*R20 Regulation* *Subject code: 3O7AA*

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

**B.Tech VII Semester Supplementary Examinations, May 2026**

## DATABASE MANAGEMENT SYSTEMS

**(CE)**

***Maximum Marks: 70*** Date: 14.05.2026 Duration: 3 hours

**Note:** **1.This question paper contains two parts A and B.**
**2. Part A is compulsory which carries 20 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 (10X2M=20 Marks) | | Marks | CO | BTL |
|---|---|---|---|---|
| 1 | Write the types of languages a database system provides. | 2M | 1 | L1 |
| 2 | Define DBMS. | 2M | 1 | L1 |
| 3 | Write about relational model? | 2M | 2 | L1 |
| 4 | How to represent the strong entity set and weak entity set in E-R Model? | 2M | 2 | L1 |
| 5 | Write about Various Integrity Constraints in SQL? | 2M | 3 | L1 |
| 6 | What is schema refinement? | 2M | 3 | L1 |
| 7 | List the properties of transaction. | 2M | 4 | L1 |
| 8 | Write about recoverable schedules. | 2M | 4 | L1 |
| 9 | What is clustered index? | 2M | 5 | L1 |
| 10 | What is the order of B+ tree? | 2M | 5 | L1 |

Part-B

| Answer All the following questions. (5X10M=50Marks) | | Marks | CO | BTL |
|---|---|---|---|---|
| 11 | Draw an Entity Relationship (ER) for railway reservation system. | 10M | 1 | L2 |
| | OR | | | |
| 12 | What is class hierarchy? Analyze how is it represented in ER diagram. | 10M | 1 | L2 |
| 13 | Explain the fundamental operations in Relational Algebra with examples. | 10M | 2 | L2 |
| | OR | | | |
| 14 | Explain types of Relational Calculus with suitable example. | 10M | 2 | L2 |
| 15 | What is trigger? Explain how to implement triggers in SQL. | 10M | 3 | L2 |
| | OR | | | |
| 16 | What is normalization? Describe the conditions required for a relation to be in INF, 2NF and 3NF? Explain with examples. | 10M | 3 | L2 |

| | | | | |
|---|---|---|---|---|
| 17 | What is 2PL locking Protocol? Explain with Suitable Example? Implement how does it guarantee Serializability. | 10M | 4 | L2 |
| | OR | | | |
| 18 | a) Analyze the problems with storage of data on external storage? Explain.<br>b) Compare and Contrast states of transactions. | 5M<br>5M | 4 | L2 |
| 19 | Explain in detail about index data structures. | 10M | 5 | L2 |
| | OR | | | |
| 20 | Explain the structure of B+tree in detail with example. | 10M | 5 | L2 |