CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
IV–B.TECH–I–Semester End Examinations (Supply) - December- 2025
DATABASE MANAGEMENT SYSTEMS
(MECH)

[Time: 3 Hours]   **[Max. Marks: 70]**

Note: This question paper contains two parts A and B.

    Part A is compulsory which carries 20 marks. Answer all questions in Part A.

    Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A   (20 Marks)

1. a)	What is the need of data model in DBMS and give its classification.	[2M]
b)	Define Entity, Attributes, Entity set, relationship with appropriate notations?	[2M]
c)	What is the instance of a relation?	[2M]
d)	Define-relational algebra.	[2M]
e)	Prove that any relation schema with two attributes is BCNF.	[2M]
f)	How BCNF is stronger than 3NF.	[2M]
g)	List and define ACID properties.	[2M]
h)	Define validation based protocols.	[2M]
i)	Draw the structure of B+ tree.	[2M]
j)	What is hash based index?	[2M]

PART-B   (50 Marks)

2.	List and explain various data models used for database design.	[10M]
	OR	
3.	What is Entity set? Define Relationship set. List and explain the symbols used to draw ER Diagram.	[10M]
4.	What is an integrity constraint? Explain its enforcement by DBMS with illustrative example.	[10M]
	OR	
5.	Write about relational algebra? Discuss about different operators used in algebra.	[10M]
6.	Illustrate the usage of SQL GROUP BY, ORDER BY and HAVING clauses.	[10M]
	OR	
7.	Explain about normal forms in database design.	[10M]
8.	Explain transaction states with examples.	[10M]
	OR	
9.	Explain concurrency control with lock based protocols	[10M]
10.	Explain file organizations.	[10M]
	OR	
11.	Explain about B+ Trees Dynamic Indexing.	[10M]

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