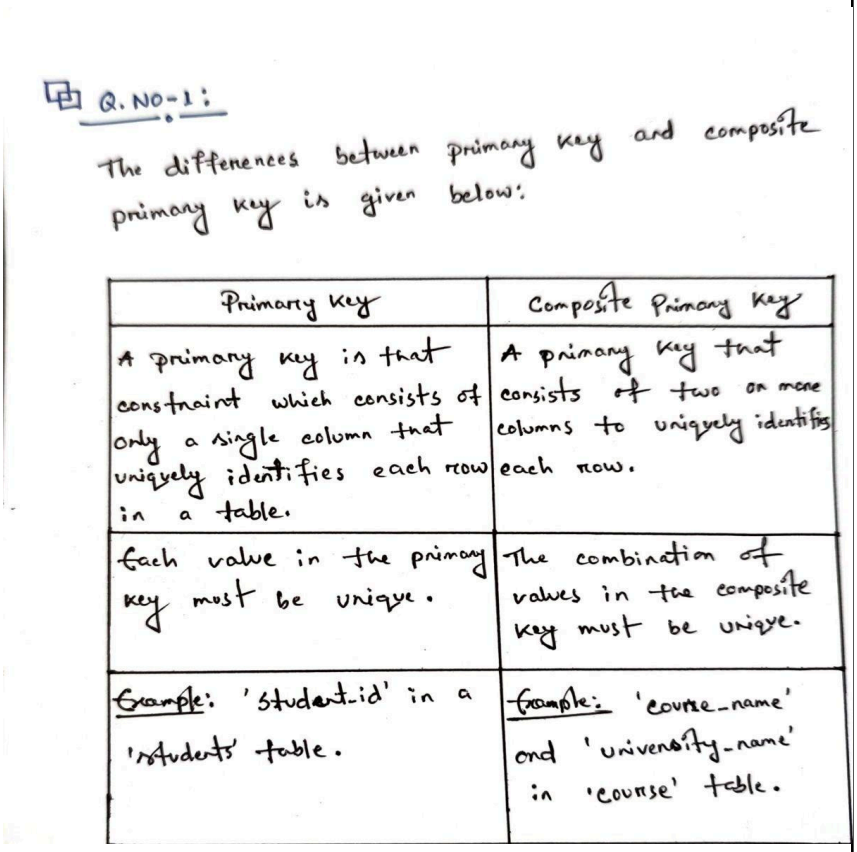
Mid Term Exam
Total Marks:100

Q.No	QUESTIONS	Marks
1	Write the difference between Primary Key and Composite Primary Key. 	5
2	Write the difference between using JOIN Query and not using JOIN query.	5

Q. NO-1:

The differences between primary key and composite primary key is given below:

Primary Key	Composite Primary Key
A primary key is that constraint which consists of only a single column that uniquely identifies each row in a table.	A primary key that consists of two or more columns to uniquely identify each row.
Each value in the primary key must be unique.	The combination of values in the composite key must be unique.
Example: 'student_id' in a 'students' table.	Example: 'course_name' and 'university_name' in 'course' table.

Q. NO-02:

The difference between join query and not join query is given below:

JOIN Query	Non-JOIN Query
Combines rows from two or more tables based on a related column between them.	Retrieves data only from a single table.
Can perform various types of joins (INNER JOIN, LEFT JOIN, RIGHT, CROSS JOIN, SELF JOIN) etc.	Doesn't involve such any join operation.
Involves a condition that matches columns from different tables.	Conditions (if any) only involve columns from a single table.
More complex	Generally simpler and faster.

3	Create a table of Employees which has the following fields a. First Name b. Last Name c. Date of Birth d. Department Id e. Salary Create a table of Departments which has the following fields a. Department Id b. Department Name Create both of the tables using proper constraints	20

```sql
CREATE TABLE Departments(
    DepartmentID CHAR(4) PRIMARY KEY,
    Department_Name VARCHAR(100) NOT NULL
);

CREATE TABLE Employees (
    First_Name VARCHAR(30) NOT NULL,
    Last_Name VARCHAR(30),
    DateOfBirth DATE,
    DepartmentID CHAR(4),
    Salary DOUBLE,
    CONSTRAINT fk_Department
        FOREIGN KEY (DepartmentID) REFERENCES Departments(DepartmentID)
);
```

Use dummydb in MySQL to answer the following questions: Link

4	Write SQL Query to get the second max salary `SELECT DISTINCT salary` `FROM Employees` `ORDER BY Salary DESC` `LIMIT 1,1;`	10
5	Write SQL Query to show the department names and the average salary of the departments. `SELECT d.Department_Name, AVG(e.Salary) AS Average_Salary` `FROM Departments d` `JOIN Employees e ON d.Department_ID = e.Department_ID` `GROUP BY d.Department_Name;`	10

6 Illustrate the INNER, LEFT, RIGHT, SELF Joins.

- **INNER JOIN / JOIN:**

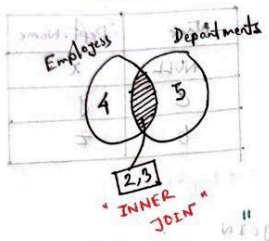
Returns records that have matching values in both tables.

Employees

Name	Dept. ID
a	4
b	2
c	3

Departments

Dept. ID	Dept. Name
5	x
3	y
2	z



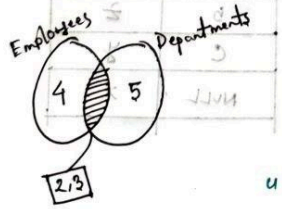
Result

Name	Dept. Name
b	z
c	y

```
SELECT Name
FROM Employees
INNER JOIN Departments
ON Employees.Dept-ID = Departments.Dept-ID
```

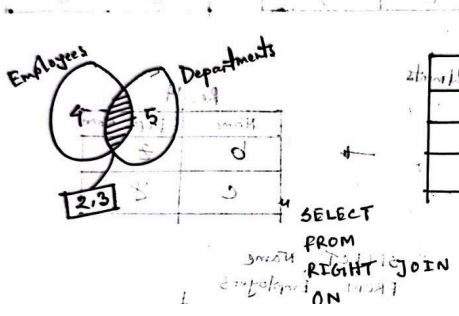
- **LEFT JOIN:**

Returns all records from the left table and the matched records from the right table. The result is NULL from the right side, if there is no match.



Name	Dept. Name
a	NULL
b	z
c	y

```
SELECT
FROM
LEFT JOIN
ON
```

	• **RIGHT JOIN:** • Returns all records from the right table, and the matched records from the left table. The result is NULL from the left side when there is no match.  Result Name | Dept. Name NULL | x c | y b | z • **SELF JOIN:** A self join is a regular join but the table is joined with itself. Employees Name | EmpID | Mgr ID a | 100 | NULL b | 101 | 100 c | 102 | NULL d | 103 | 102 SELECT e.Name, m.Name FROM Employees AS e JOIN Employees AS m ON e.EmpID = m.MgrID;	
7	What is a subquery? Write with an example	10

Sub Query:

Subqueries also known as inner queries or nested queries, are queries embedded within other SQL queries.
Subqueries can be used in various parts of an SQL statement, including the 'SELECT', 'INSERT', 'UPDATE', and 'DELETE' clauses, as well as in conditions with the 'WHERE', 'HAVING' and 'FROM' clauses.

- Return a single row with one or more columns.

Example:

Main query

```
SELECT  Name
FROM    employees
WHERE   ID = (SELECT  ManagerID
              FROM    departments
              WHERE   name = 'sales');
```

Sub query

8	Show the names of the employees who get less salary than Steven	10

	``sql SELECT First_name FROM Employees WHERE Salary < (SELECT salary FROM employees WHERE first_name LIKE '%Steven%' OR last_name LIKE '%Steven%' ORDER BY salary DESC LIMIT 1); -- There are multiple steven ```	
9	Count the number of employees of each job type ```sql SELECT Job_ID, COUNT(*) AS Employee_Count FROM Employees GROUP BY Job_ID; ```	10
10	Show the names of Departments which doesn't have any employees ```sql SELECT D.Department_Name FROM Departments D LEFT JOIN Employees E ON D.Department_ID = E.Department_ID WHERE E.Department_ID IS NULL; ```	10