

QUESTION BANK

Unit 1

Q1. Define the following terms:

Domain, attribute, Relation Schema, Degree of a Relation, Relational Database Schema, Relational Database State.

Q2. Justify the following statements:

1. Handling NULL values is difficult.
2. Relation must have a key.
3. Weak entities do not have their own key attributes.

Q3. Why tuples in a relation not ordered?

Q4. Why duplicate tuples not allowed in a relation?

Q5. Differentiate between a key and a superkey.

Q6. Why do we designate one of the candidate keys of a relation to be the primary key?

Q7. Discuss the characteristics of relations that make it different from ordinary tables and files.

Q8. Discuss the various reasons that lead to the occurrence of NULL values in relations.

Q9. Discuss the entity integrity and referential integrity constraints . Why is each considered important?

Q10. Discuss various types of update operations on a relation.

Q11. Define foreign key. What is this concept used for?

Q12. What is transaction? How does it differ from an update?

Unit 2

Q13. Differentiate between RDBMS and OODBMS.

Q14. List the advantages of the object-oriented database approach for DBM?

Q15. What is an object identifier? Explain with an example. What are its advantages and disadvantages?

Q16. What are the primary characteristics should an OID possess?

Q17. Explain how OID differs from primary key and tuple identifier in the relational model.

Q18. Explain the following terms in context of OODBMS: method, signature, message, collection, extent.

Q19. What is the difference between persistent and transient objects? How is persistence handled in OO database systems.

Q20. How do regular inheritance, multiple inheritance and selective inheritance differ?

Q21. Discuss the concept of polymorphism/operator overloading.

Q22. Differentiate between structured and unstructured complex objects.

Q23. What is versioning? Why is it important? What is the difference between configurations and versions?

Q24. Define the following terms:

Portability, interoperability, object model, object definition language, object query language, atomic object.

Q25. What is the function of the object definition language and the object manipulation language?

Q26. Show the relationship between the ODMG group by, having and partition statements and the corresponding grouping and aggregation facility in SQL. Give an example to illustrate that.

Q27. Describe the built-in structural literals of the ODMG Object Model and the operation of each.

Q28. What are the differences and similarities of EXTENDS and interface “:” inheritance?

Q29. What is meant by the type orthogonality of OQL?

Q30. Discuss general principles behind the C++ binding of the ODMG standard.

Q31. What are the main differences between designing a relational database and an object database?

Q32. Why can ODL not be considered a full programming language?

Q33. List the object relational features included in SQL-99? Give an example with syntax.

Q34. What are the rules associated with inheritance and overloading of function implementation?

Q35. What is the nested relational model? Illustrate an application where it is useful.

Unit 3

Q36. What are the differences between row-level and statement-level active rules?

Q37. Discuss some applications of active databases.

Q38. What are the differences between immediate, deferred, and detached execution of active rule actions?

Q39. With an example, illustrate how active rules can be specified?

Q40. Discuss how time is represented in temporal databases.

Q41. Describe how the insert, delete and update commands should be implemented on a transaction time relation.

Q42. Differentiate between tuple versioning and attribute versioning.

Q43. What are the different types of multimedia sources?

Q44. Describe the concept of deductive databases.

Q45. How do spatial databases differ from regular databases? Discuss different categories of spatial queries.

Q46. Where is the time series data used? Give an example.

Unit 4

Q47. Discuss the motivation behind parallel and distributed databases.

Q48. Differentiate between pipelined parallelism and data portioned parallelism.

Q49. Discuss the following techniques for partitioning data: round-robin, hash and range.

Q50. Explain how existing code can be parallelized by introducing split and merge operations.

Q51. What do we need to consider in optimizing queries for parallel execution?

Q52. Describe a naming scheme that supports distributed data independence.

Q53. Describe the voting and read-any write-all approaches to synchronous replication.

Q54. Summarize peer-to-peer and primary site approaches to asynchronous replication.

Q55. Discuss deadlock detection in a distributed database.

Q56. Why is recovery in a distributed DBMS more complicated than in a centralized system?

Q57. What is commit protocol and why is it required in a distributed database?

Unit 5

Q58. What are decision support applications? Discuss the relation of complex SQL queries, OLAP, data mining and data warehousing.

Q59. Describe multidimensional data model. Explain the difference between measures and dimensions.

Q60. Why are views important in decision support environments? How are views related to data warehousing and OLAP?

Q61. How can views be maintained incrementally? Discuss all the relational algebra operators and aggregation.

Q62. Discuss the choice of an appropriate maintenance policy for when to refresh a view.

Q63. What is the role of data mining in KDD process?

Q64. What is apriori property? Describe an algorithm for finding frequent itemsets.

Q65. How are iceberg queries related to frequent itemsets?

Q66. What is an association rule? Differentiate between support and confidence of a rule?

Q67. What is a sequential pattern? How can we compute sequential pattern?

Q68. Can we use association rules for prediction?

Q69. What is the difference between Bayesian networks and Association rule?

Q70. Give examples of classification and regression rules.

Q71. What are the components of a decision tree? How are decision trees constructed?

Q72. What is clustering? How can the distance between two sequences be defined?

Q73. Describe an incremental algorithm for computing frequent itemset..

Some interesting exercises will be done in the class while doing various concepts of advanced databases.