SQL Queries from Basic to Advanced with Example Outputs

1. SELECT — Fetch Data

Example: SELECT * FROM Employee; Output: EmpID | Name | City | Salary | DeptID ---------- 1 | Pooja | Nashik | 50000 | 101 2 | Ananya | Mumbai | 70000 | 102 3 | Atharva | Pune | 40000 | 101 4 | Ajinkya | Mumbai | 65000 | 103 5 | Anushka | Nashik | 30000 | 102 Explanation: Shows all rows and columns from Employee table.

2. SELECT Specific Columns

Example: SELECT Name, City FROM Employee; Output: Name | City ---------- Pooja | Nashik Ananya | Mumbai Atharva | Pune Ajinkya | Mumbai Anushka | Nashik Explanation: Displays only selected columns.

3. WHERE Clause

Example: SELECT * FROM Employee WHERE City = 'Mumbai'; Output: EmpID | Name | City | Salary | DeptID ---------- 2 | Ananya | Mumbai | 70000 | 102 4 | Ajinkya| Mumbai | 65000 | 103 Explanation: Filters rows based on condition.

4. Aggregate Functions

Example: SELECT COUNT(*) AS Total, AVG(Salary) AS AvgSal, MAX(Salary) AS MaxSal, MIN(Salary) AS MinSal FROM Employee; Output: Total | AvgSal | MaxSal | MinSal ---------- 5 | 51000 | 70000 | 30000 Explanation: Performs aggregate operations on Salary.

5. GROUP BY and HAVING

Example: SELECT City, COUNT(*) AS EmpCount, AVG(Salary) AS AvgSalary FROM Employee GROUP BY City HAVING AVG(Salary) > 40000; Output: City | EmpCount | AvgSalary ---------- Mumbai | 2 | 67500 Explanation: Groups records by City and filters grouped results.

6. JOIN

Example: SELECT E.Name, D.DeptName FROM Employee E INNER JOIN Department D ON E.DeptID = D.DeptID; Output: Name | DeptName ---------- Pooja | IT Ananya | HR Atharva | IT Ajinkya | Sales Anushka | HR Explanation: Combines rows from two tables based on matching DeptID.

7. Subquery

Example: SELECT Name, Salary FROM Employee WHERE Salary > (SELECT AVG(Salary) FROM Employee); Output: Name | Salary ---------- Ananya | 70000 Ajinkya | 65000 Explanation: Uses result of one query inside another.

8. CASE Expression

Example: SELECT Name, Salary, CASE WHEN Salary >= 60000 THEN 'High' WHEN Salary BETWEEN 40000 AND 59999 THEN 'Medium' ELSE 'Low' END AS SalaryLevel FROM Employee; Output: Name | Salary | SalaryLevel ---------- Pooja | 50000 | Medium Ananya | 70000 | High Atharva | 40000 | Medium Ajinkya | 65000 | High Anushka | 30000 | Low Explanation: Adds a calculated column based on conditions.

9. Transaction Control

Example: START TRANSACTION; UPDATE Employee SET Salary = Salary + 5000 WHERE City = 'Nashik'; SAVEPOINT S1; DELETE FROM Employee WHERE Salary < 35000; ROLLBACK TO S1; COMMIT; Explanation: Demonstrates transaction with savepoint, rollback, and commit.