a) $\Pi_{person\_name}(\sigma_{city = \text{`Miami'}}(employee))$

b) $\Pi_{person\_name}(\sigma_{salary > 100000}(works))$

c) $\Pi_{person\_name}(\sigma_{city = \text{`Miami'}}(employee)) \cap \Pi_{person\_name}(\sigma_{salary > 100000}(works))$

d) $temp = employee \bowtie_{(employee.person\_name = works.person\_name)} (Works)$

$\Pi_{ID, person\_name}(\sigma_{company\_name \neq \text{`BigBank'}}(temp))$

e) $\Pi_{ID, person\_name}(temp) - \Pi_{temp.ID, temp.person\_name}(temp \bowtie_{(temp.salary \leq temp2.salary)} (\rho_{temp2}(temp)))$

f) $R2 = \sigma_{company\_name = \text{`BigBank'}}(temp)$

$\Pi_{ID, person\_name, city}(R2)$

g) $R3 = \sigma_{salary > 10000}(R2)$

$\Pi_{ID, person\_name, street, city}(R3)$

h) $\Pi_{ID, person\_name}(employee \bowtie_{employee.city = company.city} (company))$

a. $\Pi_{ID, name}(\sigma_{dept\_name = \text{`physics'}}(instructor))$

b. $\Pi_{ID, name}(instructor \bowtie_{instructor.dept\_name = department.dept\_name \wedge department.building = \text{`Watson'}} (department))$

c. $R1 = \Pi_{course\_id, dept\_name}(section \bowtie_{section.course\_id = course.course\_id} (course))$

$R2 = \Pi_{ID, name, course\_id}(student \bowtie_{student.ID = takes.ID} (takes))$

$\Pi_{ID, name}(R1 \bowtie_{R1.course\_id = R2.course\_id \wedge R1.dept\_name = \text{`Comp\_Sci'}} (R2))$

d. $\Pi_{ID, name}(student \bowtie_{student.ID = takes.ID \wedge takes.year = 2018} (takes))$

e. $\Pi_{ID, name}(student \bowtie_{student.ID = takes.ID \wedge takes.year \neq 2018} (takes))$