CS348 Quiz 4 (LE1) **Name:** _____

PSO: _____

Please fill your answers in the following table:

1	2	3	4	5	6	7	8

1. Which of following expressions is equivalent to this QBE?

Employee

EId	SSN	FirstName	Last Name	Age	DeptId
P.				_AX	5

CONDITIONS

Age
_AX > 50

A. $\sigma_{Age>50}(Employee)$

B. $\pi_{EId}(\sigma_{Age>50}(Employee))$

C. $\sigma_{Age>50 \wedge Deptid=5}(Employee)$

D. $\pi_{EId}(\sigma_{Age>50 \wedge Deptid=5}(Employee))$

E. $\sigma_{Age>50 \wedge Deptid=5 \wedge EId='P'}(Employee)$

2. What is the minimal cover of the following functional dependencies?

$$A \rightarrow BCDE,\ CD \rightarrow E$$

A. $A \rightarrow B,\ CD \rightarrow E$

B. $A \rightarrow BCD,\ C \rightarrow E$

C. $A \rightarrow BCE,\ D \rightarrow E$

D. $A \rightarrow BCD,\ CD \rightarrow E$

E. $A \rightarrow BCDE,\ CD \rightarrow E$

3. REMOVED ~~Which statement is CORRECT about dependency preserving decompositions?~~

A. ~~A Decomposition is dependency preserving if all subsets of R contains all of the dependencies in R.~~

B. ~~The projection of F on R_i is a subset of F^+.~~

C. ~~is possible that there is not a dependency preserving decomposition of R into 3NF.~~

D. ~~**It is possible that there is not a dependency preserving decomposition of R into BCNF.**~~

E. ~~None of the above.~~

4. Consider the relation R(A, B, C, D, E, F) and the following functional dependencies. Which decomposition is a loss-less decomposition when tested with the non-additive join test for binary decompositions (NJB).

$$AB \rightarrow C,\ B \rightarrow DF,\ BC \rightarrow E$$

A. R1(A, B, C), R2(D, E, F)

B. R1(A, B, C), R2(B, C, D, E)

C. R1(A, B, C), R2(B, C, D, E, F)

D. R1(A, B, C, D), R2(D, E, F)

E. R1(A, C, E), R2(B, D, F)

5. Address, a composed attribute, is not allowed in which normal form?

A. 1NF

B. 2NF

C. 3NF

D. BCNF

E. All of the above

6. Consider the relation R(A,B,C,D,E,F) and following functional dependencies, what is the key for R?
$AB \rightarrow E,\ F \rightarrow CD,\ AD \rightarrow F$

A. F

B. AB

C. AD

D. ABF

E. ADF

7. The _____ constraint states that no primary key value can be NULL.

A. Primary key.

B. Superkey.

C. Entity integrity.

D. Referential integrity.

E. None of the above.

8. Which of the following rules states that the addition of same attribute to the right side and the left side of a functional dependency will always result in a valid functional dependency?

A. Augmentation rule.

B. Referential rule.

C. Reflexive rule.

D. Transitivity rule.

E. None of the above.