**2. SQL Queries:**

**a. Design and Develop SQL DDL statements which demonstrate the use of SQL objects such**

**as Table, View, Index, Sequence, Synonym, different constraints etc.**

1. **Create table**

CREATE TABLE Department (

dept\_no INT PRIMARY KEY,

dept\_name VARCHAR(20) UNIQUE NOT NULL,

bldg\_name VARCHAR(20)

);

1. **Add a New Column to the Department Table**

ALTER TABLE Department ADD budget INT;

1. **Create an Instructor Table with a Foreign Key Constraint**

CREATE TABLE Instructor (

ins\_id INT PRIMARY KEY,

ins\_name VARCHAR(20) NOT NULL,

dept\_no INT,

salary INT,

mob\_no BIGINT,

FOREIGN KEY (dept\_no) REFERENCES Department(dept\_no)

);

1. **Create a Unique Index on a Column**

CREATE UNIQUE INDEX idx\_mob\_no ON Instructor(mob\_no);

1. **Rename the Instructor Table**

RENAME TABLE Instructor TO Teacher;

1. **Drop the Budget Column from the Department Table**

ALTER TABLE Department DROP COLUMN budget;

1. **Modify a Column’s Data Type**

ALTER TABLE Department MODIFY dept\_name VARCHAR(30);

1. **Create a View to Exclude Sensitive Information**

CREATE VIEW Instructor\_View AS

SELECT ins\_id, ins\_name, dept\_no FROM Instructor;

1. **Drop the Unique Index on a Column**

DROP INDEX idx\_mob\_no ON Instructor;

1. **Drop the Instructor\_View**

DROP VIEW Instructor\_View;

1. **Truncate the Instructor Table(to use truncate remove constraints or use delete command)**

TRUNCATE TABLE Instructor;

**Theory for SQL DDL and DML Operations**

**Introduction to SQL**

Structured Query Language (SQL) is used to communicate with and manipulate relational databases. SQL includes various types of commands, with Data Definition Language (DDL) focusing on defining and modifying database structures, and Data Manipulation Language (DML) focusing on managing data within those structures.

**Database Overview**

In this assignment, we created a simple school database consisting of two primary tables: Department and Instructor (later renamed to Teacher). The Department table stores details about different departments, while the Instructor table holds information about faculty members, including their associated departments.

**Key SQL Operations**

Creating Tables:

The Department table includes columns for department number, name, and building name.

The Instructor table includes columns for instructor ID, name, department number (as a foreign key), salary, and mobile number.

Modifying Tables:

We added a budget column to the Department table and later removed it as needed.

The data type for the department name was modified to accommodate longer entries.

Managing Data:

The TRUNCATE command was used to remove all records from the tables efficiently, preserving the structure for future data entries.

Unique indexes were created to ensure that mobile numbers in the Instructor table remain unique.

Views:

A view was created to show instructor details without sensitive salary information, demonstrating how to restrict data access while maintaining usability.