CS2102 Database Systems – Quiz 1
2013/2014 Semester I

This is a series of MCQ. Please write your answers in the OCR form provided.

Questions 1 to 5 are based on the following two relations R1 and R2.

R1		
A	**B**	**C**
1	0	1
2	1	2
3	1	3
4	2	2
5	1	5

R2	
A	**D**
1	1
2	2
3	3
4	2
4	2
5	5

1. Which of the following tuples belongs to the result of the query Q1 ?

$Q1 = \{ <X> \mid \exists Y \ R2 (X, Y) \}$

a. $<1>$
b. $<2>$
c. $<3>$
d. All of the above tuples belong to the result
e. None of the above tuples belongs to the result

2. What is the result of the query Q2 ?

$Q2 = \{<Y1> \mid \exists X1 \ \exists Z1 \ \forall X2 \ \forall Y2 \ \forall Z2 \ (R1(X1, Y1, Z1) \wedge (R1(X2, Y2, Z2) \Rightarrow X1 \leq X2))\}$

a. ϕ
b. $\{ <0> \}$
c. $\{ <1> \}$
d. $\{ <2> \}$
e. None of the above

3. Which of the following tuples belongs to the result of the query Q3 ?

$Q3 = \{ P \mid \exists X \in R1 \ \exists Y \in R2 \ (X.B = Y.D \ \wedge P.A = X.A) \}$

a. $<2>$
b. $<3>$
c. $<4>$
d. All of the above tuples belong to the result
e. None of the above tuples belongs to the result

4. Which is the result of the following query ?

$$\pi_{B,C} \, (R1) \, / \, \pi_A \, (\sigma_{(D=2 \, \lor \, D=3)} \, (R2))$$

a. ϕ
b. $\{ <1> \}$
c. $\{ <2>, <3> \}$
d. $\{ <0>, \ <1>, <2> \}$
e. None of the above

5. What is the result of the following query?

SELECT R2.A FROM R1, R2
WHERE R1.A = R2.A
GROUP BY R1.A
HAVING COUNT(*) > 1

a. ϕ
b. $\{ <0> \}$
c. $\{ <1> \}$
d. $\{ <2> \}$
e. An error