

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	50 minutes	15 out of 15

Score for this quiz: **15** out of 15
 Submitted Mar 10, 2021 at 7pm
 This attempt took 50 minutes.

Question 1 1 / 1 pts

Is the following statement true or false?

Suppose p and q are atoms.
 $\{p, p \vee q\}$ entails q .

☐ True
☒ False

Correct!

Is the following statement true or false?
 Suppose p and q are atoms $(p, p \vee q)$ entails q (intersection)
 Ans. False

☐ False

Question 3 1 / 1 pts

Is the following statement true or false?

If a propositional program contains a rule of form $F \leftarrow \perp$ then removing that rule doesn't change its stable models.

☒ True
☐ False

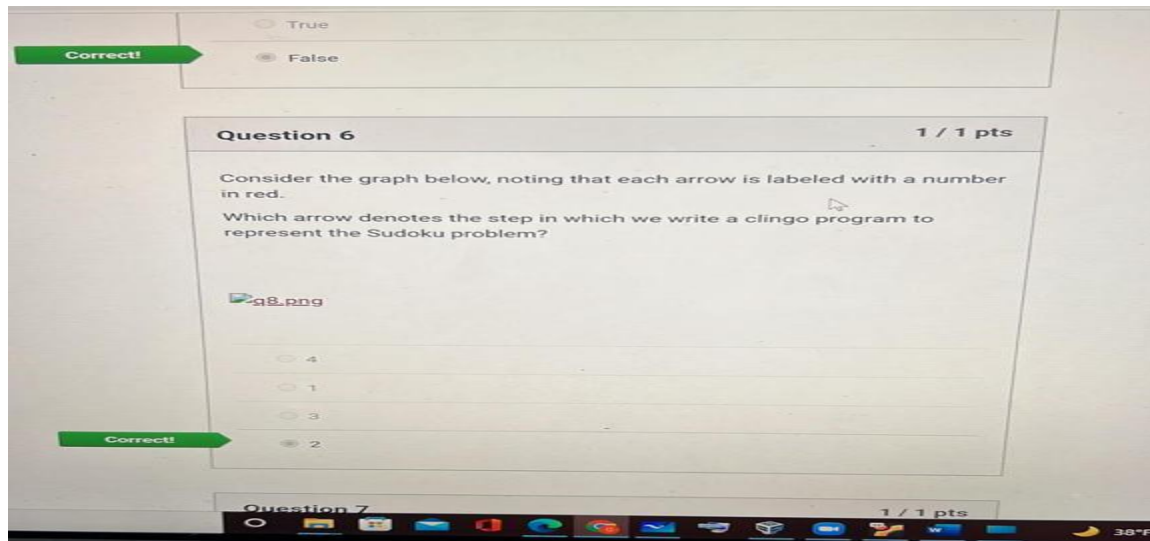
Correct!

Question 4 1 / 1 pts

Is the following statement true or false?

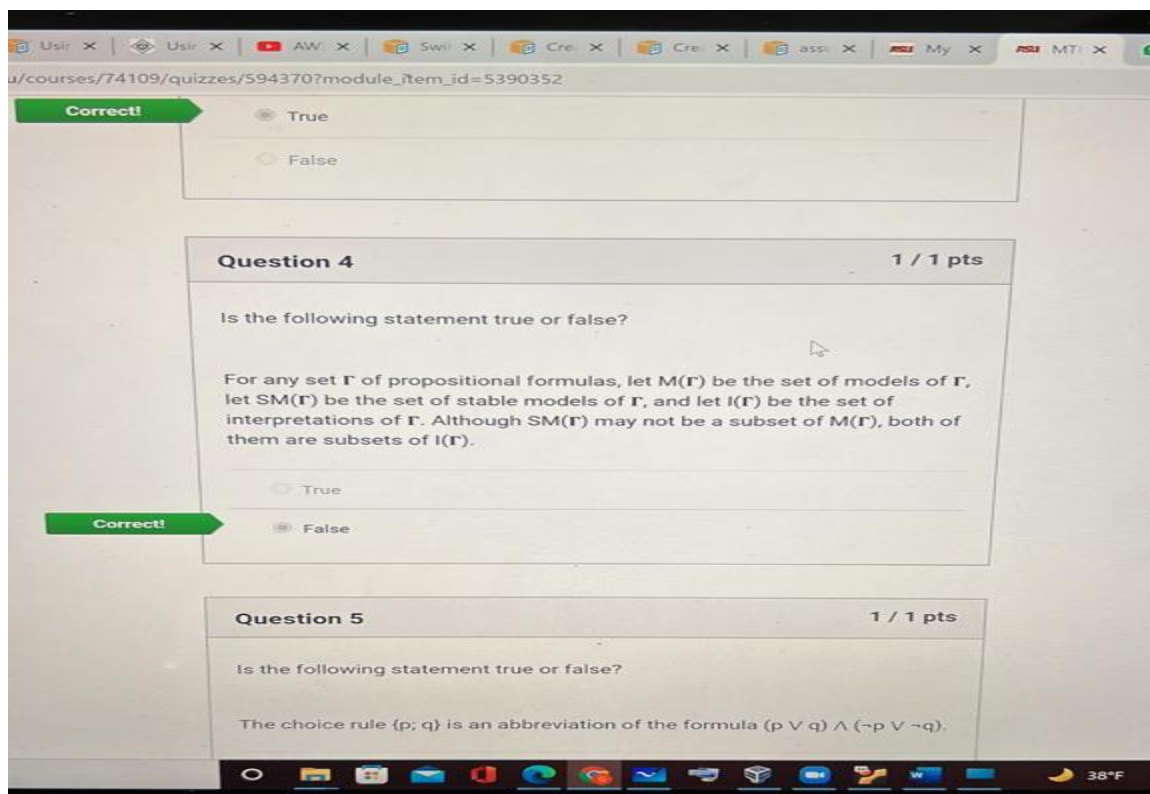
For any set Γ of propositional formulas, let $\Gamma(\alpha)$ be

Is the following statement true or false?
 If a propositional program contains a rule of form $F \leftarrow \text{Inverted } T$ then removing that rule doesn't change its stable models
 A. True



Consider the graph below, noting that each arrow is labeled with a number in red.
Which arrow denotes the step in which we write a clingo program to represent the Sudoku problem?

A. 2



Is the following statement true or false?

For any set T of propositional formulas; let $M(T)$ be the set of models of T , let $SM(T)$ be the set of stable models of T , and let $I(T)$ be the set of interpretations of T . Although $SM(T)$ may not be a subset of $M(T)$, both of them are subsets of $I(T)$?

A. False

edu/courses/74109/quizzes/594370?module_item_id=5390352

Question 7
1 / 1 pts

Recall the definition of propositional formula, provided below.

A propositional formula of signature σ is defined recursively as follows:

- Every atom is a formula
- Both 0-place connectives are formulas
- If F is a formula then $\neg F$ is a formula
- For any binary connective \odot , if F and G are formulas then $(F \odot G)$ is a formula

Which of the options listed below is a propositional formula strictly according to the above definition? (Select all that apply.)

Correct!

☒ $(\neg \perp \rightarrow \perp)$

☐ $p \leftarrow \perp$

☐ $p \vee q \vee r$

Correct!

☒ q

Question 8
1 / 1 pts

Which of the options listed below is a tautology? (Select all that apply.)

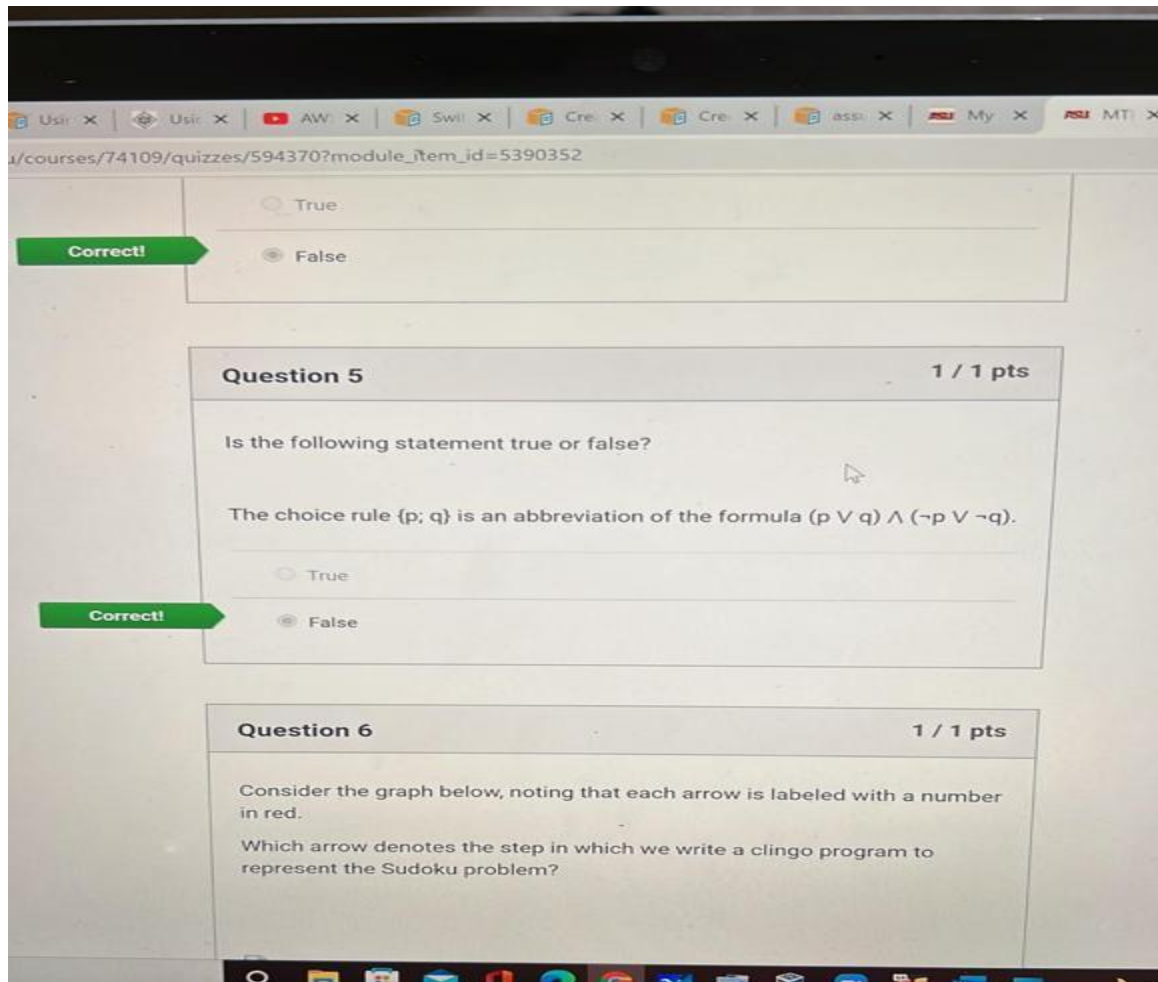
Recall the definition of propositional formula, provided below.

A propositional formula of signature $O(\sigma)$ is defined recursively as follows:

- Every atom is a formula
- Both 0-place connectives are formulas
- If F is a formula then $\neg F$ is a formula
- For any binary connective dot (\cdot), if F and G are formulas then $(F \cdot G)$ is a formula

Which of the options listed below is a propositional formula strictly according to the above definition(select all that apply) ?

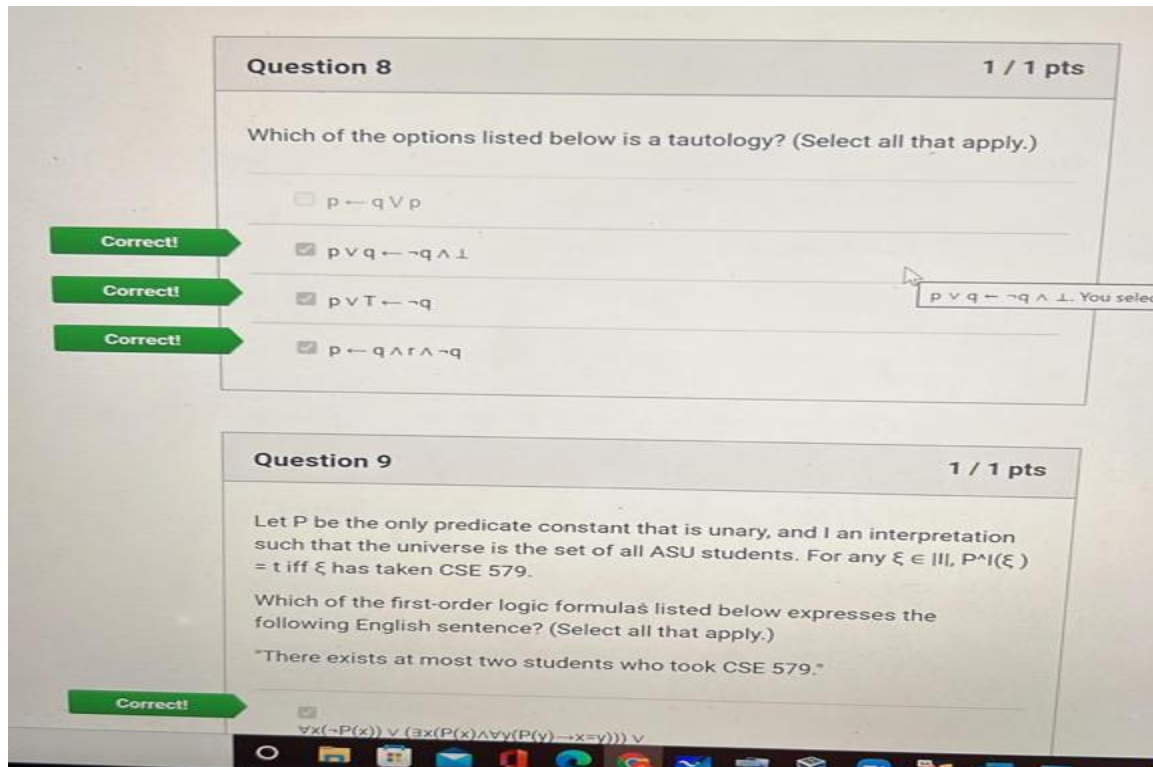
Ans: A & D (q)



Is the following statement true or false?

The choice rule (p, q) is an abbreviation of the formula $(p \vee q) \wedge (\sim p \vee \sim q)$.

And: False



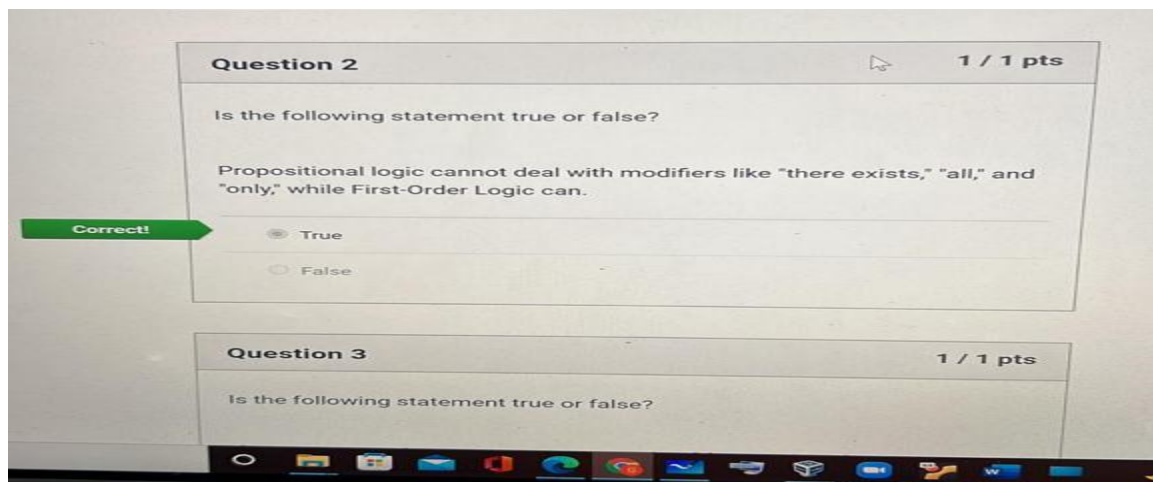
Which of the options listed below is a tautology? (Select all that apply)

Ans: BCD

$P \vee q \leftarrow \neg q \wedge (\text{Inverted } T)$

$P \vee T \leftarrow \neg q$

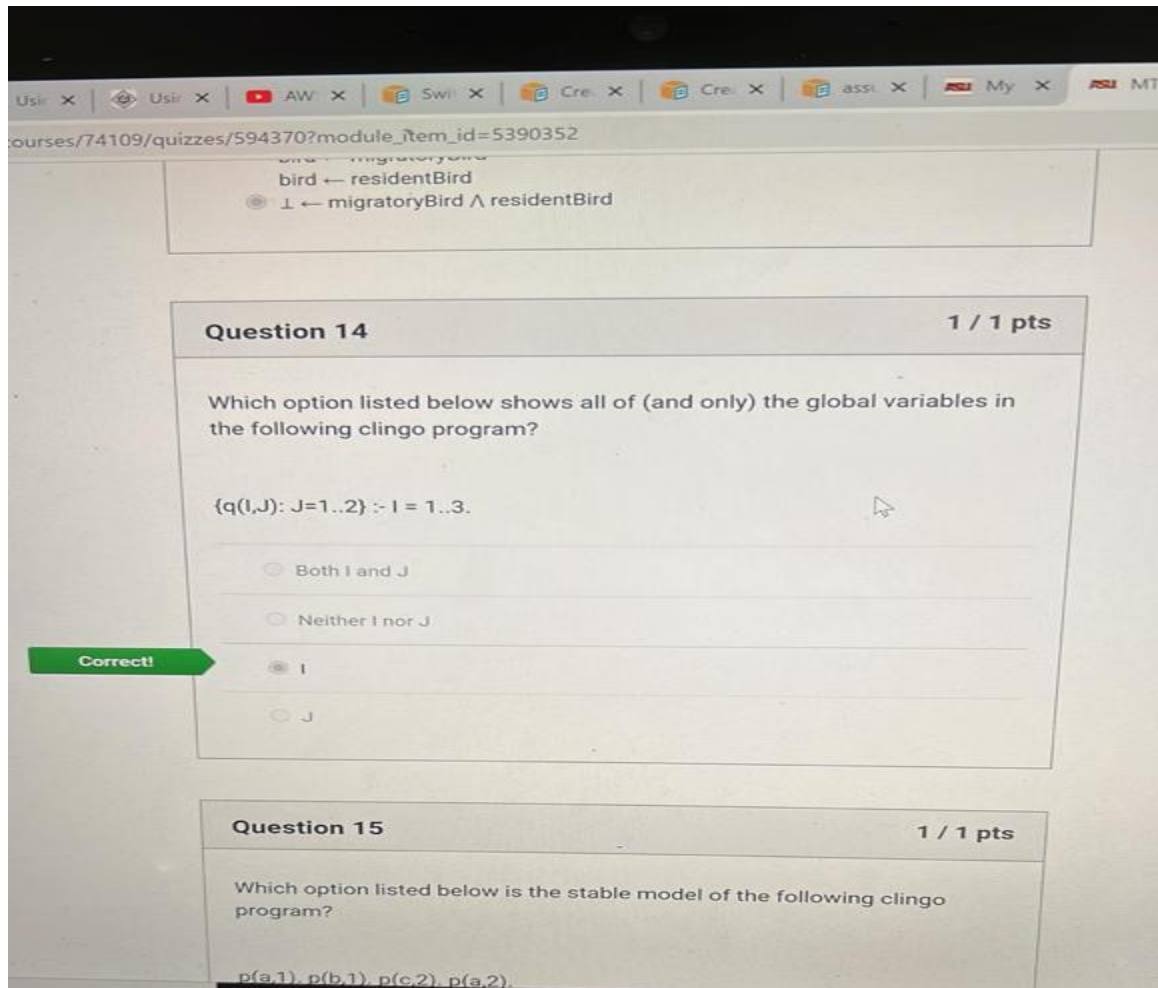
$P \leftarrow q \wedge r \wedge \neg q$



Is the following statement true or false?

Propositional logic cannot deal with modifiers like "there exists." "all" and "only", while First Order Logic can?

Ans: True



Which option listed below shows all of (and only) the global variables in the following clingo program?

$\{q(I,J) : J = 1..2\} :- I = 1..3.$

Ans: I (Option C)

Question 13

1 / 1 pts

What is the reduct of the following clingo program relative to the interpretation {bird}?

bird :- migratoryBird.

bird :- residentBird.

:- migratoryBird, residentBird.

☐ bird ← ⊥
bird ← ⊥
☐ ⊥ ← ⊥ ∧ ⊥

☐ bird ← ⊥
☐ bird ← ⊥

☐ bird ← migratoryBird
☐ bird ← residentBird

Correct!

☒ bird ← migratoryBird
bird ← residentBird
☐ ⊥ ← migratoryBird ∧ residentBird

Question 14

1 / 1 pts

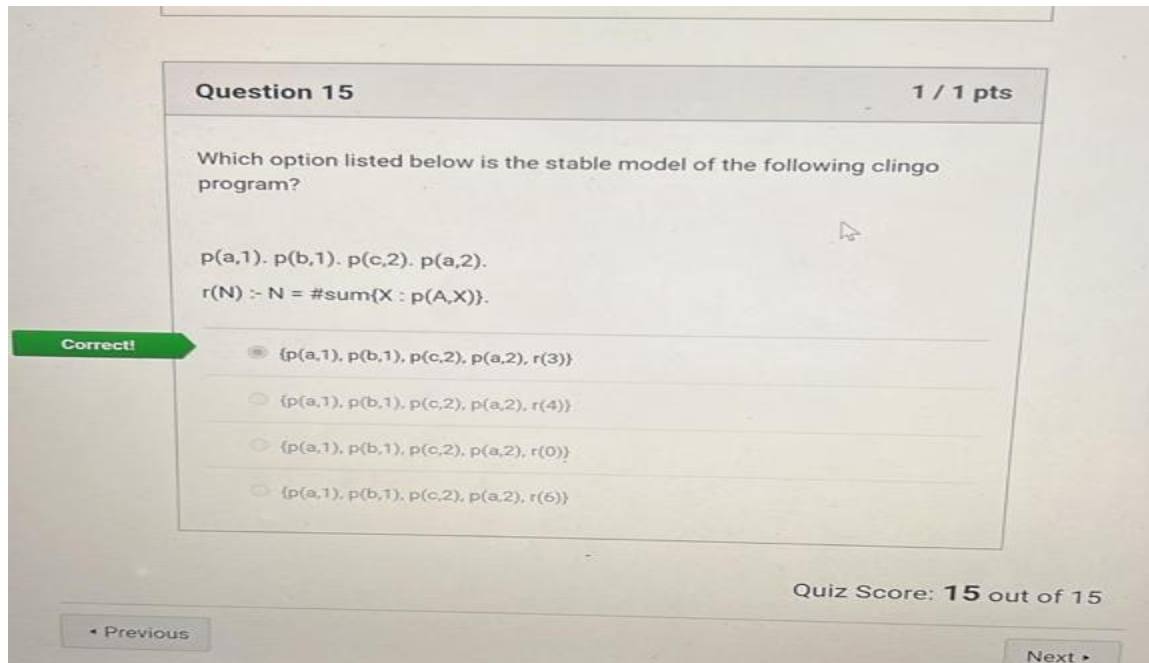
What is the reduct of the following clingo program relative to the interpretation {bird} ?

bird :- migratoryBird

bird :- residentBird.

:- migratoryBird, residentBird

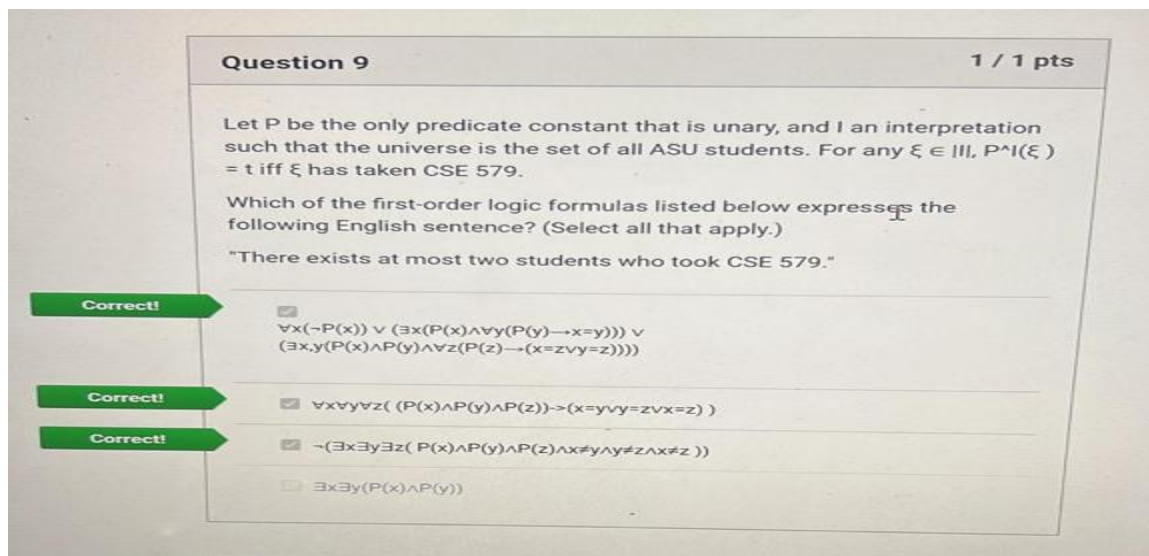
Ans: D



Which option listed below is the stable models of the following clingo program ?

$P(a,1).p(b,1).p(c,2).p(a,2).$
 $r(N) :- N = \#sum\{X : p(A, X)\}.$

Ans: A



Let P be the only predicate constant that is unary, and I an interpretation such that the universe is the set of all ASU students. For any E (Epsilon) Equals $|I|$, $P^I(E) = t$ iff E has taken CSE 579/.

Which of the first order logic formulas listed below expresses the following English sentence? (Select all that apply.)

"There exists at most two students who took CSE 579."

Ans : A, B, C

Question 12		1 / 1 pts
Which statement listed below correctly describes the stable models of the following propositional rule?		
$p \leftarrow \neg p$		
Correct!	<input type="radio"/>	Its stable model is \emptyset .
	<input checked="" type="radio"/>	It has no stable model.
	<input type="radio"/>	Its stable models are \emptyset and $\{p\}$.
	<input type="radio"/>	Its stable model is $\{p\}$.

Question 13		1 / 1 pts
What is the reduct of the following clingo program relative to the interpretation $\{bird\}$?		
$bird \rightarrow migratoryBird.$		

Which statement listed below correctly describes the stable models of the following propositional rule?

$P \leftarrow \neg p$

Ans : It has no stable model (B)

Question 10

1 / 1 pts

Let the underlying signature be $\{a, P, Q\}$, where a is an object constant, P is a unary predicate constant, and Q is a binary predicate constant. Assume object variables range over the set N of nonnegative integers, and the signature is interpreted as follows:

- a represents the number 10,
- $P(x)$ represents the condition "x is a prime number,"
- $Q(x, y)$ represents the condition "x is less than y."

Which of the first-order logic formulas listed below expresses the following English sentence? (Select all that apply.)

"x equals 0."

Correct!

☒ $\exists y (P(y) \wedge \neg \exists z (P(z) \wedge Q(z, y)) \wedge Q(x, y) \wedge \neg \exists u (Q(u, x)))$

Correct!

☒ $\neg \exists y (Q(y, x))$

☐ $\neg P(x) \wedge Q(x, y)$

☐ $\forall y (Q(x, y))$

Let the underlying signature be $\{a, P, Q\}$, where a is an object constant, P is the unary predicate constant, and Q is the binary predicate constant. Assume object variables range over the set N of non negative integers and the signature is interpreted as follows:

a represents the number 10,

$P(x)$ represents the condition "x is a prime number."

$Q(x,y)$ represents the condition "x is less than y."

Which of the first order logic formulas listed below expresses the following English sentence? (Select all that apply)?

Ans : A, D

Question 11 1 / 1 pts

Which of the formulas listed below has a model but not a Herbrand model? (Select all that apply.)

☐ $\neg P(a) \rightarrow P(a)$

☐ $P(a) \wedge \neg P(a)$

☒ $P(a) \wedge P(b) \wedge (\forall x P(x) \rightarrow x=c)$

☒ $a=b$

Correct!

Correct!

Question 12 1 / 1 pts

Which statement listed below correctly describes the stable models of the following propositional rule?

$p \leftarrow \neg p$

Its stable model is:

Which of the formulas listed below has a model but not a Herbrand model? (Select all that apply.)

Ans : C, D