✅ SQL Interview Questions and Answers Top (1–50)

1. What is SQL?

Answer: SQL (Structured Query Language) is used to manage and manipulate relational databases.

2. What are the types of SQL statements?

Answer:

- DDL (Data Definition Language)
- DML (Data Manipulation Language)
- DCL (Data Control Language)
- TCL (Transaction Control Language)

3. What is a Primary Key?

Answer: A unique identifier for each record in a table. It cannot be NULL.

4. What is a Foreign Key?

Answer: A key that links one table to another using the primary key.

5. What is a JOIN in SQL?

Answer: It combines rows from two or more tables based on a related column.

6. Types of JOINs?

Answer: INNER, LEFT, RIGHT, FULL OUTER, SELF JOIN.

7. What is the difference between DELETE and TRUNCATE?

Answer: DELETE is logged and can be rolled back. TRUNCATE is faster, cannot be rolled back.

8. What is the use of GROUP BY?

Answer: It groups rows with the same values in specified columns.

9. What is HAVING clause?

Answer: Used to filter records after grouping (unlike WHERE).

10. What is a subquery?

Answer: A query nested inside another SQL query.

11. What is normalization?

Answer: Process of organizing data to reduce redundancy.

12. What are the types of normalization?

Answer: 1NF, 2NF, 3NF, BCNF.

13. What is denormalization?

Answer: Combining normalized tables to improve performance.

14. What is an index?

Answer: A performance-tuning method to retrieve records faster.

15. What is the difference between clustered and non-clustered index?

Answer: Clustered index sorts the actual data, non-clustered creates a separate index structure.

16. What is a constraint?

Answer: Rules enforced on data like NOT NULL, UNIQUE, PRIMARY KEY, etc.

17. What is the difference between UNIQUE and PRIMARY KEY?

Answer: Both enforce uniqueness, but PRIMARY KEY also prevents NULLs.

18. What is an alias in SQL?

Answer: A temporary name for a column or table.

19. What is the BETWEEN operator?

Answer: Filters values within a range.

20. What does the LIKE operator do?

Answer: Used in WHERE clause to search for a specified pattern.

21. How do you sort records in SQL?

Answer: Using `ORDER BY` clause.

22. What is the IN clause?

Answer: Allows multiple values in a WHERE condition.

23. What is NULL in SQL?

Answer: A field with no value.

24. What is COALESCE()?

Answer: Returns the first non-NULL value in a list.

25. What is CASE statement?

Answer: A conditional expression in SQL.

26. What is a view?

Answer: A virtual table based on the result set of an SQL query.

27. What is the difference between a table and a view?

Answer: Table stores data; view is a saved query result.

28. What is a stored procedure?

Answer: A precompiled SQL code that can be reused.

29. What is a trigger?

Answer: A set of actions triggered by DML operations.

30. What is a transaction?

Answer: A sequence of operations performed as a single unit.

31. What are ACID properties?

Answer: Atomicity, Consistency, Isolation, Durability.

32. What is the difference between CHAR and VARCHAR?

Answer: CHAR is fixed-length; VARCHAR is variable-length.

33. What is the difference between RANK and DENSE_RANK?

Answer: RANK leaves gaps; DENSE_RANK does not.

34. What is the LIMIT clause?

Answer: Restricts the number of rows returned.

35. What is the ISNULL() function?

Answer: Replaces NULL with a specified value.

36. What is UNION and UNION ALL?

Answer: UNION removes duplicates; UNION ALL retains them.

37. What is an EXCEPTION in SQL?

Answer: Errors that occur during query execution.

38. How to retrieve current date?

Answer: Use `GETDATE()` in SQL Server or `CURRENT_DATE` in PostgreSQL.

39. What is AUTO_INCREMENT?

Answer: Automatically generates a unique number for a column.

40. What is a correlated subquery?

Answer: A subquery that uses values from the outer query.

41. What is CROSS JOIN?

Answer: Returns the Cartesian product of two tables.

42. What is SELF JOIN?

Answer: A table is joined with itself.

43. What is the EXISTS operator?

Answer: Checks if a subquery returns any rows.

44. What is the purpose of the DISTINCT keyword?

Answer: Removes duplicate rows.

45. What is the ROW_NUMBER() function?

Answer: Assigns a unique row number to each row.

46. How do you rename a column in SQL?

Answer: Using `AS` keyword in `SELECT`, or `ALTER TABLE` to rename permanently.

47. What are temporary tables?

Answer: Tables created for temporary data storage during a session.

48. How to handle errors in SQL Server?

Answer: Using `TRY...CATCH` block.

49. What are scalar functions?

Answer: Functions that return a single value.

50. What are aggregate functions?

Answer: Operate on multiple rows: `SUM()`, `AVG()`, `COUNT()`, `MAX()`, `MIN()`.