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| LOGO.jpg | **GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY**  (**AN AUTONOMOUS INSTITUTION**)  **(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)**  **(Accredited by NAAC with “A” Grade, NBA (EEE, ECE & ME) &**  **ISO 9001:2008 Certified Institution)** |
| **QUESTION BANK(DESCRIPTIVE – 12 MARKS)**  **Subject Name: Database Management Systems Subject Code: 23A0512T**  **Course & Branch:** B.Tech & (Common to CSE ,CS,DS, AI&ML)  **Year & Semester: II B.Tech II Semester Regulation:**RG23 | |

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| **Q. No** | **Unit-I: Introduction to Database and ER diagrams** | **[BT Level] [CO][ Marks]** |
| 1 | Compare different types of Data Models with examples. | [2][CO1][12] |
| 2 | Difference between the Database System and File System with neat  sketch. | [2][CO1][12] |
| 3 | Explain the concept of Schema and Instance and it’s types with examples. | [2][CO1][12] |
| 4 | Explain architecture of Database System. | [2][CO1][12] |
| 5 | What is Data Independence? Explain the Three-tier architecture of Data Independence with neat diagram. | [2][CO1][12] |
| 6 | Explain 3 Levels of Data abstraction with neat diagram. | [2][CO1][12] |
| 7 | Explain Relation model with an examples. | [2][CO1][12] |
| 8 | Explain Record Based Models with examples. | [2][CO1][12] |
| 9 | Explain Entity Relationship Model with suitable examples. | [2][CO1][12] |
| 10 | Explain Object Oriented Based Models with examples? | [2][CO1][12] |
| **Q. No** | **Unit-II: Relational Model** | **[BT Level] [CO][ Marks]** |
| 1 | Explain different Integrity Constraints in Relational model. | [2][CO2][12] |
| 2 | Explain Relational Algebra with examples. | [2][CO2][12] |
| 3 | Explain Relational Calcus with examples. | [3][CO2][12] |
| 4 | Explain Selection, Projection & Union operation with examples. | [3][CO2][12] |
| 5 | Implement referential integrity constraint by considering an  examples. | [3][CO2][12] |
| 6 | Explain Join, Cross product & Intersection operations in relational algebra with examples. | [2][CO2][12] |
| 7 | Implement Set operations in relational algebra with examples. | [3][CO2][12] |
| 8 | Create the following 2 tables in Relational Algebra using given schemas: Sailors(sid int, sname varcha2, rating int, age int) and Boats(bid int, bname varchar2, bcolor varchar2)   1. Insert data values into tables. 2. Find the names of sailors with a rating greater than 5. 3. Retrieve the names and ages of sailors. | [2][CO2][12] |
| 9 | Define DML? Explain DML commands with examples. | [3][CO2][12] |

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| 10 | Create the following 2 tables in Relational Calcus using given schemas: Sailors(sid int, sname varcha2, rating int, age int) and Boats(bid int, bname varchar2, bcolor varchar2)   1. Insert appropriate data values into tables. 2. Find the names of sailors with a rating greater than 5. 3. Retrieve the names and ages of sailors. | [3][CO2][12] |
| 11 | What is DDL? Explain DDL commands with syntax. |  |

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| **Q. No** | **Unit-III: SQL** | **[BT Level] [CO][ Marks]** |
| 1 | Explain SELECT, FROM and WHERE Clauses with suitable examples. | [L4][CO3][12] |
| 2 | Create a Sailors, Boats & Reserves tables for Nested Query using given schemas:  Sailors(sid int, sname varcha2, rating int, age int), Boats(bid int, bname varchar2, bcolor varchar2) and Reserve(bid int, bname varchar2, bcolor varchar2)   1. Insert appropriate values into tables. 2. Find the names of sailors who have reserved boat no 103. 3. Find the names of sailors, who have reserved Red boat. | [L4][CO3][12] |
| 3 | Explain various aggregate functions and provide the suitable examples. | [L4][CO3][12] |
| 4 | Explain Primary Key and Foreign Key with suitable examples. | [L4][CO3][12] |
| 5 | Explain Unique and Not Null constraints with examples. | [L4][CO3][12] |
| 6 | Explain Integrity Constraints with examples. | [L4][CO3][12] |
| 7 | Implementation of Different types of joins with syntax. | [L4][CO3][12] |
| 8 | Explain and demonstrate the use of SQL functions for Date and Time,  Numeric and String conversions. | [L4][CO3][12] |
| 9 | Create a Sailors, Boats & Reserves tables for View using given schemas:  Sailors(sid int, sname varcha2, rating int, age int), Boats(bid int, bname varchar2, bcolor varchar2) and Reserve(bid int, bname varchar2, bcolor varchar2)   1. Insert appropriate values into tables. 2. Find the names of sailors. Who have not reserved. 3. Find the colors of boats reserved by lubber. | [L4][CO3][12] |
| 10 | Explain the functions in SQL with Suitable example. | [L4][CO3][12] |
| **Q. No** | **Unit-IV: Normalization** | **[BT Level] [CO][ Marks]** |
| 1 | Explain the need for normalization with suitable example. | [L3][CO4][12] |
| 2 | Explain functional dependency in the context of relational databases. | [L3][CO4][12] |
| 3 | Compare between 1NF, 2NF with examples. | [L3][CO4][12] |
| 4 | Difference between 3NF and BCNF with example. | [L3][CO4][12] |

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| 5 | Compare primary key, candidate key, Super key and foreign  keys with suitable examples. | [L3][CO4][12] |
| 6 | Relate transitive dependency with 3NF. Provide an example to  illustrate your answer. | [L3][CO4][12] |
| 7 | Illustrate Join Dependency and the Fifth Normal Form with  example. | [L3][CO4][12] |
| 8 | Illustrate Multi-Valued Dependency and the Fourth Normal  Form with an example. | [L3][CO4][12] |
| 9 | Illustrate with an example about partial functional dependency and describe how this type of dependency relates to 2NF. | [L3][CO4][12] |
| 10 | Explain lossy decomposition and loss less decomposition with examples. | [L3][CO4][12] |

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| **Q. No** | **Unit-V: Transaction Management & introduction to indexing techniques** | **[BT Level] [CO][ Marks]** |
| 1 | Describe the ACID Properties of a transaction. | [L2][CO5][12] |
| 2 | Explain Timestamp protocol with an example. | [L2][CO5][12] |
| 3 | Explain the benefit of two phase locking protocol with an  example. | [L2][CO5][12] |
| 4 | Elaborate the states of a transaction with a neat Sketch. | [L2][CO5][12] |
| 5 | Define Serializability. Explain the types of serializability with examples. | [L2][CO5][12] |
| 6 | Ascertain various concurrency control protocols with suitable  examples. | [L3][CO6][12] |
| 7 | What is dead lock in database system? Explain with suitable examples. | [L3][CO6][12] |
| 8 | Explain Log Based Recovery with example. | [L3][CO6][12] |
| 9 | Explain Optimistic techniques with examples. | [L3][CO6][12] |
| 10 | What are the techniques to recovering those failures? | [L2][CO6][12] |