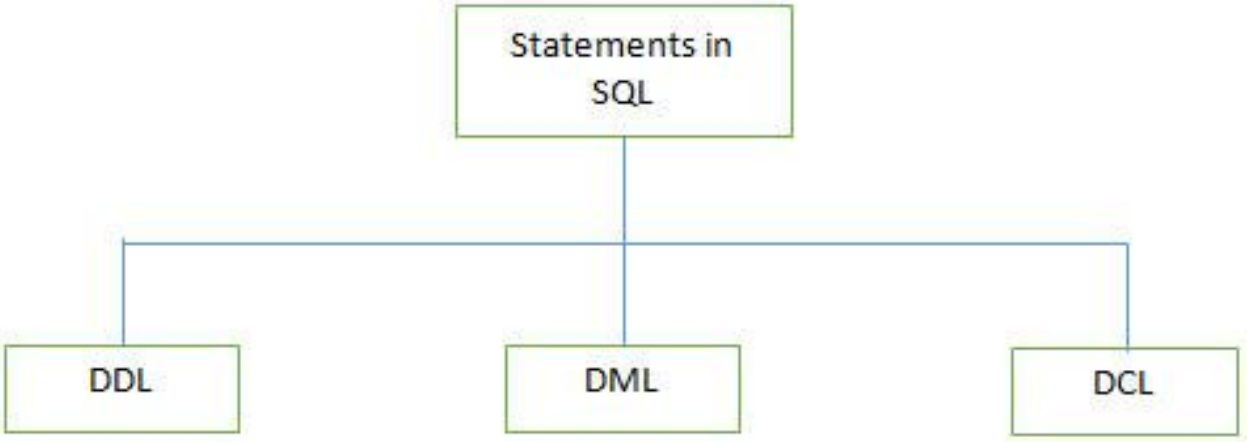
Question #1) What is SQL?
Structured Query Language is a database tool which is used to create and access database to support software application.

Question #2) What are tables in SQL?
The table is a collection of record and its information at a single view.

Question #3) What are different types of statements supported by SQL?



There are 3 types of SQL statements
1) DDL (Data Definition Language): It is used to define the database structure such as tables. It includes three statements such as Create, Alter, and Drop.
Some of the DDL Commands are listed below

- **CREATE**: It is used for creating the table.
- **ALTER:** The ALTER table is used for modifying the existing table object in the database.
- **DROP:** The DROP TABLE statement is used to drop an existing table in a database.

2) DML (Data Manipulation Language): These statements are used to manipulate the data in records. Commonly used DML statements are Insert, Update, and Delete.
The Select statement is used as partial DML statement that is used to select all or relevant records in the table.
3) DCL (Data Control Language): These statements are used to set privileges such as Grant and Revoke database access permission to the specific user**.**

Question #4) How do we use DISTINCT statement? What is its use?
DISTINCT statement is used with the SELECT statement. If the records contain duplicate values then DISTINCT is used to select different values among duplicate records.
Syntax: SELECT DISTINCT column_name(s)
FROM table_name;

Question #5) What is the difference between BETWEEN and IN operators in SQL?
BETWEEN
The BETWEEN operator is used to fetch rows based on a range of values. For Example,

```
SELECT * FROM Students
WHERE ROLL_NO BETWEEN 20 AND 30;
```

This query will select all those rows from the table Students where the value of the field ROLL_NO lies between 20 and 30.

IN

The IN operator is used to check for values contained in specific sets. For example,

```
SELECT * FROM Students
WHERE ROLL_NO IN (20,21,23);
```

This query will select all those rows from the table Students where the value of the field ROLL_NO is either 20 or 21 or 23.

Question #6) What is the difference between CHAR and VARCHAR2 datatype in SQL?

Both of these datatypes are used for characters but varchar2 is used for character strings of variable length whereas char is used for character strings of fixed length. For example, if we specify the type as char(5) then we will not be allowed to store string of any other length in this variable but if we specify the type of this variable as varchar2(5) then we will be allowed to store strings of variable length, we can store a string of length 3 or 4 or 2 in this variable.

Question #7) Write an SQL query to find names of employee start with 'A'?

The LIKE operator of SQL is used for this purpose. It is used to fetch filtered data by searching for a particular pattern in where clause.

The required query is:

```
SELECT * FROM Employees WHERE EmpName like 'A%' ;
```

Question #8) What do you mean by data definition language?

Data definition language or DDL allows to execute queries like CREATE , ALTER and DELETE. That is, those queries which define the data

Question #9) What do you mean by data manipulation language?

Data manipulation Language or DML is used to access or manipulate data in the database. It allows us to perform below listed functions:

- Insert data or rows in database
- Delete data from database
- Retrieve or fetch data
- Update data in database.

Question #10) What is the difference between primary key and unique constraints?

Primary key cannot have NULL value, the unique constraints can have NULL values. There is only one primary key in a table, but there can be multiple unique constrains. The primary key creates the cluster index automatically but the Unique key does not.

Question #11) What do you mean by foreign key?

A Foreign key is a field which can uniquely identify each row in another table. And this constraint is used to specify a field as Foreign key. That is, this field points to primary key of another table. This usually creates a kind of link between the two tables.

Question #12) What is a join in SQL? What are the types of joins?

An SQL Join statement is used to combine data or rows from two or more tables based on a common field between them. Different types of Joins are:

- **INNER JOIN**: The INNER JOIN keyword selects all rows from both the tables as long as the condition satisfies. This keyword will create the result-set by combining all rows from both the tables where the condition satisfies i.e value of the common field will be same.

- **LEFT JOIN**:This join returns all the rows of the table on the left side of the join and matching rows for the table on the right side of join. The rows for which there is no matching row on right side, the result-set will contain null. LEFT JOIN is also known as LEFT OUTER JOIN
- **RIGHT JOIN**:RIGHT JOIN is similar to LEFT JOIN. This join returns all the rows of the table on the right side of the join and matching rows for the table on the left side of join. The rows for which there is no matching row on left side, the result-set will contain null. RIGHT JOIN is also known as RIGHT OUTER JOIN.
- **FULL JOIN**: FULL JOIN creates the result-set by combining result of both LEFT JOIN and RIGHT JOIN. The result-set will contain all the rows from both the tables. The rows for which there is no matching, the result-set will contain NULL values.

Question #13) What is an index?

A database index is a data structure that improves the speed of data retrieval operations on a database table at the cost of additional writes and the use of more storage space to maintain the extra copy of data. Data can be stored only in one order on disk. To support faster access according to different values, faster search like binary search for different values is desired. For this purpose, indexes are created on tables. These indexes need extra space on disk, but they allow faster search according to different frequently searched values.

Question #14) What are transaction and its controls?

A transaction can be defined as the sequence task that is performed on databases in a logical manner to gain certain results. Operations performed like Creating, updating, deleting records in the database comes from transactions.

In simple word, we can say that a transaction means a group of SQL queries executed on database records.

There are 4 transaction controls such as

- **COMMIT**: It is used to save all changes made through the transaction
- **ROLLBACK**: It is used to roll back the transaction such as all changes made by the transaction are reverted back and database remains as before
- **SET TRANSACTION**: Set the name of transaction
- **SAVEPOINT:** It is used to set the point from where the transaction is to be rolled back

Question #15) What are properties of the transaction?

Properties of transaction are known as ACID properties, such as

- **Atomicity**: Ensures the completeness of all transactions performed. Checks whether every transaction is completed successfully if not then transaction is aborted at the failure point and the previous transaction is rolled back to its initial state as changes undone
- **Consistency**: Ensures that all changes made through successful transaction are reflected properly on database
- **Isolation**: Ensures that all transactions are performed independently and changes made by one transaction are not reflected on other
- **Durability**: Ensures that the changes made in database with committed transactions persist as it is even after system failure

Question #16) What is View in SQL?

A View can be defined as a virtual table that contains rows and columns with fields from one or more table.

Syntax: *CREATE VIEW view_name AS*
SELECT column_name(s)
FROM table_name
WHERE condition

Question #17) How many Aggregate Functions are available there in SQL?
SQL Aggregate Functions calculates values from multiple columns in a table and returns a single value.
There are 7 aggregate functions we use in SQL

- **AVG():** Returns the average value from specified columns
- **COUNT():** Returns number of table rows
- **MAX():** Returns largest value among the records
- **MIN():** Returns smallest value among the records
- **SUM():** Returns the sum of specified column values
- **FIRST():** Returns the first value
- **LAST():** Returns Last value

Question #18) What are Scalar Functions in SQL?
Scalar Functions are used to return a single value based on the input values. Scalar Functions are as follows

- **UCASE():** Converts the specified field in upper case
- **LCASE():** Converts the specified field in lower case
- **MID():** Extracts and returns character from text field
- **FORMAT():** Specifies the display format
- **LEN():** Specifies the length of text field
- **ROUND():** Rounds up the decimal field value to a number

Question #19) What are triggers?
Triggers in SQL is kind of stored procedures used to create a response to a specific action performed on the table such as Insert, Update or Delete. You can invoke triggers explicitly on the table in the database.
Action and Event are two main components of SQL triggers when certain actions are performed the event occurs in response to that action.
Syntax: *CREATE TRIGGER name {BEFORE|AFTER} (event [OR..]}*
ON table_name [FOR [EACH] {ROW|STATEMENT}]
EXECUTE PROCEDURE functionname {arguments}

Question #20) What is the difference between SQL and MySQL?
SQL is a structured query language that is used for manipulating and accessing the relational database, on the other hand, MySQL itself is a relational database that uses SQL as the standard database language.

Question #21) What is the use of NVL function?
NVL function is used to convert the null value to its actual value.

Question #22) What is the Cartesian product of table?
The output of Cross Join is called as a Cartesian product. It returns rows combining each row from the first table with each row of the second table. For Example, if we join two tables having 15 and 20 columns the Cartesian product of two tables will be 15×20=300 Rows.

Question #23) What do you mean by Subquery?

Query within another query is called as Subquery. A subquery is called inner query which returns output that is to be used by another query.

Question #24) How many row comparison operators are used while working with a subquery?

There are 3-row comparison operators which are used in subqueries such as IN, ANY and ALL.

Question #25) What is the difference between clustered and non-clustered indexes?

- One table can have only one clustered index but multiple nonclustered indexes.
- Clustered indexes can be read rapidly rather than non-clustered indexes.
- Clustered indexes store data physically in the table or view and non-clustered indexes do not store data in table as it has separate structure from data row

Question #26) What is the difference between DELETE and TRUNCATE?

- The basic difference in both is DELETE is DML command and TRUNCATE is DDL
- DELETE is used to delete a specific row from the table whereas TRUNCATE is used to remove all rows from the table
- We can use DELETE with WHERE clause but cannot use TRUNCATE with it

Question #27) What is the difference between DROP and TRUNCATE?

TRUNCATE removes all rows from the table which cannot be retrieved back, DROP removes the entire table from the database and it cannot be retrieved back.

Question #28) How to write a query to show the details of a student from Students table whose name starts with K?

*SELECT * FROM Student WHERE Student_Name like '%K';*

Here 'like' operator is used for pattern matching.

Question #29) What is the difference between Nested Subquery and Correlated Subquery?

Subquery within another subquery is called as Nested Subquery. If the output of a subquery is depending on column values of the parent query table then the query is called Correlated Subquery.

SELECT adminid(SELECT Firstname+' '+Lastname FROM Employee WHERE empid=emp. adminid)AS EmpAdminId FROM Employee

This query gets details of an employee from Employee table.

Question #30) What is the difference between SQL and PL/SQL?

SQL is a structured query language to create and access databases whereas PL/SQL comes with procedural concepts of programming languages.

Question #31). When is the UPDATE_STATISTICS command used?

Ans. This command is used, once the processing of large data is done.

When we delete a large number of files, alteration or reproduction takes place in the tables, to be concerned of these changes we need to restructure the indexes This is done using UPDATE_STATISTICS command

1.Query to find Second Highest Salary of Employee?
Select distinct Salary from Employee e1 where 2=Select count(distinct Salary) from Employee e2 where e1.salary<=e2.salary;

2.Query to find duplicate rows in table?
Select * from Employee a where row_id != select max(row_id) for Employee b where a.Employee_num=b.Employee_num;

3.How to fetch monthly Salary of Employee if annual salary is given?
Select Employee_name,Salary/12 as 'Monthly Salary' from employee;

4.What is the Query to fetch first record from Employee table?
Select * from Employee where Rownum =1;

5.What is the Query to fetch last record from the table?
Select * from Employee where Rowid= select max(Rowid) from Employee;

6.What is Query to display first 5 Records from Employee table?
Select * from Employee where Rownum <= 5;

7.What is Query to display last 5 Records from Employee table?
Select * from Employee e where rownum <=5 union select * from (Select * from Employee e order by rowid desc) where rownum <=5;

8.What is Query to display Nth Record from Employee table?
Select * from Employee where rownum = &n;

9.How to get 3 Highest salaries records from Employee table?
Select distinct salary from Employee a where 3 >= (select count(distinct salary) from employee b where a.salary <= b.salary) order by a.salary desc;

10.How to Display Odd rows in Employee table?
Select * from(Select rownum as rno,E.* from Employee E) where Mod(rno,2)=1;

11.How to Display Odd rows in Employee table?
Select * from(Select rownum as rno,E.* from Employee) where Mod(rno,2)=0;

12.How to fetch 3rd highest salary using Rank Function?
select * from (Select Dense_Rank() over (order by salary desc) as Rnk,E.* from Employee E) where Rnk=3;

13.How Can i create table with same structure of Employee table?
Create table Employee_1 as Select * from Employee where 1=2;

14.Display first 50% records from Employee table?
Select rownum,E.* from Employee E where rownum<=(Select count(*/2) from Employee);

15.Display first 50% records from Employee table?
Select rownum,E.* from Employee E minus Select rownum,E.* from Employee E where rownum<=(Select count(*/2) from Employee);

16.How Can i create table with same structure with data of Employee table?
Create table Employee1 as select * from Employee;