Q1: "What is SQL?"
Ans: "SQL (Structured Query Language) is a standard programming language used to manage, manipulate, and query relational databases."

Q2: "What are SQL dialects? Give some examples."
Ans: "SQL dialects are variations of SQL used by different database systems with minor syntax differences. Examples include MySQL, PostgreSQL, Oracle SQL, SQL Server (T-SQL), and SQLite."

Q3: "What are the main applications of SQL?"
Ans: "SQL is used for querying databases, inserting, updating, and deleting data, creating and modifying database structures, controlling access, and generating reports."

Q4: "What is an SQL statement? Give some examples."
Ans: "An SQL statement is a command executed in a database. Examples: SELECT * FROM employees;, INSERT INTO students VALUES (1, 'John');, UPDATE products SET price = 200 WHERE id = 3;."

Q5: "What types of SQL commands (or SQL subsets) do you know?"
Ans: "SQL commands are categorized into:

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

Q6: "Give some examples of common SQL commands of each type."
Ans: "Examples:

- **DDL: CREATE, ALTER, DROP**
- **DML: SELECT, INSERT, UPDATE, DELETE**
- **DCL: GRANT, REVOKE**
- **TCL: COMMIT, ROLLBACK, SAVEPOINT"**

Q7: "What are tables and fields in SQL?"
Ans: "A table is a collection of related data organized in rows and columns. Fields (or columns) are the individual data categories in a table, e.g., name, age, salary."

Q8: "What is an SQL query, and what types of queries do you know?"
Ans: "An SQL query is a request to the database to retrieve or manipulate data. Types: SELECT queries, JOIN queries, subqueries, aggregate queries, and conditional queries with WHERE clauses."

Q9: "What is a subquery?"
Ans: "A subquery is a query nested inside another query to provide intermediate results for the main query."

Q10: "What types of SQL subqueries do you know?"
Ans: "Types of subqueries:

- **Single-row subquery**
- **Multiple-row subquery**
- **Correlated subquery**
- **Nested subquery"**

Q11: "What is a constraint, and why use constraints?"
Ans: "A constraint is a rule applied to a table column to enforce data integrity. Constraints ensure accuracy and consistency of data."

Q12: "What SQL constraints do you know?"
Ans: "Common SQL constraints: PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, CHECK, DEFAULT."

Q13: "What is a SQL comment?"
Ans: "A SQL comment is used to include explanatory notes in SQL code. Single-line: -- comment, Multi-line: /* comment */."

Q14: "What types of SQL operators?"
Ans: "SQL operators are used in conditions and expressions:

- **Arithmetic operators: +, -, *, /**
- **Comparison operators: =, !=, <, >, <=, >=**
- **Logical operators: AND, OR, NOT**
- **Bitwise operators: &, |, ^**
- **Other operators: LIKE, IN, BETWEEN, IS NULL"**

Q15: "What is an alias?"
Ans: "An alias is a temporary name given to a table or column in a query using AS to make output more readable. Example: SELECT first_name AS Name FROM employees;."

Q16: "What is a clause?"
Ans: "A clause is a component of an SQL statement that performs a specific function, such as WHERE, FROM, ORDER BY, or GROUP BY."

Q17: "What are some common statements used with the SELECT query?"
Ans: "Common statements used with SELECT include WHERE, ORDER BY, GROUP BY, HAVING, DISTINCT, and JOIN."

Q18: "How to delete a table from a database?"
Ans: "To delete a table, use the DROP TABLE statement. Example: DROP TABLE employees;."

Q19: "How to get the count of records in a table?"
Ans: "Use the COUNT() aggregate function. Example: SELECT COUNT(*) FROM employees;."

Q20: "How to sort records in a table?"
Ans: "Use the ORDER BY clause. Example: SELECT * FROM employees ORDER BY salary DESC;."

Q21: "How to select all columns from a table?"
Ans: "Use the * symbol. Example: SELECT * FROM employees;."

Q22: "How to select common records from two tables?"
Ans: "Use the INTERSECT operator. Example: SELECT column_name FROM table1 INTERSECT SELECT column_name FROM table2;."

Q23: "What is the DISTINCT statement and how do you use it?"
Ans: "DISTINCT removes duplicate values in the result set. Example: SELECT DISTINCT department FROM employees;."

Q24: "What is NULL value? How is it different from zero or a blank space?"
Ans: "NULL represents missing or unknown data. It is different from zero (numeric value) or a blank space (empty string) because it signifies the absence of any value."

Q25: "What are the various types of SQL functions?"
Ans: "Types of SQL functions:

- **Aggregate functions**
- **Scalar functions**
- **String (character) functions**
- **Date/time functions**
- **Conversion functions**
- **Conditional functions (e.g., CASE)"**

Q26: "What are aggregate functions in SQL? Give some examples."
Ans: "Aggregate functions perform calculations on multiple rows to return a single value. Examples: SUM(), AVG(), COUNT(), MIN(), MAX()."

Q27: "What are scalar functions in SQL? Give some examples."
Ans: "Scalar functions operate on a single value and return a single value. Examples: UCASE(), LCASE(), ROUND(), LEN(), NOW()."

Q28: "What are case manipulation functions? Give some examples."
Ans: "Case manipulation functions change the letter case of a string. Examples: UPPER(), LOWER(), INITCAP()."

Q29: "What are character manipulation functions? Give some examples."
Ans: "Character manipulation functions modify or analyze strings. Examples: CONCAT(), SUBSTRING(), TRIM(), REPLACE(), LENGTH()."

Q30: "What is the default data ordering with the ORDER BY statement, and how do you change it?"
Ans: "The default ordering is ascending (ASC). To change it, use DESC for descending order. Example: SELECT * FROM employees ORDER BY salary DESC;."

Q31: "What set operators are used in SQL?"
Ans: "SQL set operators include UNION, UNION ALL, INTERSECT, and EXCEPT (or MINUS in some databases) to combine results from multiple queries."

Q32: "What operator is used in the query for pattern matching?"
Ans: "The LIKE operator is used for pattern matching in SQL. Example: SELECT * FROM employees WHERE name LIKE 'A%';."

Q33: "What is the order of appearance of the common statements in the SELECT query?"
Ans: "The typical order: SELECT → FROM → JOIN → WHERE → GROUP BY → HAVING → ORDER BY → LIMIT."

Q34: "What is a view, and why use it?"
Ans: "A view is a virtual table based on a query. It is used to simplify complex queries, enhance security, and present data in a specific format without storing it physically."

Q35: "Can we create a view based on another view? Give Example"
Ans: "Yes, views can be based on other views. Example: CREATE VIEW view2 AS SELECT * FROM view1 WHERE salary > 50000;."

Q36: "Can we still use a view if the original table is deleted?"
Ans: "No, a view depends on the underlying table. If the table is deleted, the view becomes invalid."

Q37: "What is the difference between renaming a column and giving an alias to it?"
Ans: "Renaming changes the column name permanently in the table, while an alias (AS) is temporary and only changes the name in the query output."

Q38: "What is the difference between nested and correlated subqueries?"
Ans: "Nested subquery: Independent query executed once.
Correlated subquery: Depends on the outer query and executes for each row of the outer query."

Q39: "What is the CASE() function?"
Ans: "CASE allows conditional logic in SQL. Example: SELECT name, CASE WHEN salary>50000 THEN 'High' ELSE 'Low' END AS Salary_Range FROM employees;."

Q40: "What is the difference between the DELETE and TRUNCATE statements?"
Ans: "DELETE removes specific rows using WHERE and logs each deletion.
TRUNCATE removes all rows, is faster, and resets identity counters but cannot use WHERE."

Q41: "What is the difference between the DROP and TRUNCATE statements?"
Ans: "DROP removes the table structure and data permanently.
TRUNCATE removes all data but keeps the table structure intact."

Q42: "What is the difference between the HAVING and WHERE statements?"
Ans: "WHERE filters rows before grouping.
HAVING filters groups after aggregation."

Q43: "How do you add a record to a table?"
Ans: "Use the INSERT INTO statement. Example: INSERT INTO employees (id, name, salary) VALUES (1, 'John', 50000);."

Q44: "How to find the nth highest value in a column of a table?"
Ans: "Use ORDER BY with LIMIT/OFFSET or ROW_NUMBER(). Example (MySQL): SELECT DISTINCT salary FROM employees ORDER BY salary DESC LIMIT 1 OFFSET n-1;."

Q45: "How to find the values in a text column of a table that start with a certain letter?"
Ans: "Use the LIKE operator. Example: SELECT * FROM employees WHERE name LIKE 'A%';."

Q46: "How to find the last id in a table?"
Ans: "Use ORDER BY with DESC and LIMIT 1. Example: SELECT id FROM employees ORDER BY id DESC LIMIT 1;."

Q47: "How to select random rows from a table?"
Ans: "Use ORDER BY RAND() in MySQL or ORDER BY RANDOM() in PostgreSQL. Example: SELECT * FROM employees ORDER BY RAND() LIMIT 5;."

Q48: "How to prevent duplicate records when making a query? Write a SQL query for update the name in the table [arhat Iserv LLP (Responses)]"
Ans: "Use DISTINCT to prevent duplicates. Example to update: UPDATE \arhat Iserv LLP (Responses)` SET name='New Name' WHERE id=1;`."

Q49: "How to select all even or all odd records in a table?"
Ans: "Use the MOD() function. Example for even IDs: SELECT * FROM employees WHERE MOD(id,2)=0; for odd IDs: MOD(id,2)=1;."

Q50: "What do you mean by a NULL value in SQL? How to join two tables [ICRA ANALYTICS]"
Ans: "NULL represents missing or unknown data.
To join two tables: SELECT a.*, b.* FROM table1 a JOIN table2 b ON a.id = b.id;."

Q51: "How to find the second highest salary from a table in SQL? Define a Unique Key in SQL [ARC Documents]"
Ans: "Second highest salary: SELECT MAX(salary) FROM employees WHERE salary < (SELECT MAX(salary) FROM employees);
Unique Key: Ensures all values in a column or set of columns are unique across the table."

Q52: "Write query to find the employee name who are getting salary greater than department wise avg salary [Nature Technologies]"
Ans: "SELECT name FROM employees e WHERE salary > (SELECT AVG(salary) FROM employees WHERE department=e.department);"

Q53: "Explain the differences between SQL and NoSQL databases."
Ans: "SQL: Relational, structured schema, uses tables, supports ACID.
NoSQL: Non-relational, flexible schema, stores data as key-value, document, graph, or column, supports high scalability."

Q54: "What is a constraint in SQL? Name a few"
Ans: "Constraint enforces rules on data in a table. Examples: PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, CHECK."

Q55: "What are indexes in SQL? Explain GROUP BY in SQL"
Ans: "Indexes improve query performance by allowing faster search.
GROUP BY groups rows with the same values in specified columns to perform aggregate functions."

Q56: "Write query for finding customer id who order maximum time from order table [Nature Technologies]"
Ans: "SELECT customer_id FROM orders GROUP BY customer_id ORDER BY COUNT(*) DESC LIMIT 1;"

Q57: "What is an SQL alias?"
Ans: "Alias is a temporary name for a table or column using AS. Example: SELECT name AS EmployeeName FROM employees;."

Q58: "What are aggregate functions? Can you name a few?"
Ans: "Aggregate functions perform calculations on multiple rows and return a single value. Examples: SUM(), AVG(), COUNT(), MAX(), MIN()."

Q59: "How do you update a value in SQL?"
Ans: "Use UPDATE statement. Example: UPDATE employees SET salary=60000 WHERE id=1;."

Q60: "What is a subquery? Provide an example."
Ans: "A subquery is a query within another query. Example: SELECT name FROM employees WHERE salary > (SELECT AVG(salary) FROM employees);."

Q61: "How do you optimize SQL queries?"
Ans: "Optimize by using indexes, avoiding SELECT *, using joins efficiently, minimizing subqueries, analyzing query execution plans, and caching results when possible."

Q62: "What is the difference between UNION and UNION ALL?"
Ans: "UNION removes duplicate records, UNION ALL includes all records, including duplicates."

Q63: "What is the difference between CHAR and VARCHAR2 datatypes in SQL?"
Ans: "CHAR(n) is fixed-length and pads extra spaces. VARCHAR2(n) is variable-length and stores only the entered characters."

Q64: "What is a Default constraint?"
Ans: "A Default constraint assigns a default value to a column if no value is provided during insert. Example: CREATE TABLE employees(id INT, status VARCHAR(10) DEFAULT 'active');"

Q65: "What is Auto Increment?"
Ans: "Auto Increment automatically generates sequential numbers for a column, usually for primary keys. Example: id INT AUTO_INCREMENT in MySQL."

Q66: "What are Union, Minus, and Intersect commands?"
Ans: "UNION: combines results of two queries removing duplicates.
MINUS: returns rows from the first query that are not in the second.
INTERSECT: returns rows common to both queries."

Q67: "What is a T-SQL?"
Ans: "T-SQL (Transact-SQL) is Microsoft SQL Server's extension of SQL with procedural programming, local variables, and error handling."

Q68: "How to copy tables in SQL?"
Ans: "Use CREATE TABLE new_table AS SELECT * FROM old_table; to copy structure and data. Or CREATE TABLE new_table LIKE old_table; in MySQL for structure only."

Q69: "What are the differences between SQL and PL/SQL and MySQL?"
Ans: "SQL: Standard query language for data manipulation.
PL/SQL: Procedural extension of SQL for Oracle with loops, conditions, and exceptions.
MySQL: A relational database management system using SQL for queries."

Q70: "What is the difference between BETWEEN and IN operators in SQL?"
Ans: "BETWEEN selects values within a range (inclusive). Example: salary BETWEEN 2000 AND 5000.
IN selects values from a set. Example: department IN ('HR','IT')."

Q71: "Write an SQL query to find the names of employees starting with 'A'."
Ans: "SELECT name FROM employees WHERE name LIKE 'A%';"

Q72: "What is the On Delete cascade constraint?"
Ans: "It automatically deletes child table records when the corresponding parent table record is deleted. Example: FOREIGN KEY (dept_id) REFERENCES departments(id) ON DELETE CASCADE."

Q73: "Explain WITH clause in SQL?"
Ans: "The WITH clause defines a Common Table Expression (CTE) to simplify complex queries. Example: WITH

dept_avg AS (SELECT dept_id, AVG(salary) AS avg_sal FROM employees GROUP BY dept_id) SELECT * FROM dept_avg;"

Q74: "Define BETWEEN statements in SQL?"
Ans: "BETWEEN is used to filter values within a specific range, inclusive. Example: SELECT * FROM employees WHERE salary BETWEEN 3000 AND 7000;"

Q75: "Why do we use Commit and Rollback commands?"
Ans: "COMMIT saves all changes made in the current transaction permanently.
ROLLBACK undoes changes made in the current transaction if an error occurs or user cancels the operation."