338.001, VL Logic, Martina Seidl / Wolfgang Schreiner / Wolfgang Windsteiger, 2022W

Quiz navigation

1 2 3 4

Show one page at a time

Finish review

Started on	Monday, 30 January 2023, 7:17 PM
State	Finished
Completed on	Monday, 30 January 2023, 7:24 PM
Time taken	7 mins 35 secs
Grade	**2.50** out of 5.00 (**50**%)

Question 1

Correct

Mark 2.00 out of 2.00

Flag question

Given the following set S of propositional formulas

{ a, b, ¬b, (a ∨ b), (a ∨ ¬b), (¬a ∨ b) }

Select among the following sets of of formulas all which are a minimal unsatisfable subset (MUS) of the given set S.

Select one or more:

- [ ] { (a ∨ ¬b), (¬a ∨ b) }
- [x] { ¬b, b } ✔
- [x] { a, (¬a ∨ b), ¬b } ✔
- [ ] { (a ∨ b), (a ∨ ¬b), ¬a }
- [ ] { a, b, ¬b, (a ∨ b), (a ∨ ¬b), (¬a ∨ b) }
- [x] { (a ∨ b), (¬a ∨ b), ¬b } ✔
- [ ] { ¬b, (a ∨ b), (a ∨ ¬b), (¬a ∨ b) }

Your answer is correct.

The correct answers are: { ¬b, b }, { a, (¬a ∨ b), ¬b }, { (a ∨ b), (¬a ∨ b), ¬b }

Question 2

Incorrect

Mark 0.00 out of 1.00

Flag question

Given the following formula over the reals

(x < u ∨ u < y) ∧ (y < v ∨ v < x) ∧ (v >= x)

with its propositional skeleton

(a ∨ b) ∧ (c ∨ d) ∧ ¬d

How many propositional solutions does the propositional skeleton of this formula have not taking the theory into account?

Thus we are seeking the number of different satisfying assignments to the propositional skeleton which do not necessarily have to be theory consistent.

Answer: 9 ✖

The correct answer is: 3

Question 3

Incorrect

Mark 0.00 out of 1.00

Flag question

Given the following formula over integers

((x < y) ∨ (x+1 = y)) ∧ (¬(x < y) ∨ ¬(x+1 = y)) ∧ (y = 3) ∧ (x >= 0)

with its propositional skeleton

(a ∨ b) ∧ (¬b ∨ ¬a) ∧ c ∧ d

How many theory consistent propositional solutions does the propositional skeleton of this formula have?

Thus we are seeking the number of different assignments to the propositional skeleton which not only satisfy it propositionally but also are theory consistent.

Answer: 3 ✖

The correct answer is: 2

Question **4**

Partially correct

Mark 0.50 out of 1.00

Flag question

Which of the following propositional formulas are translations of a = b to SAT where a and b are bit-vectors of size 2.

1. $(a1 \leftrightarrow b1) \wedge (a2 \leftrightarrow b2)$ ✔
2. $(\neg a1 \vee b1) \wedge (\neg a2 \vee b2) \wedge (\neg b1 \vee a1) \wedge (\neg b2 \vee a2)$
3. $(\neg a1 \vee a2) \wedge (\neg a2 \vee b1) \wedge (\neg b1 \vee b1) \wedge (\neg b2 \vee a2)$
4. $(a \leftrightarrow b)$
5. $(a1 \rightarrow b1) \wedge (a2 \rightarrow b2)$

Die Antwort ist teilweise richtig.

You have correctly selected 1.
The correct answers are:
$(a1 \leftrightarrow b1) \wedge (a2 \leftrightarrow b2)$,

$(\neg a1 \vee b1) \wedge (\neg a2 \vee b2) \wedge (\neg b1 \vee a1) \wedge (\neg b2 \vee a2)$

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SMTL ►