

CSC 4-151 Discrete Mathematics for Computer Science

Quiz 1 November 26, 2014

solution

name

1. (3 pts.) Give the truth table for the following expression: $p \wedge (p \vee \neg q)$

p	q	$p \wedge (p \vee \neg q)$
T	T	T
T	F	T
F	T	F
F	F	T

2. (4 pts.) Use a truth table to decide if $p \rightarrow q$ is logically equivalent to $\neg p \vee q$.

p	q	$(p \rightarrow q)$	$(\neg p \vee q)$
T	T	T	T
T	F	F	F
F	T	T	T
F	F	T	T

Since $\leftrightarrow$ is a tautology

$$p \rightarrow q \equiv \neg p \vee q$$

3. (2 pts.) Consider the statement: If you keep the ball in play, you will win more games.
a. Give the converse of this statement.

If you win more games, then you keep the ball in play.

- b. Give the contrapositive of this statement.

If you don't win more games, then you didn't keep the ball in play.

4. (3 pts) Draw a circuit diagram for the boolean expression: $r \wedge (p \vee \neg q)$

