CMR INSTITUTE OF TECHNOLOGY Dept. of Information Science & Engineering	USN									

Internal Assessment Test II – June 2026

Sub:	DATABASE MANAGEMENT SYSTEM						Code:	BCS403
Date:	02/06/2026	Duration:	90 mins	Max Marks:	50	Sem/Sec: IV A, B, C	Branch:	**ISE**

Answer any 5 full questions from the following.

		Marks	OBE	
			CO	RBT
1	What is a NoSQL Graph Database? Explain Neo4j with suitable examples.	10	6	L2
2	Explain informal design guidelines for relational schema design. With a neat diagram explain the state transition diagram of a transaction.	6 4	1	L2
3	Explain the Two-Phase Locking (2PL) protocol used for concurrency control.	10	5	L2
4	Why are concurrency controls needed in DBMS? Explain 4 types of problems that may occur when two simple transactions run concurrently.	10	5	L2
5	What is Multiple Granularity Locking? Explain its implementation using Intention Locks.	10	5	L2

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6	Consider the two tables T_1 and T_2 shown below: T_1 P | Q | R 10 | a | 5 15 | b | 8 25 | a | 6 T_2 A | B | C 10 | b | 6 25 | c | 3 10 | b | 5 Show the results of the following operations: (i) $T_1 \bowtie_{T_1.P=T_2.A} T_2$ (ii) $T_1 \bowtie_{T_1.Q=T_2.B} T_2$ (iii) $T_1 \bowtie_{(T_1.P=T_2.A \text{ AND } T_1.R=T_2.C)} T_2$	10	1	L3

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