Department of Computer Science and Engineering

Question Bank 2

Subject: Database system **Class/ Sem: SE/ III**

Module 2

5 Marks Questions:

1. What is the Relational Data Model?
2. Define and differentiate between Primary Key and Foreign Key in a relational database.
3. How are Entity Relationship (ER) diagrams mapped to the Relational Model?
4. What are the basic operations of Relational Algebra?
5. Write a simple Relational Algebra query to retrieve specific data from a relational database.
6. Write a relational algebra query to find the names of all employees who work in the 'Sales' department. Assume you have two relations: Employee(EmployeeID, Name, DeptID) and Department(DeptID, DeptName).
7. Given two relations Student(StudentID, Name, Age) and Enrolled(StudentID, CourseID), write a relational algebra query to find the names of all students who are enrolled in the 'Database Systems' course. Assume you have a third relation Course(CourseID, CourseName).
8. Write a relational algebra query to retrieve the names and IDs of all employees who earn more than $50,000. Assume the relation Employee(EmployeeID, Name, Salary).
9. Given the relations Customer(CustomerID, Name, City) and Order(OrderID, CustomerID, Amount), write a relational algebra query to find the names of customers who have placed an order with an amount greater than $1,000.
10. Write a relational algebra query to retrieve the names of all products that are not in stock. Assume the relation Product(ProductID, ProductName, InStock) where InStock is a boolean value.

Module 4

1. Write a SQL statement to create a table named `Products` with columns for `ProductID` (integer, primary key), `ProductName` (string, up to 100 characters), and `Price` (decimal, with two decimal places).
2. How would you modify an existing table named `Orders` to add a new column `OrderDate` of type `DATE`?
3. Write a SQL command to delete the table `Customers` from the database.

4. Write a SQL query to retrieve all columns from a table named `Employees` where the `Department` is 'Sales'.

5. How would you update the `Salary` to `60000` for an employee with `EmployeeID` `123` in the `Employees` table?
6. Write a SQL statement to insert a new record into the `Employees` table with `EmployeeID` `456`, `Name` 'Jane Smith', and `Salary` `55000`.
7. Define a table `Students` with the following constraints: `StudentID` as the primary key, `Email` should be unique, and `Age` must be a positive integer.
8. Write a SQL statement to add a foreign key constraint to the `Orders` table, linking `CustomerID` to the `CustomerID` in the `Customers` table.
9. How would you ensure that the `Salary` column in the `Employees` table only contains values greater than 0?
10. Write a SQL query to find the total `SalesAmount` from the `Sales` table.
11. How would you find the average `Salary` of employees in the `Employees` table?
12. Write a SQL statement to get the highest `Salary` and the lowest `Salary` from the `Employees` table.
13. Create a view named `TopEmployees` that shows `EmployeeName` and `Salary` for employees with a salary greater than 70000.
14. Write a query to select all data from the `TopEmployees` view.
15. Write a nested query to find the names of employees who have a salary greater than the average salary of all employees.