### ****Basic Level****

#### ****SQL Topics****

**WHERE Clause**

* 1. What is the purpose of the WHERE clause in SQL?
  2. Write a query to fetch all employees earning more than $3000.

**LIKE**

* 1. How is the LIKE operator used in SQL?
  2. Write a query to find all customers whose names start with 'A'.

**BETWEEN**

* 1. What does the BETWEEN operator do?
  2. Write a query to find products priced between $100 and $500.

**IS NULL / IS NOT NULL**

* 1. What is the difference between IS NULL and IS NOT NULL?
  2. Write a query to fetch all rows from a table where the email column is empty.

**Aggregate Functions**

* 1. What are aggregate functions in SQL? Name a few.
  2. Write a query to calculate the total and average salary of employees.

**ALTER TABLE**

* 1. What is the purpose of the ALTER TABLE command?
  2. How would you add a new column to an existing table?

**UPDATE SET**

* 1. What does the UPDATE statement do?
  2. Write a query to increase the salary of all employees by 10%.

**LIMIT**

* 1. What is the use of the LIMIT clause?
  2. Write a query to fetch the first 5 rows from a table.

**ORDER BY**

* 1. How does the ORDER BY clause work?
  2. Write a query to sort customers by their names in descending order.

**ALIAS**

* 1. What is an alias in SQL?
  2. Write a query to rename the column customer\_name as Name.

**Joins**

* 1. What is an inner join? How is it different from an outer join?
  2. Write a query to fetch customer names and their corresponding orders using a join.

**Group By**

* 1. Why do we use the GROUP BY clause?
  2. Write a query to calculate the total sales grouped by regions.

**Having**

* 1. What is the difference between WHERE and HAVING?
  2. Write a query to filter groups where the total sales exceed $10,000.

**Constraints**

* 1. What are constraints in SQL? Name a few.
  2. How do you add a NOT NULL constraint to a column?

**Union / Union All**

* 1. What is the difference between UNION and UNION ALL?
  2. Write a query to combine results from two tables with and without duplicates.

### ****Moderate Level****

#### ****SQL Topics****

**SQL INDEX**

* 1. What are indexes in SQL?
  2. How do indexes improve query performance?

**SQL STORED PROCEDURE**

* 1. What is a stored procedure?
  2. Write a stored procedure to fetch all employees from a specific department.

**CASE STATEMENT**

* 1. What is the purpose of a CASE statement?
  2. Write a query to categorize employees based on their salary brackets.

**STRING FUNCTIONS**

* 1. What are string functions in SQL? Name a few.
  2. Write a query to reverse a string stored in a column.

**SUBQUERY**

* 1. What is a subquery?
  2. Write a query using a subquery to fetch employees earning more than the department average.

**MASKING**

* 1. What is data masking in SQL?
  2. Write a query to mask all but the last four digits of phone numbers.

**DATE FUNCTION**

* 1. What are SQL date functions?
  2. Write a query to calculate the number of days between two dates.

### ****Advanced Level****

#### ****SQL Topics****

**SQL INDEX**

* 1. What are the differences between clustered and non-clustered indexes?
  2. How would you determine whether an index is being used effectively?

**SQL STORED PROCEDURE**

* 1. How do you handle exceptions in a stored procedure?
  2. Write a procedure to log all queries executed on a specific table.

**CASE STATEMENT**

* 1. How can a CASE statement be used in an ORDER BY clause?
  2. Write a query to dynamically order rows based on a condition.

**STRING FUNCTIONS**

* 1. How can string functions be combined to manipulate data?
  2. Write a query to extract initials from a full name.

**SUBQUERY**

* 1. What are correlated subqueries?
  2. Write a query using a correlated subquery to fetch employees with salaries higher than their manager's.

**MASKING**

* 1. Explain dynamic vs. static masking.
  2. Implement masking to hide sensitive information in a live database environment.

**DATE FUNCTION**

* 1. How do you handle different time zones in SQL?
  2. Write a query to convert a timestamp to a different time zone.

### ****PL/SQL Topics****

#### ****Basic****

**STORED PROCEDURE**

* 1. What is a stored procedure in PL/SQL?
  2. Write a procedure to fetch the details of a specific employee.

**FUNCTIONS**

* 1. What is the difference between a function and a stored procedure in PL/SQL?
  2. Write a function to calculate the factorial of a number.

**CURSOR**

* 1. What is a cursor in PL/SQL?
  2. Write a PL/SQL block to iterate through a cursor and display employee names.

**TRIGGERS**

* 1. What are triggers in PL/SQL?
  2. Write a trigger to update the last modified timestamp for a record when it's updated.

#### ****Moderate****

**STORED PROCEDURE**

* 1. How can you pass parameters to a stored procedure?
  2. Write a stored procedure to calculate bonuses for all employees based on their salary.

**FUNCTIONS**

* 1. Can a function call a procedure?
  2. Write a function to validate whether a given email is in the correct format.

**CURSOR**

* 1. What is the difference between explicit and implicit cursors?
  2. Write a cursor to fetch all orders placed in the last 30 days.

**TRIGGERS**

* 1. How do you handle recursive triggers?
  2. Write a trigger to prevent deletion of records if they have dependencies in another table.

#### ****Advanced****

**STORED PROCEDURE**

* 1. How do you implement error handling in stored procedures?
  2. Write a procedure to archive old records from a table into a history table.

**FUNCTIONS**

* 1. How do you optimize PL/SQL functions for performance?
  2. Write a function to return the nth Fibonacci number.

**CURSOR**

* 1. How do you handle cursor exceptions?
  2. Write a PL/SQL block to use a cursor with a FOR UPDATE clause to update data.

**TRIGGERS**

* 1. How do you manage triggers for audit logging?
  2. Write a trigger to log every INSERT operation on a specific table into an audit table.