Unit -1

1) What are the advantages of DBMS over File System?
2) Explain the 3 levels of Data Abstraction.
3) Write about Database Applications
4) What is view of Data, Database Instance and Schema?
5) What is a data model? What are the different data models? Explain E-R model and relation model briefly.
6) Explain database users, DBA and functions of a DBA.
7) What are Database Languages and list the DDL and DML statements with Example.
8) Explain Database Architecture or structure in detail.
9) Explain the differences between DBMS and File system.

Unit -2

1. What is Entity set, Relationship set and degree of relationship set with example.
2. What are constraints in ER Modelling and explain them with examples.
3. What are strong and weak entity sets and relate them with appropriate example.
4. Explain various attributes with representation and example.
5. Explain the concept of Specialization, Generalization and Aggregation with examples.
6. Discuss about the design issues in ER Modelling.
7. Create the ER Diagram for Banking Enterprise.
8. What is Relational Model and explain relation schema and instance with an example.
9. What are integrity constraints over relations and explain referential integrity constraint with example.
10. Construct an Entity-Relationship diagram for a online shopping systems such as Jabong/Flipkart. Quote your assumptions and list the requirements considered by you for conceptual database design for the above system.
11. Create a table with employee details like eno, ename, bdate, address, dno, age, phone number. List the name, eno, dname and phone number of the employee who are also the managers of the respective departments.
12. Explain the three levels of abstraction.
13. What are integrity constraints, define the terms Primary Key, Foreign Key constrains and how these are expressed in SQL.

Unit- 3

1. Consider the following schema to write queries in relational Algebra:
    a. Sailor(sid, sname, age, rating)
    b. Boats(bid, bname, bcolor)
    c. Reserves(sid,bid,day)
        I. Find the boats reserved by sailor with id 567.
        II. Find the names of the sailors who reserved 'red' boats.
        III. Find the boats which have at least two reservations by different sailors.
2. With a suitable example explain division operation in relational algebra.
3. What is the usage of 'group by' and 'having' clauses in SQL?
4. Discuss in detail about the properties of relation algebra.
5. Discuss about Tuple relation calculus.
6. Discuss about Domain Relation calculus
7. How we can convert relationship sets with key constraints into tables? Explain.
8. Explain Set Operators in SQL with Example.
9. Write short notes on difference, union, rename and Cartesian product operations in relational algebra.
10. Define the terms Primary Key, Foreign Key constraints and how these are expressed in SQL
11. Explain the Fundamental Operations of Relational Algebra with Examples.
12. Explain Set Operators in SQL with Example.
13. Explain Aggregate functions in SQL with examples.
14. Explain the following operators in SQL with examples.
    a. IN b. EXISTS c. UNION d. INTERSECT
15. How we can translate E-R diagram with aggregation? Explain.
16. Explain DML statements and how they are expressed in SQL with example.
17. Explain DDL statements and how they are expressed in SQL with example.
18. Let R =(ABC) and S= (DEF) let r(s) and s(s) both relations on schemas R and S. then give the expression for Tuple Relation calculus that is equivalent to each of the following.

    i) $\sigma_{B=19}(r)$ ii) $\prod_{A,F,}(\sigma_{C=D}(r \times s))$ iii) $r \cap s$

19. Consider the following schema to write queries in Relation Algebra:
    a. Sailor (sid, sname, age, rating)
    b. Boats (bid, bname, bcolor)
    c. Reserves (sid,bid,day)
        i. Construct the relational algebra expression for the following:
        ii. Find names of sailors who have reserved a red boat
        iii. Find the colors of boats reserved by Lubber
        iv. Find the names of sailors who have reserved a red and a green boat.
        v. Find the names of sailors who have reserved a red or a green boat.