## SQL  Questions for Electric Vehicle Population Data:

### Basic Queries (SELECT, WHERE, ORDER BY, DISTINCT)

1. Retrieve all records from the dataset where the **State** is 'Washington'.
2. List distinct **Electric Vehicle Types** available in the dataset.
3. Get all vehicles with an **Electric Range** greater than 200 miles, sorted in descending order.
4. Find all vehicles with a **Base MSRP** between **$30,000 and $60,000**.

### Aggregation & Grouping (COUNT, SUM, AVG, GROUP BY, HAVING)

5. Count the number of electric vehicles for each **Make**.
6. Find the **average Electric Range** for each **Model Year**.
7. Get the total number of electric vehicles available in each **City**, showing only cities with more than 100 vehicles.
8. Find the **total Base MSRP** of all electric vehicles in each **Legislative District**, filtering districts where the total is above **$10 million**.

### Joins & Subqueries

9. Assume you have a separate table **Electric_Utility_Providers** with columns (**Utility_ID, Electric_Utility, State**). Write a query to fetch all electric vehicles along with their **Electric Utility Provider's State**.
10. Retrieve all vehicle models that have the highest **Electric Range** in each **State** using a subquery.
11. Find the **Make and Model** of vehicles whose **Base MSRP** is higher than the **average Base MSRP** of all vehicles.

### String & Date Functions

12. Extract the first **3 characters** from the **Postal Code** of each vehicle and rename it as Postal_Region.
13. Retrieve all vehicles where the **Model Name** contains the word 'Tesla' (case-insensitive).

### CASE, IF, and Conditional Logic

14. Create a new column Price_Category:

- **'Low'** if Base MSRP < 30,000
- **'Mid'** if Base MSRP is between 30,000 and 60,000

- **'High'** if Base MSRP > 60,000

### Updating & Deleting Data

15. Update all records where the **State** is NULL by replacing it with 'Unknown'.
16. Delete all records where **Base MSRP** is NULL or **Electric Range** is NULL.

### Indexes & Performance Optimization

17. Create an **index** on the VIN column to improve query performance.

### Advanced Queries (CTE, Window Functions)

18. Use a **Common Table Expression (CTE)** to list all vehicles along with the **rank** of their **Electric Range** within their **Make**.
19. Use a **Window Function** to calculate the running total of electric vehicles for each **Model Year**.

### Complex Query (Nested Query & UNION)

20. Retrieve the **top 5 most expensive vehicles** and **top 5 least expensive vehicles** (based on Base MSRP) in a single query using **UNION**.