Unit 1

1. Define Database. List and explain the applications of Database
2. Explain the ER Model in details with an example
3. Define and Differentiate between Super Key, Candidate Key and Primary Key. Give appropriate example
4. List different types of users in Database environment. Explain the role played by each of the listed users
5. Explain the ER Model in details with an example

Unit 3

1. List and explain aggregate functions of SQL with appropriate examples
2. Explain the following SQL constructs with examples: (1) order by, (2) group by, (3) having, (4) as, (5) in
3. Consider the following Database design
   Customer (cid, custname, custstreet, custcity)
   Account (accno, branchname,balance)
   Loan (loanno, branchname, amount)Borrower (cid, loanno)
   Branch (branchname, branchcity, asset) Depositor (cid, accno)

   a. **Solve the following queries in SQL**

      i. Display the name of customers who have both account and loan at the bank.
      ii. Update amount of loan to 10000 where loan number is "L-101".
      iii. Change the column name custcity to ccity.

      State and explain various classes of failure in database system. Find all customers who an account but no loan at bank.
4. List and explain the types of Join in SQL

Unit 4

1. Define the terms Primary Index and Secondary Index. Differentiate between them on basis of the Evaluation Criteria for indices
2. When does a collision occur in hashing? Illustrate various collision resolution techniques.
3. Illustrate Multiple Key Access with appropriate example.

Unit 5

1. List and explain the variants of Two Phase Lock Protocol
2. Explain with appropriate example the following terms
   a. Recoverable Schedules
   b. Cascadeless Schedules
3. Draw and explain the Transaction State Diagram

Unit 6

1. Compare Deferred Database Modification and Immediate Database Modification
2. State and explain various classes of failure in database system

3. Elaborate the Immediate Database Modification with its Recovery mechanism
4. Explain the purpose of Checkpoint mechanism. Explain the steps for performing a checkpoint.