Lab 3 : Dipesh Singh - 190905520

**Question 1 :**

**Find courses that ran in Fall 2009 or in Spring 2010**

(

    select course\_id

    from section

    where semester = 'Fall'

        and year = 2009

)

union

(

    select course\_id

    from section

    where semester = 'Spring'

        and year = 2010

);

**Question 2 :**

**Find courses that ran in Fall 2009 and in spring 2010**

(

    select course\_id

    from section

    where semester = 'Fall'

        and year = 2009

)

intersect

(

    select course\_id

    from section

    where semester = 'Spring'

        and year = 2010

);

**Question 3 :**

**Find courses that ran in Fall 2009 but not in Spring 2010**

(

    select course\_id

    from section

    where semester = 'Fall'

        and year = 2009

)

minus

(

    select course\_id

    from section

    where semester = 'Spring'

        and year = 2010

);

**Question 4 :**

**Find the name of the course for which none of the students registered.**

select title

from course

where course\_id not in (

        select unique course\_id

        from takes

    );

**Question 5 :**

**Find courses offered in Fall 2009 and in Spring 2010.**

select course\_id

from section

where semester = 'Fall'

    and year = 2009

    and course\_id in (

        select course\_id

        from section

        where semester = 'Spring'

            and year = 2010

    );

**Question 6 :**

**Find the total number of students who have taken course taught by the instructor with ID 10101.**

select count(unique C.ID) as cnt

from takes C

where course\_id in (

        select course\_id

        from teaches T

        where T.ID = 10101

    );

**Question 7 :**

**Find courses offered in Fall 2009 but not in Spring 2010.**

select course\_id

from section

where semester = 'Fall'

    and year = 2009

    and course\_id not in (

        select course\_id

        from section

        where semester = 'Spring'

            and year = 2010

    );

**Question 8 :**

**Find the names of all students whose name is same as the instructor’s name.**

select name

from student S

where name in (

        select all name

        from instructor I

        where I.name = S.name

    );

**Question 9 :**

**Find names of instructors with salary greater than that ofsome (at least one) instructorin the Biology department.**

select name

from instructor

where salary > some(

        select salary

        from instructor

        where dept\_name = 'Biology'

    );

**Question 10 :**

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

select name

from instructor

where salary > all(

        select salary

        from instructor

        where dept\_name = 'Biology'

    );

**Question 11 :**

**Find the departments that have the highest average salary.**

with avg\_sal(dept\_name, val) as (

    select dept\_name,

        avg(salary)

    from instructor

    group by dept\_name

),

max\_avg(val) as (

    select max(val)

    from avg\_sal

)

select dept\_name

from avg\_sal a,

    max\_avg b

where a.val = b.val;

**Question 12 :**

**Find the names of those departments whose budget is lesser than the average salary of all instructors.**

select dept\_name

from department

where budget < all(

        select avg(salary)

        from instructor

    );

**Question 13 :**

**Find all courses taught in both the Fall 2009 semester and in the Spring 2010 semester.**

select course\_id

from section S

where semester = 'Spring'

    and year = 2010

    and exists(

        select course\_id

        from section T

        where semester = 'Fall'

            and year = 2009

            and T.course\_id = S.course\_id

    );

**Question 14 :**

**Find all students who have taken all courses offered in the Biology department.**

select distinct S.ID,

    S.name

from student S

where not exists(

        (

            select course\_id

            from course

            where dept\_name = 'Biology'

        )

        minus

        (

            select T.course\_id

            from takes T

            where S.ID = T.ID

        )

    );

**Question 15 :**

**Find all courses that were offered at most once in 2009.**

select course\_id

from (

        select course\_id,

            count (\*) count

        from section

        where section.year = 2009

        group by course\_id

    )

where count = 1;

**Question 16 :**

**Find all the studentswho have opted at least two courses offered by CSE department.**

select ID

from (

        select ID,

            count(\*) as c

        from takes

            natural join course

        where dept\_name = 'Comp. Sci.'

        group by ID

    )

where c >= 2;

**Question 17 :**

**Find the average instructors salary of those departments where the averagesalary is greater than 42000**

select dept\_name,

    average

from (

        select dept\_name,

            avg(salary) as average

        from instructor

        group by dept\_name

    )

where average > 42000;

**Question 18 :**

**Create a view all\_courses consisting of course sections offered by Physics department in the Fall 2009, with the building and room number of each section.**

create view all\_courses as (

    select course.course\_id,

        sec\_id,

        building,

        room\_number

    from course,

        section

    where course.course\_id = section.course\_id

        and course.dept\_name = 'Physics'

        and section.semester = 'Fall'

        and section.year = 2009

);

**Question 19 :**

**Select all the courses from all\_courses view.**

select \*

from all\_courses;

**Question 20 :**

**Create a view department\_total\_salary consisting of department name and total salary of that department.**

create view department\_total\_salary as (

    select dept\_name,

        sum(salary) as total\_sal

    from instructor

    group by dept\_name

);

select \*

from department\_total\_salary;