

CS161 - Quiz 4

Started: Feb 24 at 6:41pm

Quiz Instructions

Question 1

1 pts

Given two arbitrary propositional sentences α and β , if α does not entail β , you can prove it using resolution.

☒ True

☐ False

Question 2

1 pts

Which of the following are Horn clauses? Choose ALL that apply.

☐ $A \wedge B \wedge D \implies C$

☐ $A \vee B \vee \neg C \vee D$

☒ $A \wedge B \wedge D \implies \neg C$

☐ $A \wedge \neg B \wedge \neg D \implies \neg C$

☒ $\neg A \vee \neg B \vee \neg C$

Question 3

1 pts

For this question, you will need to convert a propositional sentence to Conjunction Normal Form (CNF).

Please fill in the blanks with symbols like "A" or "~A".

How to represent a CNF:

- For each blank below, you fill in either a positive literal like "A" or a negative literal like "~A". Negation is represented by "~".
- It is possible that more blanks are provided than needed. If that's the case, fill in the blanks with "None".
- Important:** Please follow **the alphabetical order** to sort **clauses** and **literals within a clause**.

Example:

Given the sentence $(\neg B \vee C) \wedge (\neg B \vee A) \wedge (C \wedge B \wedge F)$

your result should look like this:

$(A \vee \neg B \vee \text{None} \vee \text{None})$

$\wedge (\neg B \vee C \vee \text{None} \vee \text{None})$

$\wedge (B \vee C \vee F \vee \text{None})$

$\wedge (\text{None} \vee \text{None} \vee \text{None} \vee \text{None})$

- Note that here BC is considered ahead of BCF alphabetically, so the clause $(\neg B \vee C)$ will be before $(B \vee C \vee F)$.
- If we have clauses $(A \vee B)$ and $(A \vee C)$, $(A \vee B)$ will be before $(A \vee C)$ because AB is alphabetically ahead of AC.

Convert the following sentence to CNF:

$A \Leftrightarrow (B \Rightarrow C)$

Result:

$($

 \vee

 \vee

 \vee

 $)$

$\wedge ($

 \vee

 \vee

 \vee

 $)$

$\wedge ($

 \vee

 \vee

 \vee

 $)$

$\wedge ($

 \vee

 \vee

 \vee

 $)$

Question 4

1 pts

$\alpha \models \beta$ if and only if $\alpha \models \beta$ is satisfiable.

☐ True

☒ False

Quiz saved at 7:01pm

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