Roll Number _____

CS3400 Database Systems

Quiz 3 - 11th Dec 2006

For the questions given below, write the corresponding SQL query statements. The primary keys for each of the relations are underlined.

Student (StudentID, Name, Gender, DOB, Curriculum, Major, Year_of_Joining)
Course (CourseID, CourseName, Credit)
PreRequisite (CourseID, PreReqID)
CourseOffering (CID, Semester, Year, Instructor)
GradeReport (SID, CID, Sem, Year, Grade)

The foreign key, primary key relationships:
PreRequisite (CourseID) references Course (CourseID)
PreRequisite (PreReqID) references Course (CourseID)
CourseOffering (CID) references Course (CourseID)
GradeReport (SID) references Student (StudentID)
GradeReport (CID) references Course (CourseID)
GradeReport (Sem) references CourseOffering (Semester)
GradeReport (Year) references CourseOffering (Year)

Select

1. For each course which was offered in 'Monsoon' 2006, find the number of students who got 'F' grade.

   ```
   Select CID, Count(*)
   From GradeReport
   Where Grade = 'F' and Sem = 'Monsoon' and Year = 2006
   Group By CID;
   ```

2. Find the names of the students, their curriculum and year of joining who did a course with a pre-requisite but didn't do the pre-requisite course.

   ```
   Select S.Name, S.Curriculum, S.Year_Of_Joining
   From Student S, GradeReport G, PreRequisite P
   Where S.StudentID = G.SID and G.CID = P.CourseID
   and G.SID not in (Select G1.SID
                     From GradeReport G1
                     Where G1.CID = P.PreReqID);
   ```

3. Find the names of the students who have always got ‘A’ grade in all the courses they have taken.

```
Select S.Name
From Student S
Where Not Exists (Select G.SID
                  From GradeReport G
                  Where G.SID = S.StudentID and G.Grade != ‘A’);
```

4. Find the names of all the 4 credit courses offered in ‘Spring’ 2007 in which only ‘MTech’ students have enrolled.

```
Select C.CourseName
From Course C, CourseOffering CO
Where C.Credit = 4 and C.CourseID = CO.CID and CO.Semester = ‘Spring’
and CO.Year = 2007
and Not Exists (Select S.StudentID
                From Student S, GradeReport G
                Where S.StudentID = G.SID and G.CID = CO.CID
                and S.Curriculum != ‘MTech’);
```

5. Insert tuples into ‘GradeReport’ table for all the BTech 2004 students for the course ‘BTP’ in ‘Spring’ 2007.

```
Insert into GradeReport
Select S.StudentID, C.CourseID, ‘Spring’, 2007, null
From Student S, Course C
Where S.Curriculum = ‘BTech’ and S.Year_Of_Joining = 2004 and C.CourseName =
‘BTP’;
```

6. For each 6-credit course, with CourseID beginning with ‘CS’, offered in ‘Spring’ 2006, if number of students who got ‘F’ grade >= 4, insert new tuple into PreRequisite table for this course with ‘C programming’ as its prerequisite.

```
Insert into PreRequisite
Select C1.CourseID, C2.CourseID
From Course C1, Course C2
Where C1.Credit = 6 and C1.CourseID Like ‘CS%’ and C2.CourseName = ‘C
  Programming’ and (Select Count(*)
                    From GradeReport G
                    Where G.CID = C1.CourseID and G.Sem = ‘Spring’
                    and G.Year = 2006 and G.Grade = ‘F’) >= 4;
```

7. Update the ‘Curriculum’ of all the ‘BTech’ students to ‘MS’ who have completed at least 170 credits.

```
Update Student S
Set S.Curriculum = ‘MS’
Where S.Curriculum = ‘BTech’ and (Select Sum (C.Credit)
                                  From Course C, GradeReport G
                                  Where G.SID = S.SID
                                  and G.CID = C.CourseID) >= 170;
```

8. Update the grades to ‘D’ of all the students who’ve got ‘F’ grade in the courses offered in ‘Spring’ 2006 such that they have got ‘A’ grade in the prerequisites of that courses.

```
Update GradeReport G
Set G.Grade = ‘D’
Where G.Grade = ‘F’ and G.Sem = ‘Spring’ and G.Year = 2006
and G.SID in (Select G1.SID
              From PreRequisite P, GradeREport G1
              Where G.CID = P.CourseID and G1.CID = P.PreReqID
              and G1.Grade = ‘A’);
```