Max. Marks: 70

Answer any Five Questions One Question for One UNIT
ALL the Question Carry Equal Marks

	UNIT-I	**Marks**	**CO**	**BL**
1.a)	Describe the three-schema architecture with a neat diagram.	7M	CO1	L2
b)	Classify different types of database users and their roles.	7M	CO1	L4
	OR			
2.a)	Compare file-based systems and database systems.	7M	CO1	L4
b)	What is data independence? Explain logical and physical independence.	7M	CO1	L2

	UNIT-II	**Marks**	**CO**	**BL**
3.a)	Explain entity, attribute, and relationship with suitable examples.	7M	CO2	L2
b)	Describe the structure of relational databases and relational integrity constraints.	7M	CO2	L2
	OR			
4.a)	Explain the concept of domain, tuple, relation, and attribute in the relational model.	7M	CO2	L1
b)	What is an ER diagram? Draw an ERD for a college admission system.	7M	CO2	L6

	UNIT-III	**Marks**	**CO**	**BL**
5.a)	Explain various JOIN operations in SQL with examples.	7M	CO3	L2
b)	Demonstrate the use of aggregate functions in SQL with examples.	7M	CO3	L3
	OR			
6.a)	Define relational algebra. Explain SELECT, PROJECT, and UNION operations.	7M	CO3	L2
b)	Explain the usage of SELECT statement with WHERE, ORDER BY, and GROUP BY clauses.	7M	CO3	L2

	UNIT-IV	**Marks**	**CO**	**BL**
7.a)	Define functional dependency. How is it useful in normalization?	7M	CO4	L1
b)	Discuss the need for normalization and anomalies it resolves.	7M	CO4	L5
	OR			
8.a)	Differentiate between 3NF and BCNF. When is BCNF preferred?	7M	CO4	L4
b)	What is lossless join decomposition? Explain with an example.	7M	CO4	L2

	UNIT-V	Marks	CO	BL
9.a)	Define transaction. Explain ACID properties with examples.	7M	CO5	L1
b)	Draw and explain transaction state diagram.	7M	CO5	L2
	OR			
10.a)	What is deadlock? How can it be detected and prevented?	7M	CO5	L4
b)	Explain Two-Phase Locking protocol with an example.	7M	CO5	L4

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