A

1. **Find the name of all instructors whose name starts with “S”.**

```
sql
Copy code
SELECT name
FROM instructor
WHERE name LIKE 'S%';
```

2. **Increase the salary of each instructor in the Comp. Sci. department by 10%.**

```
sql
Copy code
UPDATE instructor
SET salary = salary * 1.10
WHERE dept_name = 'Comp. Sci.';
```

3. **Find courses that ran in Fall 2009 and in Spring 2010.**

```
sql
Copy code
SELECT course_id
FROM section
WHERE (semester = 'Fall' AND year = 2009)
   OR (semester = 'Spring' AND year = 2010);
```

B

1. **Find the total number of instructors who teach a course in the Spring 2009 semester.**

```
sql
Copy code
SELECT COUNT(DISTINCT instructor_id) AS total_instructors
FROM teaches
WHERE semester = 'Spring' AND year = 2009;
```

2. **Find the names of all instructors who have a higher salary than some instructor in “Comp. Sci.”**

```
sql
Copy code
SELECT name
FROM instructor
WHERE salary > ANY (
    SELECT salary
    FROM instructor
    WHERE dept_name = 'Comp. Sci.'
);
```

3. **Write an SQL query to insert an instructor named John in the Biology department with instructor id 10211 and a salary of $66,000.**

```
sql
Copy code
INSERT INTO instructor (id, name, dept_name, salary)
VALUES (10211, 'John', 'Biology', 66000);
```

C

1. **Find the average salary of instructors in each department.**

```
sql
Copy code
SELECT dept_name, AVG(salary) AS avg_salary
FROM instructor
GROUP BY dept_name;
```

2. **Find the names of all instructors whose salary is greater than the salary of all instructors in the Biology department.**

```
sql
Copy code
SELECT name
FROM instructor
WHERE salary > ALL (
    SELECT salary
    FROM instructor
    WHERE dept_name = 'Biology'
);
```

3. **Delete all instructors with a salary between $13,000 and $15,000.**

```
sql
Copy code
DELETE FROM instructor
WHERE salary BETWEEN 13000 AND 15000;
```

1. Find the set of all courses taught in the Spring 2009 semester.

```
sql
Copy code
SELECT course_id
FROM section
WHERE semester = 'Spring' AND year = 2009;
```

---

2. Find the set of all courses taught in Fall 2009 and in Spring 2010 using set operations.

```
sql
Copy code
SELECT course_id
FROM section
WHERE (semester = 'Fall' AND year = 2009)
UNION
SELECT course_id
FROM section
WHERE (semester = 'Spring' AND year = 2010);
```

---

3. Find the name of all instructors with a salary between 95000 and 75000.

```
sql
Copy code
SELECT name
FROM instructor
WHERE salary BETWEEN 75000 AND 95000;
```

---

4. Find the name of all instructors whose salary is greater than at least one instructor in the Comp. Sci. department.

```
sql
Copy code
SELECT name
FROM instructor
WHERE salary > ANY (
    SELECT salary
    FROM instructor
    WHERE dept_name = 'Comp. Sci.'
);
```

---

5. Find the titles of courses in the Computer Science department that have 4 credits.

```
sql
Copy code
SELECT title
FROM course
WHERE dept_name = 'Comp. Sci.' AND credits = 4;
```

---

6. Find the names of all departments whose building name includes the substring 'Watson'.

```
sql
Copy code
SELECT dept_name
FROM department
WHERE building LIKE '%Watson%';
```

---

7. Find the names of all departments whose budget is between 70000 to 1000000.

```
sql
Copy code
SELECT dept_name
FROM department
WHERE budget BETWEEN 70000 AND 1000000;
```

Example: Joining Two Tables Using ON

Suppose you have two tables:

1. **Employees**

EmployeeID	Name	DepartmentID
1	John Doe	101
2	Jane Smith	102
3	Alice Brown	103

2. **Departments**

DepartmentID	DepartmentName
101	HR
102	IT
103	Finance

To fetch the name of employees along with their department names, you can use the **ON** clause with an **INNER JOIN**:

```
sql
Copy code
SELECT
```

```
    Employees.Name AS EmployeeName,
    Departments.DepartmentName AS Department
FROM
    Employees
INNER JOIN
    Departments
ON
    Employees.DepartmentID = Departments.DepartmentID;
```

1. INNER JOIN with ON Clause

Find employees and their respective departments:

Tables:

1. Employees

emp_id	name	dept_id
1	Alice	101
2	Bob	102
3	Charlie	103

2. Departments

dept_id	dept_name
101	HR
102	IT
104	Finance

Query:

```
sql
Copy code
SELECT Employees.name, Departments.dept_name
FROM Employees
INNER JOIN Departments
ON Employees.dept_id = Departments.dept_id;
```