R22 Regulation *Subject code: 4O7AA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VII Semester Supplementary Examinations, May 2026

DATA BASE MANAGEMENT SYSTEM

(CE)

Maximum Marks: 60 Date: 13.05.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	Define data model.	1M	1	L1
b)	List different types of database architectures.	1M	1	L1
c)	Identify entities and relationships from a university database.	1M	2	L2
d)	Distinguish between strong and weak entities.	1M	2	L2
e)	State the importance of views in DBMS.	1M	3	L2
f)	Identify two SQL commands used for modifying schema.	1M	3	L1
g)	Define concurrency control.	1M	4	L1
h)	Classify different types of locks in DBMS.	1M	4	L2
i)	Identify different types of indexing methods.	1M	5	L1
j)	List various hashing methods.	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Illustrate the ER model using a library management example.	10M	1	L2
	OR			
3	a) Compare hierarchical, network, and relational data models. b) Analyze the purpose of data independence in database design.	5M 5M	1	L3 L4
4	a) Develop an ER diagram and convert it into relational schema. b) Demonstrate relational algebra operations on a sample dataset.	5M 5M	2	L3 L3
	OR			
5	a) Apply tuple relational calculus to formulate queries. b) Evaluate the expressive power of relational algebra and calculus.	5M 5M	2	L3 L2
6	a) Construct SQL queries using nested SELECT and JOIN operations. b) Implement triggers and assertions for maintaining data consistency.	5M 5M	3	L3 L3
	OR			
7	a) Apply decomposition rules to remove anomalies from a schema. b) Analyze dependencies to determine the highest normal form.	5M 5M	3	L3 L4

8	a) Summarize transaction states and their transitions. b) Apply locking protocols to maintain serializability.	5M 5M	4	L2 L3
	OR			
9	a) Compare pessimistic and optimistic concurrency control methods. b) Examine recovery algorithms used in log-based systems.	5M 5M	4	L4 L4
10	a) Demonstrate search and update operations on a B+ tree. b) Compare tree-based and hash-based indexing in terms of efficiency.	5M 5M	5	L3 L2
	OR			
11	a) Construct extendible hashing mechanism for a given dataset. b) Evaluate the performance of different file organization techniques.	5M 5M	5	L3 L2