MODULE = 5 (theory)

1. **What do you understand By Database.**

➔ A database is an electronically stored, systematic collection of data.
➔ IT can contain any type of data, words, numbers, images, videos and files.
➔ You can use software called a database management system to store, retrieve edit data.

2. What is Normalization?

➔ Normalization is the process of organizing data in a database. It includes creating tables and establishing relationship between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy and inconsistent dependency.

3. **What is Difference between DBMS and RDBMS?**

➔ DBMS : Database Management System.
➔ DBMS stores data in the form of files.
➔ Single users are support by DBMS.
➔ DBMS does not support distributed database.
➔ It deal with small quantity of data.
➔ Ex. XML, Forxpro.

➔ RDBMS : Relational Database Management System.
➔ RDBMS stores data in the form of tables.
➔ Multiple users are support by RDBMS.
➔ Client server architecture is support by RDBMS.
➔ RDBMS support distributed database.
➔ It deal with large amount of data.
➔ Ex. MySQL,Oracle.

4. **What is MF Cod Rule of RDBMS Systems?**

➔ **1) Rule 0: The Foundation Rule:** The database must be in relational form. So that the system can handle the database through its relational capabilities.
➔ **2) Rule 1: Information Rule:** A database contains various information, and this information must be stored in each cell of a table in the form of rows and columns.
➔ **3) Rule 2: Guaranteed Access Rule:** Every single or precise data (atomic value) may be accessed logically from a relational database using the combination of primary key value, table name, and column name.
➔ **4) Rule 3: Systematic Treatment of Null Values:** This rule defines the systematic treatment of Null values in database records. The null value has various meanings in the database, like missing the data, no value in a cell, inappropriate information, unknown data and the primary key should not be null.
➔ **5) Rule 4: Active/Dynamic Online Catalog based on the relational model:** It represents the entire logical structure of the descriptive database that must be stored online and is known as a

database dictionary. It authorizes users to access the database and implement a similar query language to access the database.

- ➔ **6) Rule 5: Comprehensive Data Sub Language Rule:** The relational database supports various languages, and if we want to access the database, the language must be the explicit, linear or well-defined syntax, character strings and supports the comprehensive: data definition, view definition, data manipulation, integrity constraints, and limit transaction management operations. If the database allows access to the data without any language, it is considered a violation of the database.
- ➔ **7) Rule 6: View Updating Rule:** All views table can be theoretically updated and must be practically updated by the database systems.
- ➔ **8) Rule 7: Relational Level Operation (High-Level Insert, Update and delete) Rule:** A database system should follow high-level relational operations such as insert, update, and delete in each level or a single row. It also supports union, intersection and minus operation in the database system.
- ➔ **9) Rule 8: Physical Data Independence Rule:** All stored data in a database or an application must be physically independent to access the database. Each data should not depend on other data or an application. If data is updated or the physical structure of the database is changed, it will not show any effect on external applications that are accessing the data from the database.
- ➔ **10) Rule 9: Logical Data Independence Rule:** It is similar to physical data independence. It means, if any changes occurred to the logical level (table structures), it should not affect the user's view (application). For example, suppose a table either split into two tables, or two table joins to create a single table, these changes should not be impacted on the user view application.
- ➔ **11) Rule 10: Integrity Independence Rule:** A database must maintain integrity independence when inserting data into table's cells using the SQL query language. All entered values should not be changed or rely on any external factor or application to maintain integrity. It is also helpful in making the database-independent for each front-end application.
- ➔ **12) Rule 11: Distribution Independence Rule:** The distribution independence rule represents a database that must work properly, even if it is stored in different locations and used by different end-users. Suppose a user accesses the database through an application; in that case, they should not be aware that another user uses particular data, and the data they always get is only located on one site. The end users can access the database, and these access data should be independent for every user to perform the SQL queries.
- ➔ **13) Rule 12: Non Subversion Rule:** The non-submersion rule defines RDBMS as SQL language to store and manipulate the data in the database. If a system has a low-level or separate language other than SQL to access the database system, it should not subvert or bypass integrity to transform data.

5. **What do you understand By Data Redundancy?**

➔ Data redundancy occurs when the same piece of data exist in multiple places, whereas data inconsistency is when the same data exist in different formats in multiple tables. Unfortunately, data redundancy can cause data inconsistency, which can provide a company with unreliable and/or meaningless information.

6. What is DDL Interpreter?

➔ It interprets the DDL (Data Definition Language) Instruction and stores the record in a data dictionary (in a table containing meta-data) Query Optimizer : It executes the DML instructions and picks the lowest cost evaluation plan out of all the alternatives present. DDL includes CREATE, ALTER and DROP.

7. What is DML Compiler in SQL?

➔ A DML (data manipulation language) refers to a computer programming language that allows you to add (insert), and alter (update) data in a database. A DML is typically a sublanguage of larger databse like SQL, with the DML contain some of the language's operators.

8. What is SQL Key Constraints ? writing an Example of SQL Key Constraint.

➔ In a databse table, we can add rules to a column known as constraints. These rules control the data that can be stored in a column.

➔ **There are sevent types of constraints in SQL:**

1. Not null.
2. Unique.
3. Primary key.
4. Foreign key.
5. Check.
6. Default.
7. Create Index.

9. What is Save Point? How to create a save Point write a Query?

➔ A savepoint is a point in a transaction in which you can roll the transaction back to a certain point without rolling back the entire transaction.

➔ **Syntax** = SAVEPOINT SAVEPOINT_NAME;
This command is used only in the creation of savepoint among all the transactions.

10. What is trigger and how to create a Trigger in SQL?

➔ A trigger is a special type of stored procedure that automatically runs when an event occurs in the database server. DML triggers run when a user tries to modify data through a data manipulation language (DML) event. DML events are INSERT, UPDATE, or DELETE statements on a table or view.

➔ Syntex: `delimiter //`

```
CREATE TRIGGER upd_check BEFORE UPDATE ON account
FOR EACH ROW
BEGIN
IF NEW.amount < 0 THEN
SET NEW.amount = 0;
ELSEIF NEW.amount > 100 THEN
SET NEW.amount = 100;
END IF;
END;//
delimiter ;
```