TABLEAU

Q.1 Why Tableau? How does Tableau compare to other BI tools?
Ans: Tableau is a popular business intelligence and data visualization tool that offers several advantages over other BI tools like user friendly interface, powerful data visualization capabilities, data blending and integration, live data connections, collaboration and sharing, advanced analytics etc. Compared to other BI tools, Tableau is often praised for its ease of use, robust visualization capabilities, and seamless data integration. But, it may not be as strong as some competitors in areas like advanced data mining, scripting, or enterprise-level governance and security features.

Q.2 What data sources can you connect to? How do you connect to them?
Ans: Tableau supports connecting to a wide range of data sources which are as follows:

1. Relational database: it can connect to various RDMS like Microsoft SQL Server, Oracle, PostgreSQL, MySQL, and IBM DB2
2. Cloud databases: it can connect to various Cloud database like Amazon Redshift, Google BigQuery, and Snowflake
3. Spreadsheets: Tableau can connect directly to Excel, Google Sheets, and other spreadsheet files.
4. Data warehouses: Tableau integrates with various data warehouses like Amazon Redshift, Google BigQuery, Snowflake, and Teradata.
5. File-based data sources: Tableau supports connecting to various file formats like CSV, JSON, Excel, Access databases etc.

To **connect** to these data sources in Tableau need to click on "Connect," select the appropriate data source type, need to provide credentials like connection details like server name, database name, file path, or authentication credentials, depending on the data source type, then need to select the specific tables, views, or data objects that we are looking for, this way we can connect to the data source.

Q.3 What are the join types in Tableau?
Ans: Following are different types of joints used in tableau:

1. Inner join
2. Full outer join
3. Left join
4. Right join
5. Union join

Q.4 How to join data in Tableau?
Ans: first we need to Connect to the data sources that we need to join. Then need to drag and drop both data sources onto the canvas, need click the data source tab and select add relationship. Need to choose the specific join type (inner, left, right, full outer), then click on ok.

Q.5 What is the difference between joining and blending?
Ans: joining integrates data at the row or record level to create one combined dataset, while blending combines data at a higher visualization level while keeping the data sources separate.

Q.6 What is the difference between a live and an extract?
Ans: Live Connection gives us direct access to the original data source, which is always up-to-date, whereas Extract connection is nothing but the local copy of the data, faster but may not be fully up-to-date.

Q.7 What is a dimension vs. a measure?
Ans: **dimensions** are descriptive attributes that categorize your data
For eg: Product Names, Geographic Regions, Date or Time Fields

Measures are numeric, quantitative values that you can perform calculations on.

Eg: Sales Amount, Profit, Units Sold

Q.8 What is a discrete vs. a continuous value?

Ans: **Discrete** data roles are values that are counted as distinct and separate and can only take individual values within a range. Examples: names of customers.

Continuous data roles are used to measure continuous data and can take on any value within a finite or infinite interval.

Examples: unit price, revenue or order quantity

Q.9 What is the Order of Operations?

Ans: the order of operation is parentheses, exponents, division, multiplication, addition and then subtraction .

Q.10 What are parameters, sets, and groups?

Ans: A **parameter** is a workbook variable such as a number, date, or string that can replace a constant value in a calculation, filter, or reference line.

Sets are custom fields that define a subset of data based on some conditions

A **Group** is a set of multiple members combined in a single dimension to create a higher category of the dimension.

Q.11 What is a calculated field?

Ans: Calculated fields can be used to create new dimensions such as segments, or new measures such as ratios or sums. They can be used with any data type, various functions and aggregations, logical operators, making the calculated results virtually limitless.

Q.12 What is a dual axis?

Ans: A dual axis allows you to visualize and compare two different measures (values) on the same chart or graph, but using two separate value axes (vertical axes).

Q.13 What are LOD expressions?

Ans: A **level of detail expression** is used to run complex queries involving many dimensions at the data source level instead of bringing all the data to Tableau interface.

Q.14 What are actions?

Ans: Using **Actions**, we can create navigation between high level details to low level details to support analysis. This navigation can take place between worksheets (or) within dashboard between worksheets (or) between two difference workbooks.

Q.15 How do you restrict access to the data?

Ans: Access to a data can be restricted by using user filter, data source filter and permissions.

Q.16 How do you increase the performance of a slow workbook?

Ans: in order to increase the performance of a slow workbook, we need to

1. Use Extracts instead of live data
2. Filter out unnecessary data
3. Optimize and index data sources
4. Simplify calculations and visualizations
5. Reduce tablet file size

Q.17 Build a chart showing the top five and bottom five sales by customer?

Ans: need to create a calculated field and then need to apply the rank function stating top five and bottom five sales by customer.

Q.18 Find the state with the lowest profit ratio ?
Ans: need to create a visualization and then sort the profit ratio in ascending which will give the lowest value at top.

SQL

Q.1 What are SQL dialects? Give some examples?

Ans: SQL dialects refer to the different flavors or variations of the SQL syntax used by different database management systems. Eg PostgreSQL, MySQL, Oracle SQL etc

Q.2 What are the main applications of SQL?

Ans: the main application of SQL are as follows:

1. Data Definition
2. Data Manipulation
3. Data Retrieval
4. Data Control
5. Data Administration
6. Business Intelligence

Q.3 What is an SQL statement? Give some examples?

Ans: An SQL statement is a command or instruction written in the SQL syntax that is used to interact with a RDBMS.

Eg UPDATE: Modifies existing data in a table

DROP TABLE: Deletes an entire table from the database.

Q.4 What types of SQL commands (or SQL subsets) do you know? Give some examples of common SQL commands of each type?

Ans: Following are types of SQL commands with examples :

Data Definition Language (DDL) - Used to define, modify, and remove database objects such as tables, views, indexes, and constraints.

Examples: CREATE TABLE , ALTER TABLE.

Data Manipulation Language (DML) - Used to insert, update, delete, and retrieve data from database tables.
Examples: INSERT INTO, UPDATE, DELETE FROM

Data Control Language (DCL): Used to control access and permissions to database objects.

Examples: GRANT - Grants privileges to a user or role

REVOKE - Removes privileges from a user or role

Transaction Control Language (TCL): Used to manage transactions in a database. Examples:

COMMIT - Saves the changes made by a transaction

ROLLBACK - Undoes the changes made by a transaction

Data Manipulation Subsets

DML Statements - INSERT, UPDATE, DELETE, and MERGE

Query Statements - SELECT with various clauses like **WHERE**, **ORDER BY**, **GROUP BY**, **HAVING, JOIN**, and subqueries.

Q.5 What is a database? What is DBMS, and what types of DBMS do you know?

Ans: A **database** is an organized collection of structured data that is stored and managed in a way that allows efficient retrieval, manipulation, and maintenance of the data.

A **Database Management System (DBMS)** is a software system that allows users to define, create, maintain, and control access to databases.

Different types of DBMS are :

1. Relational Database Management Systems (RDBMS),
2. NoSQL (Non-relational) Database Management Systems
3. Object-Oriented Database Management Systems (OODBMS)
4. Distributed Database Management Systems (DDBMS)
5. Cloud Database Management Systems

Q.6 What are tables and fields in SQL?

Ans: A **table** is a collection of related data arranged in rows and columns

Fields, also known as columns, are the individual attributes or properties that describe each entry or record in a table.

Q.7 What is an SQL query, and what types of queries do you know?

Ans: An SQL query is a request or command that you give to a database to perform a specific operation or retrieve data. It is written using the sql syntax. Different sqll query are as follows:

1. Select Query
2. Insert Query
3. Update Query
4. Delete Query
5. Join Query

Q.8 What is a subquery? What types of SQL subqueries do you know?

Ans: a **subquery** allows you to query data from one or more tables and use the result in another query.

Q.9 What is a constraint, and why use constraints?What SQL constraints do you know?

Ans: A **constraint** is a rule or condition that is applied to data in a database table to ensure data integrity, accuracy, and consistency.

Eg not null, unique, primary key, foreign key, check, default, index etc

Q.10 What is a join? What types of joins do you know?

Ans: A **join** is a way to combine rows from two or more tables in a database based on a related column between them. Eg inner, outer, left, right, unmatched, left null, right null etc

Q.11 What is a primary key?What is a foreign key?What is a unique key?

Ans: **primary key** constraint is a combination of the NOT NULL and UNIQUE constraints. It identifies each record in a table uniquely and ensures that the primary key values are unique and not null.

foreign key constraint establishes a link between data in two tables, ensuring referential integrity.

unique key constraint ensures that each value in a column (or a combination of columns) is unique and prevents duplicate values.

Q.12 What is an index?What types of indexes do you know?

Ans: An **index** in SQL is a data structure that allows for faster retrieval of data from a database table. It works like an index in a book, pointing to where specific data is located, making it easier and quicker to find.

Eg filtered index, clustered, non clustered, simple, unique etc

Q.13 What is a schema?What is a SQL comment?

Ans: a **schema** is like a folder or directory in a file system, where you can store related files (database objects) together for better organization and management.

a **SQL comment** is like a written note or explanation that you can leave within your SQL code, which doesn't affect the execution of the code itself.

Q.14 What is a SQL operator? What types of SQL operators do you know?

Ans: an **operator** is a symbol or keyword that performs a specific operation on one or more values or expressions.

Eg Arithematic, comparision, logical, special operator etc

Q.15 What is an alias?What is a clause?

Ans: an **alias** is like a nickname that you can give to a table or column to make it easier to refer to in your SQL queries.

A **clause** in SQL is a specific part or component of a SQL statement that performs a particular task or applies certain conditions or logic.

Q.16 What are some common statements used with the SELECT query?

Ans: Eg Where clause, having clause, order by clause, group by clause, distinct clause, case clause etc.

Q.17 How to create a table?How to update a table?How to delete a table from a database?

Ans: we can create a table using **Create** table query,

We can update a table using **Update** table query,

We can delete a table using **Delete** query.

Q.18 How to select common records from two tables?

Ans: By using inner join

Q.19 What are entities? Give some examples.What are relationships? Give some examples.What is NULL value? How is it different from zero or a blank space?

Ans: **Entities** in SQL refer to the tables or objects that store data in a database. They represent real-world objects or concepts, such as customers, products, orders, or employees.

Relationships define how entities (tables) are related to each other based on common data elements. They allow data from multiple tables to be combined and queried together.

Eg : A customer can place multiple orders (one-to-many relationship between Customers and Orders tables)

A **NULL value** in SQL represents a missing or unknown value in a column. It is different from a zero or a blank space, which are actual values.

NULL means the value is missing or unknown, whereas **zero** is an actual numeric value, and a **blank space** is an actual string value with no characters.

Q.20 What is a function in SQL, and why use functions?What types of SQL functions do you know?What aggregate functions do you know?What scalar functions do you know?What are case manipulation functions? Give some examples. What are character manipulation functions? Give some examples?

Ans: A **function** in SQL is a pre-defined or user-defined routine that performs a specific operation or calculation on one or more input values and returns a result.

We use functions to perform calculations or transformations on data, manipulate strings or dates, apply aggregate operations on groups of rows etc.

Different types of sql functions are aggregate, scalar, date and time, numeric, case and character manipulation, etc.

case manipulation functions are used to manipulate the case (uppercase/lowercase) of string values.

Examples: UPPER(), LOWER()

character manipulation functions are used to manipulate or extract characters from string values.

Examples: LEN(), TRIM(), CONCAT, SUBSTR(), REPLACE()