1.

$$\pi_{employee.ID,employee.person\_name} \ (\sigma_{company\_name=\text{“}BigBank\text{”}}(employee \times works))$$

$$\pi_{employee.ID,employee.person\_name,city} \ (\sigma_{company\_name=\text{“}BigBank\text{”}}(employee \times works))$$

$$\pi_{employee.ID,employee.person\_name,city,street} \ (\sigma_{company\_name=\text{“}BigBank\text{”}\wedge salary>10000}(employee \times works))$$

$$\pi_{employee.ID} \ (\sigma_{employee.city=company.city}(employee \times company))$$

2.

$$\pi_{employee.ID,employee.person\_name} \ (employee \times works) - \pi_{employee.ID,employee.person\_name} \ (\sigma_{company\_name=\text{“}BigBank\text{”}}(employee \times works))$$

$$\pi_{employee.ID,employee.person\_name} \ (\sigma_{salary \geq average(salary)}(employee \times works))$$

3.

• Inserting a tuple: (20B032500, Kanata, Economics,280.000) into the instructor table, where the department table does not have the department Archeology, would violate the foreign key constraint.

• Deleting the tuple: (History, Southwestern, 1.954.410) from the department table, where at least one student or instructor tuple has dept name as Biology, would violate the foreign key constraint.(foreign key in table 2 will become empty, which will eventually violate Referential Integrity constraint)

4.

Id or person name

It is depends on situation in case of person_ name because if database is huge , there is possible that person _ name can be similar two or more times , in this case person_ name cannot be primary key