1. What is a tuple in a relational data model?
a) A column in a table
b) A row in a table
c) A unique identifier in a table
d) A combination of columns in a table

Answer: b) A row in a table
Explanation: In a relational data model, a tuple refers to a single row in a table, containing a specific instance of data.

2. What is the purpose of a domain in a relational data model?
a) It defines the set of values that a column can hold
b) It represents the primary key of a table
c) It defines the relationships between tables
d) It specifies the data type of a column

Answer: a) It defines the set of values that a column can hold
Explanation: A domain defines the permissible values for a particular attribute or column in a database table.

3. Which term refers to the collection of attributes that uniquely identifies a tuple in a relation?
a) Foreign key
b) Primary key
c) Candidate key
d) Composite key

Answer: b) Primary key
Explanation: The primary key is a set of one or more attributes whose values uniquely identify each tuple in a relation.

4. What is referential integrity in a relational database?
a) Ensuring that each attribute in a relation has a unique value
b) Enforcing consistency between related tables by requiring that foreign key values match primary key values
c) Restricting the type of values that can be stored in a column
d) Preventing unauthorized access to the database

Answer: b) Enforcing consistency between related tables by requiring that foreign key values match primary key values
Explanation: Referential integrity ensures that relationships between tables remain consistent by enforcing foreign key constraints.

5. What is the purpose of indexing in a relational database?
a) To enforce data integrity constraints
b) To optimize query performance by facilitating faster data retrieval
c) To define the structure of a database schema
d) To automate routine database maintenance tasks

Answer: b) To optimize query performance by facilitating faster data retrieval
Explanation: Indexing allows for faster retrieval of data by creating a sorted structure that enables efficient lookup of values.

6. Which relational algebra operation is used to combine rows from two relations based on a

related column between them?
a) Select
b) Project
c) Join
d) Divide

Answer: c) Join
Explanation: The join operation combines rows from two relations based on a related column between them.

7. What is the purpose of triggers in a relational database management system?
a) To enforce data integrity constraints
b) To optimize query performance
c) To automate actions in response to specified database events
d) To define the structure of database schemas

Answer: c) To automate actions in response to specified database events
Explanation: Triggers are used to automatically execute actions in response to certain database events, such as INSERT, UPDATE, or DELETE operations.

8. Which component of a relational database schema defines the structure of the database, including tables, columns, and data types?
a) Index
b) Trigger
c) Integrity constraint
d) Data definition language (DDL)

Answer: d) Data definition language (DDL)
Explanation: DDL is used to define the structure of the database, including creating and modifying tables, specifying columns, and defining data types.

9. In relational calculus, which type is focused on specifying the desired properties of the result without specifying the method for obtaining it?
a) Tuple-oriented
b) Domain-oriented
c) Extension
d) Intension

Answer: d) Intension
Explanation: In relational calculus, intensional queries specify the properties of the desired result without specifying the method for obtaining it.

10. Which relational algebra operation is used to select rows from a relation that satisfy a specified condition?
a) Project
b) Join
c) Divide
d) Select

Answer: d) Select
Explanation: The select operation retrieves rows from a relation that satisfy a specified condition or predicate.

11. What does SQL-DML stand for?

a) Structured Query Language – Data Management Language
b) Structured Query Language – Data Definition Language
c) Structured Query Language – Data Manipulation Language
d) Structured Query Language – Database Management Language

Answer: c) Structured Query Language – Data Manipulation Language
Explanation: SQL-DML refers to the part of SQL used for manipulating data in a relational database, including operations like INSERT, UPDATE, DELETE, and SELECT.

12. Which type of integrity constraint ensures that the values stored in a column are unique across all rows in a table?
a) Primary key constraint
b) Foreign key constraint
c) Unique constraint
d) Check constraint

Answer: c) Unique constraint
Explanation: A unique constraint ensures that the values in a column (or a group of columns) are unique across all rows in a table.

13. Which relational algebra operation is used to combine the results of two queries and eliminate duplicates?
a) Project
b) Union
c) Intersect
d) Difference

Answer: b) Union
Explanation: The union operation combines the results of two queries and eliminates duplicate rows.

14. In the context of relational databases, what does the term “schema” refer to?
a) A collection of data stored in a database
b) A set of rules that defines the structure and constraints of the database
c) A diagram that illustrates the relationships between tables in a database
d) A formal description of the organization of data in a database

Answer: b) A set of rules that defines the structure and constraints of the database
Explanation: A schema defines the structure of the database, including tables, columns, data types, and constraints.

15. Which relational algebra operation is used to remove rows from one relation that appear in another relation?
a) Project
b) Join
c) Divide
d) Difference

Answer: d) Difference
Explanation: The difference operation removes rows from one relation that appear in another relation.

16. What is the purpose of an assertion in a relational database?
a) To enforce referential integrity between related tables

b) To define the structure of database schemas
c) To specify conditions that must be true for the database to be in a consistent state
d) To automate actions in response to specified database events

Answer: c) To specify conditions that must be true for the database to be in a consistent state
Explanation: Assertions specify conditions that must be true for the database to be considered consistent, and they are used to enforce business rules and integrity constraints.

17. Which type of relational calculus focuses on describing what data to retrieve rather than how to retrieve it?
a) Tuple-oriented
b) Domain-oriented
c) Extension
d) Intension

Answer: a) Tuple-oriented
Explanation: Tuple-oriented relational calculus focuses on describing the desired properties of the result without specifying the method for obtaining it.

18. What does SQL-DDL stand for?
a) Structured Query Language – Data Definition Language
b) Structured Query Language – Data Manipulation Language
c) Structured Query Language – Database Definition Language
d) Structured Query Language – Database Manipulation Language

Answer: a) Structured Query Language – Data Definition Language
Explanation: SQL-DDL is used for defining the structure of a database, including creating and

modifying database objects like tables, indexes, and constraints.

19. Which relational algebra operation is used to select specific columns from a relation?
a) Project
b) Join
c) Divide
d) Union

Answer: a) Project
Explanation: The project operation selects specific columns from a relation while discarding the others.

20. In a relational database, what does the term “integrity constraint” refer to?
a) A rule that ensures data consistency and accuracy
b) A mechanism for optimizing query performance
c) A type of data manipulation operation
d) A function for retrieving data from the database

Answer: a) A rule that ensures data consistency and accuracy
Explanation: Integrity constraints are rules enforced by the database management system to ensure the accuracy and consistency of data.

21. Which SQL keyword is used to define a new table in a database?
a) ALTER
b) CREATE
c) INSERT
d) SELECT

Answer: b) CREATE
Explanation: The CREATE keyword is used in SQL to define new database objects, including tables, indexes, and views.

22. Which relational algebra operation is used to combine rows from two relations and retain only the rows that appear in both relations?
a) Join
b) Union
c) Intersect
d) Difference

Answer: c) Intersect
Explanation: The intersect operation combines rows from two relations and retains only the rows that appear in both relations.

23. What is the purpose of a foreign key in a relational database?
a) To enforce data type constraints
b) To enforce referential integrity between related tables
c) To define the primary key of a table
d) To optimize query performance

Answer: b) To enforce referential integrity between related tables
Explanation: A foreign key establishes a relationship between two tables by enforcing referential integrity, ensuring that values in one table match values in another table's primary key.

24. Which SQL operation is used to add new rows of data to a table?

a) INSERT
b) UPDATE
c) DELETE
d) SELECT

Answer: a) INSERT
Explanation: The INSERT operation is used to add new rows of data to a table in a relational database.

25. What is the purpose of a primary key in a relational database table?
a) To enforce uniqueness of values across multiple columns
b) To establish relationships between tables
c) To optimize query performance
d) To uniquely identify each row in the table

Answer: d) To uniquely identify each row in the table
Explanation: The primary key uniquely identifies each row in a table, ensuring that no two rows have the same key value.

26. Which SQL keyword is used to remove rows of data from a table?
a) ALTER
b) DELETE
c) DROP
d) REMOVE

Answer: b) DELETE
Explanation: The DELETE keyword is used to remove rows of data from a table in a relational

database.

27. In relational calculus, which type focuses on specifying the method for obtaining the desired result?
a) Tuple-oriented
b) Domain-oriented
c) Extension
d) Intension

Answer: b) Domain-oriented
Explanation: Domain-oriented relational calculus focuses on specifying the method for obtaining the desired result, including conditions and constraints.

28. What does the term “extension” refer to in relational calculus?
a) The desired properties of the result
b) The method for obtaining the result
c) The actual set of tuples that satisfies the conditions
d) The set of attributes involved in the query

Answer: c) The actual set of tuples that satisfies the conditions
Explanation: Extension in relational calculus refers to the actual set of tuples that satisfy the conditions specified in the query.

29. Which SQL operation is used to modify existing data in a table?
a) INSERT
b) UPDATE
c) DELETE

d) ALTER

Answer: b) UPDATE
Explanation: The UPDATE operation is used to modify existing data in a table in a relational database.

30. What does the term “extension” refer to in relational calculus?
a) The desired properties of the result
b) The method for obtaining the result
c) The actual set of tuples that satisfies the conditions
d) The set of attributes involved in the query

Answer: c) The actual set of tuples that satisfies the conditions
Explanation: Extension in relational calculus refers to the actual set of tuples that satisfy the conditions specified in the query.

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