Jaipur Engineering College and Research Centre

Department of Computer Science and Engineering (Artificial Intelligence)

Course: B. Tech

Session: 2024-25

Subject: DBMS

Semester: 4th

Name of Faculty: Ruchika Solanki

1. Compare and contrast a File System and a Database Management System (DBMS). What are the advantages of using a DBMS over a traditional file system?
2. How is data described and stored in a DBMS? Discuss the role of schemas and tables in this process.
3. What is the Entity-Relationship (ER) model, and why is it important in database design?
4. Explain the concepts of Entities, Attributes, and Entity Sets in the context of the ER model.
5. What are Relationships and Relationship Sets in the ER model? Provide an example of how they can be used in database design.
6. Discuss the key constraints of the ER model: Key Constraints, Participation Constraints, and how they impact database design.
7. What are Weak Entities in the ER model? How do they differ from regular entities, and what is the significance of identifying them?
8. Explain the concept of Class Hierarchies in the ER model. How are they useful in organizing related entities?
9. What is Aggregation in the ER model, and how does it help in simplifying complex relationships between entities?
10. How does the ER model handle the distinction between an Entity and an Attribute? Provide an example.
11. Explain the difference between an Entity and a Relationship in the ER model. Provide examples for both.
12. What are Binary and Ternary Relationships in the ER model? How do they differ, and when would you use each?
13. How does Aggregation differ from a Ternary Relationship in the ER model? Provide an example to illustrate the difference.

14. Discuss how a conceptual database design might look for a large enterprise. What are the main factors to consider during this process?
15. Explain the concept of Functional Dependencies. How are they used to refine database schemas and ensure data integrity?
16. What is Boyce-Codd Normal Form (BCNF), and how does it differ from the standard Third Normal Form (3NF)?
17. Explain Third Normal Form (3NF) and why it is commonly used in database normalization.
18. What is the process of normalization, and how does it help in eliminating redundancy in relational databases?
19. What is the process of Decomposition into 3-NF, and what are the benefits of this approach?
20. Describe a scenario where a database design may fail to meet BCNF or 3NF. How would you address such issues?