1.
Create Table students(sid : char(10), name : varchar(50), age : int, gpa : float, Primary Key (sid));

Create Table courses(cid : char(10), deptid : varchar(10), name: varchar(50), Primary Key (cid));

Create Table professors(ssn : int, name : varchar(50), address : varchar(100), phone : char(10), deptid : varchar(10), Primary Key (ssn));

Create Table enrollment(sid : char(10), cid : char(10), section : int, grade : varchar(2), primary key (sid,cid), foreign key (sid) references students, foreign key (cid) references courses, foreign key (cid,section) references teaches);

Create Table teaches(cid : char(10), section : int, ssn : int, primary key (cid,section), foreign key (cid) references courses, foreign key (ssn) references professors);

2.
```
Select p.name
from professor p
where deptid = ‘cs’;
```

3.
```
Select s.sid
From students s
Join enrollment using (sid) join courses c using (cid)
Where c.deptid = ‘cs’;
```

4.
```
Select p.ssn, p.name
From professor p
Join teaches using (ssn) join courses c using (cid)
Where p.deptid = ‘cs’ and c.deptid != ‘cs’;
```

5.
```
Select deptid, count(*)
From courses
Group by deptid;
```

6.
```
Select deptid, count(*)
From courses
Group by deptid
Having count(*)>10;
```

7.
```
Select distinct s.name
From students s
Join enrollment e on e.sid = s.sid join teaches t on e.cid = t.cid join professors p on t.ssn = p.ssn
Where p.name like ‘M%’;
```

8.
```
Select c.deptid, count(*) <30 as ‘small’, count(*) >= 30 and count(*) <80 as ‘medium’,
count(*) >=80 as ‘large’
From courses c, enrollment e,
Where c.cid = e.cid
Group by c.deptid;
```

9.
```
Insert into T1,
Select name, deptid
From professors
Group by name
Having count(deptid)>20;

Insert into T2,
Select c.deptid, count(*) <30 as ‘small’, count(*) >= 30 and count(*) <80 as ‘medium’,
count(*) >=80 as ‘large’
From courses c, enrollment e,
Where c.cid = e.cid
Group by c.deptid;
Having large > small + medium;

Select T1.name
From T1, T2
Where T1.deptid = T2.deptid;
```

10.
```
Select cid, section, ((no_pass / pass) *100)  as fail_rate
From (select cid, section, count(*) as no_pass from enrollment where grade in (‘D’, ‘F’) group
by section) m join (select cid, section, count(*) as pass from enrollment group by section) n on
(m.cid = n.cid) and (m.section = n.section);
```

11.
```
Select p.name, max(fail_rate)
From professors p, teaches t, (Select cid, section, ((no_pass / pass) *100)  as fail_rate
From (select cid, section, count(*) as no_pass from enrollment where grade in (‘D’, ‘F’) group
by section) m join (select cid, section, count(*) as pass from enrollment group by section) n on
(m.cid = n.cid) and (m.section = n.section)) r
Where p.ssn = t.ssn and t.section = r.section and t.cid = r.cid
Group by p.name;
```

12.

```
Select ((select count(*) from enrollment where grade in (‘D’, ‘F’))/count(*)*100) as
average_fail_rate,
From enrollment;
```

13.

```
Select cid, section
From (Select cid, section, ((no_pass / pass) *100)  as fail_rate, from (select cid, section, count(*)
as no_pass from enrollment where grade in (‘D’, ‘F’) group by section) m join (select cid,
section, count(*) as pass from enrollment group by section) n on (m.cid = n.cid) and (m.section =
n.section)),
(Select ((select count(*) from enrollment where grade in (‘D’, ‘F’))/count(*)*100) as
average_fail_rate, from enrollment)
Where fail_rate > average_fail_rate;
```

14.

```
select c.deptid,
count(*) as SPS
sum((case when e.grade = 'A' then 1 else 0 end)) / count(*) * 100 as
'%A',
sum((case when e.grade = 'B' then 1 else 0 end)) / count(*) * 100 as
'%B',
sum((case when e.grade = 'C' then 1 else 0 end)) / count(*) * 100 as
'%C',
sum((case when e.grade = 'D' then 1 else 0 end)) / count(*) * 100 as '%D',
sum((case when e.grade = 'F' then 1 else 0 end)) / count(*) * 100 as '%F'
from enrollment e join courses c on e.cid = c.cid
group by c.deptid;
```