



R22 Regulation

Subject code:4E4EC

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

## B.Tech IV Semester Supplementary Examinations, December 2025

### DATABASE MANAGEMENT SYSTEMS

(Common to CSE, CSE(AI&ML) & CSE(DS))

Maximum Marks: 60

Date:20.12.2025

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 the terms DDL and DML.	1M	CO1	BL1
b)	Write the components of DBMS.	1M	CO1	BL2
c)	Define- relational algebra.	1M	CO2	BL1
d)	What is the use of integrity constraints?	1M	CO2	BL1
e)	List the properties of decomposition.	1M	CO3	BL2
f)	Write about transitive functional dependency.	1M	CO3	BL2
g)	What are the two types of serializability?	1M	CO4	BL1
h)	Give the reasons for allowing concurrency.	1M	CO4	BL2
i)	What is a hash index?	1M	CO5	BL1
j)	What are called secondary indices?	1M	CO5	BL2

#### Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	Discuss the architecture of DBMS with a neat block diagram.	10M	CO1	BL2
OR				
3	What is ER Diagram? Discuss its Components with different kinds of attributes. Draw an ER diagram for banking application.	10M	CO1	BL4
4	Explain the various relational algebra operations with suitable example.	10M	CO2	BL3
OR				
5	a) Describe the steps involved in converting an ER diagram to a relational schema. b) Compare and contrast tuple relational calculus and domain relational calculus with examples.	5M 5M	CO2	BL4
6	Explain about Functional Dependency and the types in detail with examples	10M	CO3	BL2
OR				
7	What is Normalization? Explain 1NF, 2NF, 3NF and BCNF with your own examples.	10M	CO3	BL2

8	a) Present the significance of two phase locking protocol in Transaction management. b) Explain Time Stamp based Protocol.	3M 7M	CO4	BL2
OR				
9	a) What is the role of buffer management in transaction processing? b) Discuss the multiple granularity locking protocol and its advantages.	3M 7M	CO4	BL2
10	Demonstrate the structure of B+ tree and give the algorithm for search in the B+ tree with example.	10M	CO5	BL3
OR				
11	What is the need of indexing and Hashing? Explain the types of indices and hashing with suitable example.	10M	CO5	BL3