

Quiz Guide

CSC 28 – Discrete Structures for Computer Science

To maximize your quiz performance: attend lectures, do readings, start homework early, ask for help when you need it, review problems and solutions before the quiz. If anything in this assignment does not make sense, please ask for help.

1) Make sure you've done the assigned reading and have reviewed your notes. Some people find it useful to rewrite their notes into a second notebook, cleaning them up and correcting them as they go.

2) Any problem similar to the ones in the homework may be on the quiz. Study them until you completely understand. Some people find it useful to try to write their own problems and then have their classmates try to solve them.

3) Here are some problems from old quizzes. There is no guarantee that the problems on your quiz will be like these, but it may be useful to see what I've asked in the past.

Give an example (either in English or using variables) of a tautology and of a contradiction.

Write the negation of "everybody has a friend" in simple English by (i) writing the phrase using quantifiers, (ii) negating and then simplifying the quantified statement, and (iii) reinterpreting the statement in English.

(i)

(ii)

(iii)

Let $N(x, y)$ mean " x needs y " and $H(x)$ mean " x is happy". Write each of the following in their logical form. If a statement is negative, rewrite it in a positive form. The universe is all people.

Everyone needs someone.

Not everyone needs someone.

If someone needs someone, then someone is happy.

Are $a \wedge (b \vee c)$ and $(a \vee b) \wedge (a \vee c)$ logically equivalent? Justify your answer with a truth table.

Is the statement $a \rightarrow b$ logically equivalent to $\neg(a \vee \neg b)$? Justify your answer using a truth table. In a sentence explain *how* your table justifies your answer.

Is the following argument valid? Answer by converting the argument to its logical form and then validating the argument with a truth table. "If I'm hungry, then I'll eat soup or toast. I'll never eat toast. Therefore, If I'm hungry, then I'll eat soup."

Is the following a valid argument: "I'm not hungry or I'm mad. I'm red in the face or I'm not mad. Therefore, I'm red in the face or I'm not hungry." Justify your answer by showing the argument's logical form (two premises and one conclusion) and then using a truth table to determine your answer. In a sentence explain *how* your table justifies your answer.