Analyx Academy

SQL Interview Questions – Data Analyst & Power BI Developer

🔹 SECTION 1: SQL BASICS (FOUNDATION – VERY COMMON)

1. What is SQL and why is it used?
2. Difference between SQL and MySQL?
3. What are DDL, DML, DCL, TCL commands?
4. Difference between DELETE, TRUNCATE, and DROP?
5. What is a primary key?
6. Difference between primary key and unique key?
7. Can a table have multiple primary keys?
8. What is a foreign key?
9. What is referential integrity?
10. What is a NULL value?
11. Difference between WHERE and HAVING?
12. Difference between DISTINCT and GROUP BY?
13. What is ORDER BY and its default sorting?

14. What is LIMIT / TOP?
15. Difference between CHAR and VARCHAR?

🔹 SECTION 2: JOINS (MOST ASKED – MUST MASTER)

16. What are joins?
17. Types of joins in SQL?
18. Difference between INNER JOIN and LEFT JOIN?
19. Difference between LEFT JOIN and RIGHT JOIN?
20. What is FULL OUTER JOIN?
21. What is CROSS JOIN?
22. What is a self join?
23. When do you use self join?
24. Difference between join and subquery?
25. Can we join more than 2 tables?
26. How do joins impact performance?
27. What happens if join condition is missing?
28. Join vs Union – difference?
29. How do you find unmatched records using joins?
30. *Find customers who placed orders but never received delivery.*

SECTION 3: AGGREGATION & GROUP BY (DAILY USE)

31. What is aggregation?
32. Difference between COUNT(*) and COUNT(column)?
33. Can we use WHERE with aggregate functions?
34. What is HAVING clause?
35. Difference between SUM() and AVG()?
36. What is conditional aggregation?
37. How to calculate department-wise average salary?
38. How to find highest salary per department?
39. How to find departments having more than 10 employees?
40. *Find total sales, total orders, and average order value per month.*

SECTION 4: SUBQUERIES (VERY FREQUENT)

41. What is a subquery?
42. Types of subqueries?
43. Difference between correlated and non-correlated subquery?
44. Can subquery return multiple rows?
45. Where can subqueries be used?
46. Difference between IN and EXISTS?
47. Which is faster: JOIN or subquery?
48. Write a query to find employees earning more than average salary.
49. Find second highest salary using subquery.
50. *Find customers whose total purchase is above average customer spend.*

SECTION 5: WINDOW FUNCTIONS

51. What are window functions?
52. Difference between window function and aggregate function?
53. What is ROW_NUMBER()?
54. Difference between ROW_NUMBER(), RANK(), and DENSE_RANK()?
55. What is PARTITION BY?
56. What is ORDER BY in window function?
57. What is LAG() and LEAD()?
58. Use case of LAG()?
59. Find latest record per user.
60. *Find month-over-month sales growth.*

SECTION 6: DATE & TIME FUNCTIONS (PROJECT QUESTIONS)

61. How do you handle date in SQL?
62. Difference between GETDATE() and CURRENT_DATE?
63. How to extract year, month, day?
64. How to calculate date difference?
65. What is DATEADD()?
66. What is DATEDIFF()?
67. How to filter last 30 days data?
68. How to group data by month?
69. How to find week-on-week growth?
70. *Find users active in last 7 days but inactive before.*

SECTION 7: NULL HANDLING (VERY COMMON TRAPS)

71. How do you handle NULL values?
72. Difference between IS NULL and = NULL?
73. What is COALESCE()?
74. Difference between COALESCE() and ISNULL()?
75. How does NULL affect aggregation?
76. How to replace NULL with 0?
77. How to count NULL values?
78. *Sales column has NULL values – how will you handle it in reports?*

SECTION 9: PERFORMANCE & OPTIMIZATION (2–4 YRS LEVEL)

79. What is indexing?
80. Types of indexes?
81. How does index improve performance?
82. When not to use index?
83. What is execution plan?
84. What is EXPLAIN?
85. Difference between clustered and non-clustered index?
86. How to optimize slow SQL query?
87. What is normalization?
88. What is denormalization?
89. *Query is slow on 10M records – what will you do?*

SECTION 10: POWER BI + SQL (REAL INTERVIEW QUESTIONS)

90. Why SQL is important for Power BI?
91. SQL vs Power BI DAX – when to use what?
92. How do you prepare data for Power BI using SQL?
93. What transformations do you prefer in SQL vs Power BI?
94. How do you create fact and dimension tables?
95. What is star schema?
96. How do you handle incremental data loads?
97. *Should KPI calculation be done in SQL or DAX? Why?*

SECTION 11: SCENARIO-BASED & REAL INTERVIEW QUESTIONS

98. Find duplicate records in a table.
99. Delete duplicate records but keep latest one.
100. Find customers who ordered in Jan but not in Feb.
101. Find top 3 products per category.
102. Find running total of sales.
103. Find nth highest salary.
104. Detect duplicate transactions within 10 minutes.
105. Find customers with increasing month-on-month spend.
106. Identify churned customers.
107. Find first and last transaction per user.
108. Calculate retention rate.
109. Revenue contribution percentage per product.
110. *Design SQL logic for dashboard showing daily, monthly & YTD sales.*