**UNIT I**

1. Identify various components in client/server architecture,3 tier architecture for DBMS.
2. Demonstrate various DDL commands with relevant examples.
3. Demonstrate DML commands with relevant examples.
4. Explain three schema architecture in DBMS.
5. Discuss the characteristics of Database approach?
6. Compare dbms vs file system
7. Explain in detail about data models?
8. Write a short notes on Instance and schema?
9. Write any three database applications with their functionalities.
10. Discuss the classification of DBMS?
11. Define data independence? How do you implement data independence in DBMS? Explain
12. Demonstrate data abstraction implementation in DBMS.
13. Explain the Database system structure with a neat sketch.

**UNIT II**

1. Explain Relational Model with a suitable example?
2. Explain the importance of null values.
3. Define Super key, Candidate key, Primary key and foreign key with suitable examples.
4. Discuss domain constraints and key constraints?
5. Explain various Datetime, Numeric and String conversion functions.
6. What are the data types in SQL.
7. Explain Select Clause with an example.
8. Define logical and arithmetic operators with an example.

**UNIT III**

1. Demonstrate generalization and aggregation by using E-R diagram
2. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.
3. Construct an E-R diagram for banking system.
4. Construct an E-R diagram for library management system
5. Construct an E-R diagram for airline reservation system
6. Write the additional features of E/R Model
7. Write a short note on following with suitable examples?

Entity

Attribute

Relationship

Entity Set

1. What is attribute and types of attributes in ER model.
2. Explain various types of Joins available in SQL with examples
3. How would you use the operators IN, EXISTS, UNIQUE, ANY and ALL in writing nested queries? Why are they useful? Explain with an example.
4. Explain correlated queries with examples.
5. Define group by, having and order by with an example.
6. What are the aggregate operators.

**UNIT IV**

1. Describe 1NF and 2NF with an example.
2. Elaborate the properties of decomposition?
3. Illustrate 3NF,4NF with a suitable example?
4. Explain BCNF,5NF with a suitable example?
5. Write short notes on Normalization and explain why it is needed?
6. Define surrogate key
7. Define functional dependency? What are types of functional dependencies?
8. Explain attribute closure and closure of functional dependency with an example.

**UNIT V**

1. Discuss about ACID properties?
2. Discuss the issues in handling concurrent transactions.
3. Discuss about serializability and recoverability.
4. Define transaction? What are the various states of transaction?
5. Explain Conflict Serializability and view Serializablility with an example.
6. Discuss ARIES Algorithm.
7. List out the failure classification.
8. Elaborate hash based indexing and tree based indexing.
9. Compare Primary Index with Secondary Index.
10. Demonstrate the implementation of B trees.
11. What are the benefits of using dynamic indexing? Explain in detail B+ tree file organization.
12. Explain ISAM with an example.
13. Define indexing? What is clustered and unclustered indexes?