SILVER OAK UNIVERSITY
EDUCATION TO INNOVATION

School of Technology,Design and Computer Application
College of Technology
Bachelor of Technology (Computer Engineering)

| **Semester:** | 3 | **Academic Year:** | 2025-26 |
|---|---|---|---|
| **Course Name:** | Database Management Systems | **Course Code:** | 2010043223 |

## Question Bank

| Sr No. | Question Text | Marks | CO |
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| **Unit 1 : Database system architecture and Data models** | | | |
| **1** | Compare traditional file processing systems and database management systems. | 3 | CO1 |
| **2** | What is DBMS? List out applications of DBMS | 4 | CO1 |
| **3** | Draw and explain the three level architecture of DBMS. | 6 | CO1 |
| **4** | Who is DBA? Discuss the role of database administrator (DBA). | 4 | CO1 |
| **5** | Explain different levels of data abstraction | 4 | CO1 |
| **6** | Explain Data Independence | 4 | CO1 |
| **7** | List various mapping cardinalities of the E-R diagram. | 6 | CO1 |
| **8** | What are constraints in DBMS ? explain with a proper example. | 6 | CO1 |
| **9** | Define E-R Diagram. Discuss generalization in E-R Diagram. | 6 | CO1 |
| **10** | Differentiate strong entity set and weak entity set. Demonstrate the concept of both using real-time example using E-R diagram | 6 | CO1 |
| **11** | Explain specialization in E-R diagram | 3 | CO1 |
| **12** | Define: Primary Key, Foreign key, NOT NULL constraints and referential integrity (Foreign Key) constraint | 6 | CO1 |
| **13** | Explain Network model and Object Oriented model in brief | 6 | CO1 |
| **14** | Draw E-R diagram for bank management system | 6 | CO1 |
| **Unit 2 : Relational query languages** | | | |
| **15** | List the relational algebra operators. Discuss any one such algebra operator with suitable examples. | 6 | CO2 |
| **16** | Consider the following relational database, where the primary keys are underlined. Give an expression in the relational algebra to express each of the following queries:<br>employee (ssn, name,. dno, salary, hobby, gender)<br>department(dno, dname, budget, location,mgrsm)<br>works_on(ssn, pno) | 6 | CO2 |

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| | project(pno, pname, budget, location, goal)<br>• List all pairs of employee names and the project numbers they work on.<br>• List out department number, department name and department budget<br>• List all projects that Raj Yadav works on by project name.<br>• List the names of employees who supervise themselves | | |
| **17** | Explain all types of join in detail with example | 6 | CO2 |
| **18** | Explain the working of Cartesian product Operation and the Division Operation with an appropriate example | 3 | CO2 |
| **Unit 3 : Relational database design** | | | |
| **19** | What is functional dependency? Explain the its types in detail | 4 | CO2 |
| **20** | Compute closure of following set F of functional dependencies for relation schema r (A, B, C, D, E). A → BC , CD → E , B → D , E → A List the candidate keys for R. | 6 | CO2 |
| **21** | What is meant by normalization? Write its need. List and discuss various normalization forms. | 6 | CO2 |
| **22** | Explain Armstrong's axioms . | 3 | CO2 |
| **Unit 4 : Query processing and optimization,Storage strategies** | | | |
| **23** | Explain steps of query processing with the help of a neat diagram. | 6 | CO3 |
| **24** | Explain linear search and binary search algorithm for selection operation. | 6 | CO3 |
| **25** | Explain evaluation expression Process in query optimization. | 3 | CO3 |
| **26** | Explain External Sort Merge Algorithm with example. | 3 | CO3 |
| **27** | Explain B-tree and Hashing | 6 | CO3 |
| **28** | Define Static and Dynamic Hashing. | 6 | CO3 |
| **29** | Explain Indices in DBMS | 6 | CO3 |
| **Unit 5 : Transaction processing** | | | |
| **30** | List and discuss ACID properties of transactions. | 6 | CO4 |
| **31** | Define transaction. Explain various states of transaction with suitable diagram | 4 | CO4 |
| **32** | State differences between conflict serializability and view serializability | 6 | CO4 |
| **33** | Write differences between shared lock and exclusive lock | 4 | CO4 |
| **34** | Explain timestamp-based protocols in detail. | 5 | CO4 |
| **35** | What is locking? Explain Two phase locking and its types | 6 | CO4 |
| **36** | Define wait-Die & wound-wait. | 4 | CO4 |
| **37** | Explain deadlock with suitable example. | 4 | CO4 |
| **Unit 6 : Database Security** | | | |
| **38** | Explain cryptography techniques to secure data. | 6 | CO4 |
| **39** | Explain SQL Injection | 3 | CO4 |
| **40** | Explain DAC, MAC RBAC models in detail. | 6 | CO4 |
| **Unit 7 : SQL and PL/SQL Concepts** | | | |
| **41** | Write SQL statements (Query) for following tables:<br>T1(rollno, stuname, age, city, branchcode)<br>T2(branchcode, branchname)<br>1. Retrieve students' details whose branchcode is 5.<br>2. Find an average age of all students.<br>3. Add a new branch in the T2 table. | 6 | CO5 |

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| | 4. Display rollno, stuname and age of students whose city is Chennai.<br>5. Change the age of the student to 20 whose rollno is 1.<br>6. Delete student details whose age is 18.<br>7. Retrieve branch information in descending order. | | |
| **42** | Describe GRANT and REVOKE commands | 4 | CO5 |
| **43** | Describe ROLLBACK and COMMIT commands | 4 | CO5 |
| **44** | List and explain aggregation functions with suitable example | 6 | CO5 |
| **45** | Write a short note on the cursor. | 4 | CO5 |
| **46** | Explain Trigger with proper example | 6 | CO5 |
| **47** | Explain stored procedures with proper examples. | 4 | CO5 |
| **48** | Write a PL/SQL code to print sum of the even numbers between 1 to 100 | 6 | CO5 |

**Course Coordinator** **Head of Department**