

**SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES**  
(AUTONOMOUS)  
Murukambattu, Chittoor

MCA DEPARTMENT



**QUESTION BANK**

**For**

**24MCA115 -Database Management Systems**

**Regulation – R24**

**Academic Year 2025– 26**

*Prepared by*

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| <b>UNIT I - Introduction &amp; Database Design and E-R Model</b>                                                                                                                                                                                                                                                                   |                                                                                    |                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------|
| Database System Applications - Purpose of Database Systems - View of Data - Database Languages - Database Design - Database Architecture - Database Users and Administrators.<br>The Entity-Relationship Model – Entity Sets –Relationship sets –Attributes –Entity-Relationship Diagrams –Weak Entity Sets –Extended E-R Features |                                                                                    |                              |
| <b>PART -A</b>                                                                                                                                                                                                                                                                                                                     |                                                                                    |                              |
| <b>Q. No.</b>                                                                                                                                                                                                                                                                                                                      | <b>Questions</b>                                                                   | <b>Blooms Taxonomy Level</b> |
| 1                                                                                                                                                                                                                                                                                                                                  | What is database?                                                                  | Remembering                  |
| 2                                                                                                                                                                                                                                                                                                                                  | What is DBMS?                                                                      | Remembering                  |
| 3                                                                                                                                                                                                                                                                                                                                  | List out applications of Database system?                                          | Remembering                  |
| 4                                                                                                                                                                                                                                                                                                                                  | Mention three types of views                                                       | Remembering                  |
| 5                                                                                                                                                                                                                                                                                                                                  | What are the 3 important components of ER Model                                    | Remembering                  |
| 6                                                                                                                                                                                                                                                                                                                                  | Mention types of Attributes                                                        | Understanding                |
| 7                                                                                                                                                                                                                                                                                                                                  | What is weak entity set                                                            | Remembering                  |
| 8                                                                                                                                                                                                                                                                                                                                  | List out additional features of EER Model                                          | Remembering                  |
| 9                                                                                                                                                                                                                                                                                                                                  | Define Specialization and Generalization                                           | Understanding                |
| <b>PART -B</b>                                                                                                                                                                                                                                                                                                                     |                                                                                    |                              |
| 1                                                                                                                                                                                                                                                                                                                                  | Describe the three levels of data abstraction?                                     | Understanding                |
| 2                                                                                                                                                                                                                                                                                                                                  | Explain various applications of database systems                                   | Understanding                |
| 3                                                                                                                                                                                                                                                                                                                                  | Discuss the overall architecture of database system in detail.                     | Understanding                |
| 4                                                                                                                                                                                                                                                                                                                                  | Discuss the purpose of Database systems                                            | Understanding                |
| 5                                                                                                                                                                                                                                                                                                                                  | Explain ER Model in detail                                                         | Understanding                |
| 6                                                                                                                                                                                                                                                                                                                                  | Write Extended ER Model.                                                           | Understanding                |
| 7                                                                                                                                                                                                                                                                                                                                  | Write about Database Design in detail                                              | Understanding                |
| 8                                                                                                                                                                                                                                                                                                                                  | Discuss about Database Languages                                                   | Understanding                |
| 9.                                                                                                                                                                                                                                                                                                                                 | Mention about Database Users and Administrator                                     | Remembering                  |
| <b>UNIT II - The Relational Model</b>                                                                                                                                                                                                                                                                                              |                                                                                    |                              |
| Introduction to The Relational Model –Integrity Constraints over Relations – Querying Relational Data – Logical Database Design: ER to Relational<br>Relational Algebra And Calculus – Preliminaries – Relational Algebra – Relational Calculus – Expressive power of Algebra and Calculus.                                        |                                                                                    |                              |
| <b>PART -A</b>                                                                                                                                                                                                                                                                                                                     |                                                                                    |                              |
| 1                                                                                                                                                                                                                                                                                                                                  | Define Relational Model                                                            | Understanding                |
| 2                                                                                                                                                                                                                                                                                                                                  | List out various keys in DBMS                                                      | Remembering                  |
| 3                                                                                                                                                                                                                                                                                                                                  | What is Integrity Constraint                                                       | Understanding                |
| 4                                                                                                                                                                                                                                                                                                                                  | List out the steps to convert ER Model into Relational Model                       | Remembering                  |
| 5                                                                                                                                                                                                                                                                                                                                  | What is Relational Algebra                                                         | Understanding                |
| 6                                                                                                                                                                                                                                                                                                                                  | Define Relational Calculus                                                         | Understanding                |
| 7                                                                                                                                                                                                                                                                                                                                  | List out Relational Algebra operators                                              | Remembering                  |
| 8                                                                                                                                                                                                                                                                                                                                  | Mention two types of Relational Calculus                                           | Remembering                  |
| <b>PART -B</b>                                                                                                                                                                                                                                                                                                                     |                                                                                    |                              |
| 1                                                                                                                                                                                                                                                                                                                                  | Write about Integrity constraints and querying Languages                           | Understanding                |
| 2                                                                                                                                                                                                                                                                                                                                  | Demonstrate the process of converting ER Model to Relational Model with an example | Applying                     |
| 3                                                                                                                                                                                                                                                                                                                                  | Explain Relational Algebra and its operators with examples                         | Understanding                |



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| 4                                                                                                                                                                                                                                                                                                                                                                                                                                             | Illustrate Set operators in Relational Algebra                                      | Applying      |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                             | Write about Join Operators in Relational Algebra                                    | Understanding |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                             | Write about Relational Calculus with examples                                       | Understanding |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                             | Experiment Querying with the Relational Data                                        | Applying      |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                             | Write about expressive power of Algebra and calculus                                | Understanding |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                             | Explain Logical Database design with an example                                     | Understanding |
| <b>UNIT III - SQL &amp; PL/SQL</b>                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                     |               |
| Interactive SQL Part I - Types of Data Constraints - Computations done on Table Data - Oracle functions - Grouping Data from Tables in SQL - Sub queries - Joins - Concatenation data from table columns using the Union - Intersect and Minus Clause - Views - Sequences - Granting and Revoking Permissions - Advantages of PL/SQL - The Generic PL/SQL block - Control Structure - What is Cursor - Database Triggers - Types of Triggers. |                                                                                     |               |
| <b>PART – A</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is Data Definition Language?                                                   | Understanding |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                             | Differentiate between alter and update commands                                     | Understanding |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                             | Differential between drop and delete                                                | Understanding |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                             | List out DDL commands                                                               | Remembering   |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                             | Purpose of Group by clause                                                          | Understanding |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                             | What are views? How they are created?                                               | Understanding |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                             | Mention the types of Joins                                                          | Remembering   |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is the difference between WHERE and Having Clause?                             | Remembering   |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is PL/SQL                                                                      | Understanding |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                            | List out the SET operators                                                          | Remembering   |
| <b>PART – B</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                             | Illustrate DDL, DML commands                                                        | Applying      |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                             | Discuss briefly about SQL Functions                                                 | Understanding |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                             | Demonstrate various SQL Clauses like WHERE, DISTINCT, ORDER BY, GROUP BY AND HAVING | Applying      |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                             | Write about various types of SQL Constraints                                        | Understanding |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                             | Illustrate Various JOINS in SQL                                                     | Applying      |
| 6                                                                                                                                                                                                                                                                                                                                                                                                                                             | Explain SQL Views with Examples                                                     | Understanding |
| 7                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is PL/SQL and its advantages                                                   | Understanding |
| 8                                                                                                                                                                                                                                                                                                                                                                                                                                             | Write about PL/SQL cursors                                                          | Understanding |
| 9                                                                                                                                                                                                                                                                                                                                                                                                                                             | Update student data using Cursors                                                   | Applying      |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                            | Illustrate SQL Sequence and set operators                                           | Applying      |
| <b>UNIT IV - Relational Database Design &amp; Transaction Management</b>                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |               |
| Schema refinement and Normal Forms – Introduction to schema refinement – Functional Dependencies – Reasoning about FDS – Normal Forms – Properties of Decompositions – Normalizations. Transaction Concept - Transaction States - Concurrency Executions – Serializability – Recoverability - Testing for Serializability                                                                                                                     |                                                                                     |               |
| <b>PART – A</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |               |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is Normalization                                                               | Understanding |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                             | List out the Anomalies that occur due to Redundancy                                 | Remembering   |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                             | Define Functional Dependency                                                        | Remembering   |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                             | What is closure of F                                                                | Understanding |



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| 5                                                                                                                                                                                                                                  | List out the Normal Forms                                                                                                                                                                  | Remembering   |
| 6                                                                                                                                                                                                                                  | Mention the properties of Decomposition                                                                                                                                                    | Remembering   |
| 7                                                                                                                                                                                                                                  | What is Transaction                                                                                                                                                                        | Understanding |
| 8                                                                                                                                                                                                                                  | Mention the Transaction Properties                                                                                                                                                         | Remembering   |
| 9                                                                                                                                                                                                                                  | List out the Transaction States                                                                                                                                                            | Remembering   |
| 10                                                                                                                                                                                                                                 | What is Serializability                                                                                                                                                                    | Understanding |
| <b>PART – B</b>                                                                                                                                                                                                                    |                                                                                                                                                                                            |               |
| 1                                                                                                                                                                                                                                  | Explain the need of Schema Refinement                                                                                                                                                      | Understanding |
| 2                                                                                                                                                                                                                                  | Consider a relation R ( A , B , C , D , E , F , G ) with the functional dependencies-<br>A → BC<br>BC → DE<br>D → F<br>CF → G<br>Compute A <sup>+</sup> , D <sup>+</sup> , BC <sup>+</sup> | Applying      |
| 3                                                                                                                                                                                                                                  | Demonstrate First 3 Normal Forms with Examples                                                                                                                                             | Applying      |
| 4                                                                                                                                                                                                                                  | Differentiate the difference between Third Normal Form and BCNF with example                                                                                                               | Understanding |
| 5                                                                                                                                                                                                                                  | Categorize the Properties of Decomposition with Examples                                                                                                                                   | Analyzing     |
| 6                                                                                                                                                                                                                                  | Explain Transaction Properties and its states                                                                                                                                              | Understanding |
| 7                                                                                                                                                                                                                                  | Write about concurrent Execution, Serial, Non Serial and Serializability schedules                                                                                                         | Understanding |
| 8                                                                                                                                                                                                                                  | Discuss about conflict Serializability and View Serializability                                                                                                                            | Understanding |
| 9                                                                                                                                                                                                                                  | Illustrate Test for Conflict Serializability                                                                                                                                               | Analyzing     |
| 10                                                                                                                                                                                                                                 | Discuss about Recoverability in detail                                                                                                                                                     | Understanding |
| <b>UNIT V – Concurrency Control and Recovery System</b>                                                                                                                                                                            |                                                                                                                                                                                            |               |
| Lock-Based Protocol - Timestamp-Based Protocols - Validation-Based Protocols - Deadlock Handling, Failure Classification - Storage Structure - Recovery and Atomicity - Log-Based Recovery - Recovery with Concurrent Transactions |                                                                                                                                                                                            |               |
| <b>PART-A</b>                                                                                                                                                                                                                      |                                                                                                                                                                                            |               |
| 1                                                                                                                                                                                                                                  | List out the Concurrency Control Techniques in DBMS                                                                                                                                        | Remembering   |
| 2                                                                                                                                                                                                                                  | Why Read lock is called as Shared lock                                                                                                                                                     | Understanding |
| 3                                                                                                                                                                                                                                  | Why write lock is called as Exclusive Lock                                                                                                                                                 | Understanding |
| 4                                                                                                                                                                                                                                  | Define Two Phase Locking protocol                                                                                                                                                          | Understanding |
| 5                                                                                                                                                                                                                                  | What is Timestamp of a Transaction                                                                                                                                                         | Understanding |
| 6                                                                                                                                                                                                                                  | What is Deadlock and starvation                                                                                                                                                            | Understanding |
| 7                                                                                                                                                                                                                                  | What is the Purpose of wait-for-graph                                                                                                                                                      | Understanding |
| 8                                                                                                                                                                                                                                  | Mention failure classification types                                                                                                                                                       | Remembering   |
| 9                                                                                                                                                                                                                                  | List out storage structure types                                                                                                                                                           | Remembering   |
| 10                                                                                                                                                                                                                                 | Mention two log based approaches                                                                                                                                                           | Remembering   |
| <b>PART – B</b>                                                                                                                                                                                                                    |                                                                                                                                                                                            |               |
| 1                                                                                                                                                                                                                                  | Interpret Locking Protocol in detail                                                                                                                                                       | Understanding |
| 2                                                                                                                                                                                                                                  | Discuss the Time Stamp Ordering Protocol in Detail                                                                                                                                         | Understanding |
| 3                                                                                                                                                                                                                                  | Write about Validation Protocol                                                                                                                                                            | Understanding |
| 4                                                                                                                                                                                                                                  | Illustrate Deadlock detection                                                                                                                                                              | Applying      |
| 5                                                                                                                                                                                                                                  | Explain the two problems that occur with Lock based protocol                                                                                                                               | Understanding |
| 6                                                                                                                                                                                                                                  | Write about Recovery and atomicity                                                                                                                                                         | Understanding |



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| 7  | Explain Log based Recovery in detail         | Understanding |
| 8  | What is Recovery with concurrent Execution   | Understanding |
| 9  | Write about Deadlock Handling                | Understanding |
| 10 | Briefly Infer Concurrency Control Techniques | Understanding |