FOA2Q

Started on	Monday, 13 November 2023, 7:16 PM
State	Finished
Completed on	Monday, 13 November 2023, 7:31 PM
Time taken	15 mins
Grade	**5.0** out of 5.0 (**100**%)

Question 1

Correct

Mark 3.0 out of 3.0

Flag question

In the following, we interpret formulas over the finite domain {0, 1, 2} with the usual interpretations of the various symbols.

1. Mark all assignments *<x,y>* of values to *x* and *y* that make the following formula true:

x > 0 ∨ x ≤ y

☑ ☐ ☑ ☑ ☑ ☑ ☑ ☑ ☑

<0,0> <0,1> <0,2> <1,0> <1,1> <1,2> <2,0> <2,1> <2,2>

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Mark 2.0 out of 2.0

The correct answer is:

- <0,0>
- <0,1>
- <0,2>
- <1,0>
- <1,1>
- <1,2>
- <2,0>
- <2,1>
- <2,2>

2. Mark all assignments of values to *x* that make the following formula true:

x > 0 ∨ ∀y : x ≤ y

☑ 0 ✔ ☑ 1 ✔ ☑ 2 ✔ ☐ none

Mark 1.0 out of 1.0

The correct answer is: true

Question 2

Correct

Mark 1.0 out of 1.0

Flag question

Consider the following formula where the outermost logical connective is "negation":

¬∃x : ((∀y : q(x, y)) ∧ (p(x) ∨ ∀y : (p(y) → q(x, y))))

Which of the following formulas (where only atomic formulas are negated) is logically equivalent to this formula?

Select one:

- a. ∀x : ((∃y : ¬q(x, y)) ∨ (¬p(x) ∧ ∃y : (p(y) ∧ ¬q(x, y)))) ✔
- b. ∀x : ((∃y : ¬q(x, y)) ∨ (¬p(x) ∧ ∃y : (¬p(y) → ¬q(x, y))))
- c. ∀x : ((∀y : q(x, y)) ∨ (¬p(x) ∧ ∃y : (p(y) ∧ ¬q(x, y))))
- d. ∀x : ((∃y : ¬q(x, y)) ∨ (¬p(x) ∨ ∃y : (p(y) ∨ ¬q(x, y))))
- e. ∀x : ((∃y : ¬q(x, y)) ∨ (p(x) ∧ ∃y : (¬p(y) ∧ ¬q(x, y))))
- f. None

Die Antwort ist richtig.

The correct answer is: ∀x : ((∃y : ¬q(x, y)) ∨ (¬p(x) ∧ ∃y : (p(y) ∧ ¬q(x, y))))

Question 3

Correct

Mark 1.0 out of 1.0

Flag question

Consider the following two formulas interpreted over the domain {1,2}:

∀x: (p(x) ∨ q(x))
(∀x: p(x)) ∨ (∀x: q(x))

For which definition of *p* and *q* is the first formula "true" and the second formula "false"?

Select one:

- a. p(1)=true, p(2)=true; q(1)=false, q(2)=false
- b. p(1)=true, p(2)=false; q(1)=true, q(2)=false
- c. p(1)=true, p(2)=true; q(1)=true, q(2)=false
- d. p(1)=true, p(2)=false; q(1)=false, q(2)=true ✔
- e. None

Die Antwort ist richtig.

The correct answer is: p(1)=true, p(2)=false; q(1)=false, q(2)=true

Finish review