CS348 Quiz 3 (LE2) **Name:** _____

PSO: _____

Please fill your answers in the following table:

1	2	3	4	5	6	7	8	9

1. Which of the following is **NOT** one of the five basic relational algebra operations?
   A. Assignment.
   B. Natural join.
   C. Project.
   D. Set difference.
   E. Set Union.

2. REMOVED ~~Which pair of relational algebra operations are equal?~~
   A. ~~$R_1 \cap (R_2 \cup R_3) = (R_1 \cap R_2) \cup R_3$~~
   B. ~~$R_1 - R_2 = R_2 - R_1$~~
   C. ~~$R_1 - (R_2 - R_3) = (R_1 - R_2) - R_3$~~
   D. ~~$R_1 \cap R_2 = (R_1 \cup R_2) - (R_1 - R_2)$~~
   E. ~~$R_1 \bowtie_{condition} R_2 = \sigma_{condition}(R \times S)$~~

3. Consider a relationship that stores midterm grades of students from all sections R(SectionId, StudentId, Grade). Which operation correctly calculates the average grade in each section?
   A. $\mathcal{F}_{AVERAGE\ Grade}$(R)
   B. $\mathcal{F}_{AVERAGE\ Grade}$(SectionId)
   C. SectionId $\mathcal{F}_{AVERAGE\ Grade}$(R)
   D. Grade $\mathcal{F}_{AVERAGE\ SectionId}$(R)
   E. R $\mathcal{F}_{AVERAGE\ Grade}$(SectionId)

4. A JOIN operation with a general join condition such as $\{=, <, \leq, >, \geq, \neq\}$ is called
   A. EQUIJOIN.
   B. THETA JOIN .
   C. NATURAL JOIN.
   D. INNER JOIN.
   E. OUTTER JOIN.

5. For the given tuple relational calculus what is the query doing?
   { t | ∃ s ∈ professor (t[name] = s[name] ∧ ∃ u ∈ department (u[dept name] = s[dept name] ∧ u[building] = Lawson)) }

A. Returns the building name of all the departments.

B. Finds the name of the dapartment whose instructor and building is Lawson.

C. Finds the names of all department is in the Lawson building.

D. Finds the names of all instructors whose department is in the Lawson building.

E. Find the names of the instructors who is Lawson.

6. Relational algebra is

A. Data Definition Language.

B. Procedural query language.

C. Meta Language.

D. Non-procedural language.

E. None of the above.

7. In a company database schema, what is the relational algebra expression for selecting employees with at least 30,000 as salary?

A. $\sigma_{Salary>=30000}(EMPLOYEE)$

B. $\sigma_{Salary>30000}(EMPLOYEE)$

C. $\sigma_{Salary!=30000\&Salary>30000}(EMPLOYEE)$

D. $\sigma_{Salary<=30000}(EMPLOYEE)$

E. None of the above

8. Which of the following statements is **TRUE**?

A. Inner join operations contain CROSS PRODUCT, NATURAL JOIN and EQUIJOIN.

B. NATURAL JOIN requires two join attributes have same type.

C. Two relations in DIVISION operation must have same number of attributes.

D. Any relational algebra expression can be expressed by the combination of $\sigma, \pi, \rho, \cup, -, \times$

E. None of the above.

9. The set of possible values is denoted by

A. Domain.

B. Attribute.

C. Degree.

D. Tuple.

E. Cartesian.