Question 1: What is database?

Answer: A database is a logically coherent collection of data with some inherent meaning, representing some aspect of real world and which is designed, built and populated with data for a specific purpose.

Question 2: What is a Database system?

Answer: The database and DBMS software together is called as Database system.

Question 3: What are the advantages of DBMS?

Answer: The advantages of DBMS are as follows:

1. Redundancy is controlled
2. Unauthorised access is restricted
3. Providing multiple user interfaces
4. Enforcing integrity constraints
5. Providing backup and recovery

Question 4: What is normalization?

Answer: It is a process of analysing the given relation schemas based on their Functional Dependencies (FDs) and primary key to achieve the properties

- Minimizing redundancy
- Minimizing insertion, deletion and update anomalies.

Question 5: What is DDL (Data Definition Language)?

Answer: A data base schema is specifies by a set of definitions expressed by a special language called DDL.

Question 6: What is Functional Dependency?

Answer: Functional Dependency is the starting point of normalization. Functional Dependency exists when a relation between two attributes allows you to uniquely determine the corresponding attributes value.

Question 7: What is 2NF?

Answer: A relation schema R is in 2NF if it is in 1NF and every non-prime attribute A in R is fully functionally dependent on primary key

Question 8: What is the difference between primary key and unique constraints?

Answer: 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.

Question 9: What is SQL?

Answer: SQL is Structured Query Language designed for inserting and modifying in a relational database system.

Question 10: What is a view in SQL? How to create one

Answer: A view is a virtual table based on the result-set of an SQL statement. We can create using create view syntax.

CREATE VIEW view_name AS

SELECT column_name(s)

FROM table_name

WHERE condition

**Question 11:.What is Unique key constraint?(90% asked in Interview Questions for TCS)**

**Answer:**

The UNIQUE Constraint uniquely identifies each record in a database table.

The UNIQUE and PRIMARY KEY Constraints both provide a guarantee for Uniqueness for a column or set of columns.

A PRIMARY KEY Constraint automatically has a UNIQUE Constraint defined on it.

**Note:** You can have many UNIQUE Constraints per table, but only one PRIMARY KEY Constraint per table is allowed.

**Question 12:..How to select first 5 characters from First name in Employee table?**

**Answer:**

Oracle Query:

```
Select Substr(0,5) from Employee;
```

**Question 13:..How to fetch all the records from Employee whose joining year is  2017?**

**Answer:**

Oracle:

```
select * from Employee where To_char(Joining_date,'YYYY')='2017';
```

**Question 14:..What is mean by Sequence in database?(80 % asked in Interview Questions for TCS)**

**Answer:**

Use the CREATE SEQUENCE statement to create a **sequence**, which is a database object from which multiple users may generate unique integers. You can use sequences to automatically generate primary key values.

When a sequence number is generated, the sequence is incremented, independent of the transaction committing or rolling back.

Once a sequence is created, you can access its values in SQL statements with the CURRVAL Pseudo Column, which returns the current value of the sequence, or the NEXTVAL Pseudo Column, which increments the sequence and returns the new value.

**Question 14:..What is join in SQL?(100% asked in Interview Questions for TCS)**

**Answer:**

The most used concept in real life scenarios are nothing but SQL Joins.Although in reporting,stand alone applications development,Web application development the concept of join is really important.

Joins are nothing but Combining the records from two or more tables.

There are following 2 types of joins:

1.Joins using Operators -> Equi Join,Non Equi Join

2.Joins using Concept-> Inner Join,Outer Join,Cross Join,Self Join.

**Question 15:.What is view in SQL?(100% asked in Interview Questions for TCS)**

**Answer:**

Views in SQL is nothing but the logical table created from one or more tables.We can use the views to fetch the columns from one or more different tables at a time.In real life specifically views are used in Reporting purpose.To create a report we need data from different tables and need to show it on a single dashboard so we are using the views to fetch the data from different tables.View can contain all rows from the table or selected rows from the table.

**Question 16:..How to find all details about Constraint?**

**Answer:**

To find details about constraint following query is used:

1.Select * from User_constraints;

2.Select * from User_cons_columns;

**Question 17:..How to Find the Sequence information?**

**Answer:**

To Find the Sequence information following query is used:

Select * from User_Sequences;

**Question 19:**Write an SQL SELECT statement to count the number of rows in STUDENT table and display the result with the label NumStudents.

SELECT COUNT(*) AS NumStudents FROM STUDENT;

**Question 20:**What is a foreign key, and what is it used for?

A foreign key is used to establish relationships among relations in the relational model. Technically, a foreign key is a column (or columns) appearing in one relation that is (are) the primary key of another table. Although there may be exceptions, the values in the foreign key columns usually must correspond to values existing in the set of primary key values. This correspondence requirement is created in a database using a referential integrity constraint on the foreign key.

**Question 21:**What does it mean when we say that a relation is in Boyce-Codd Normal Form (BCNF)?

A relation is in BCNF when every determinant in the relation is a candidate key. This means that any possible primary key can determine all other attributes in the relation. Attributes may not be determined by non-candidate key attributes or part of a composite candidate key.

**Question 22:**What is a cascading update?
Referential integrity constraints require that foreign key values in one table correspond to primary key values in another. If the value of the primary key is changed -- that is, updated -- the value of the foreign key must immediately be changed to match it. Cascading updates will set this change to be done automatically by the DBMS whenever necessary.

**Question 23:**Explain what we mean by an ACID transaction.
An ACID transaction is one that is atomic, consistent, isolated, and durable. Durable means that database changes are permanent. Consistency can mean either statement level or transaction level consistency. With transaction level consistency, a transaction may not see its own changes. There are four transaction isolation levels: read committed, read uncommitted, repeatable read and serialization. Atomic means it is performed as a unit.
**Question 24:**Briefly describe the four JDBC driver types that Sun defines.
Type 1 drivers provide a bridge between Java and ODBC. Types 2-4 drivers are written entirely in Java, but differ as to how they connect to the DBMS. Type 2 drivers rely on the DBMS product for intermachine communication, if any. Type 3 drivers translate JDBC calls into a DBMS-independent network protocol. Type 4 drivers translate JDBC calls into a DBMS-dependent network protocol.
**Question 24:** What is OLAP?
OnLine Analytical Processing (OLAP) is a Business Intelligence (BI) reporting system. OLAP provides the user with the capability to sum, count, average and do other simple arithmetic operations on groups of data. An OLAP report has measures and dimensions. Measures are the data values to be displayed. Dimensions are characteristics of the measures. OLAP reports are called OLAP cubes, although such reports are not limited to three dimensions.

**Question 25:**Compare a hierarchical and network database model?
The hierarchical model is a top-down structure where each parent may have many children but each child can have only one parent. This model supports one-to-one and one-to-many relationships. The network model can be much more flexible than the hierarchical model since each parent can have multiple children but each child can also have multiple parents. This model supports one-to-one, one-to-many, and many-to-many relationships.

**Question 26:**Describe the difference between embedded and dynamic SQL.

Embedded SQL is the process of including hard coded SQL statements. These statements do not change unless the source code is modified. Dynamic SQL is the process of generating SQL on the fly. The statements generated do not have to be the same each time.

**Question 27: Write Sql query to display the second highest salary of the employee**

```
SELECT sal
FROM emp
ORDER BY sal DESC
LIMIT 1, 1;
```

**Question 28:Get employee details from employee table whose first name starts with 'J'**

```
Select * from EMPLOYEE where FIRST_NAME like 'J%'
```

**Question 29:Select TOP N salary from employee table**

**SQL Queries in Oracle**, `select * from (select * from employee order by SALARY desc) where rownum <N + 1`