1. Explain decomposition using multivalued dependencies.
2. Explain in detail the design issues in the E-R model. How do extended E-R features help overcome some of these issues?
3. Describe weak entity sets with example and their representation in E-R diagrams.
4. Explain specialization and generalization with diagrams and examples. How are they useful in database modeling?
5. Describe the features of a good relational database design.
6. What is normalization? Explain all its types with suitable examples.
7. Discuss functional dependency theory and its role in relational design.
8. Explain decomposition using functional dependencies. How does it help in achieving normalization?
9. What is multivalued dependency? How do we use it for decomposition? Give an example.
10. Explain the different types of physical storage media used in databases. How do they vary in terms of speed, cost, and capacity?
11. Describe the various RAID levels and their advantages and disadvantages.
12. Discuss the different types of file organization in databases. What are the advantages and disadvantages of each?
13. Compare fixed-length and variable-length records in terms of their structure, storage efficiency, and access time.
14. Discuss different record organization methods and their impact on performance.
15. Explain the concept of indexing in databases and compare primary and secondary indexing.
16. Describe the structure and advantages of B+ Trees in database indexing.
17. Explain the structure and operations of B-Trees. How are B-Trees used in indexing?
18. Explain static hashing and its limitations in handling dynamic data
19. Explain dynamic hashing and how it resolves the limitations of static hashing.
20. Explain the query processing steps in a database system. What are the common measures used to estimate query cost?
21. Describe the selection operation in query processing and the methods used to improve its efficiency.
22. What is sorting, and why is it important in query processing? Describe an external sorting algorithm.
23. Explain different types of join operations and their performance
24. How are relational expressions evaluated? What are the factors influencing the choice of evaluation plan?
25. Explain the Transaction Concept, its States, and Implementation in DBMS.
26. Define Serializability and Explain Concurrency Control with Lock-based Protocols.
27. Explain Recovery System, Failure Classification, and Storage Structure.
28. Discuss Log-based Recovery, Buffer Management, and Recovery with Concurrent Transactions.
29. Explain Failure with Loss of Non-Volatile Storage and Role of Remote Backup Systems.