CSE 235 Homework 04 Spring 2021

Due: Friday, Feb 26, 2021

Name 1(Print) _____ **CSE Login** _____

Name 2(Print) _____ **CSE Login** _____

Problem	Page	Notes	Points	Score
1.6:4 (all)	78		5	
Problem A	-	See below	2	
Problem B	79	Modified from textbook. See below	7	
1.6:16 (b,c)	79		8	
1.6:24	80		6	
(Optional) 1.6:10 (a,b,c,d,e)	79		0	
(Optional) 1.6:14 (all)	79		0	
(Optional) 1.6:28	80		0	
Typesetting (bonus)			3	
Total			28	

Hint Clearly number each sentence and state the rules that you apply at each step.

Problem A Prove the statement below. You may use equivalence rules or rewrite both sentences in Conjunctive Normal Form but you may *not* use truth tables. **(2 points)**

$$(p \wedge q) \rightarrow r \equiv p \rightarrow (q \rightarrow r)$$

Problem B (Modified from Exercise 1.6.12)

1. Rewrite the following axioms in Conjunctive Normal Form: $(p \wedge t) \rightarrow (r \vee s)$, $q \rightarrow (u \wedge t)$, $u \rightarrow p$, and $\neg s$. **(3 points)**
2. Apply equivalence and inference rules, particularly disjunctive syllogism (i.e., unit resolution) and the resolution rule, to prove that $q \rightarrow r$. **(4 points)**

Instructions Follow instructions *carefully*, failure to do so may result in points being deducted.

- Problems that have a point score greater than 0 are *required* to do and will be graded. Problems that have a point score of 0 are *not* required, but *recommended* to do for extra practice. These problems will *not* be graded.
- The homework must be submitted on paper. Homework *neatly* formatted in LaTeXwill receive a 10 percent bonus. When formatting in LaTeX, submit both the .tex and .pdf files via handin, in addition to the hard copy. You will not receive the bonus points if you work with a partner (see below).
- Clearly label each problem and submit answers *in order*.
- Staple this cover page to the front of your assignment for easier grading.
- Late submissions *will not be accepted*
- When you are asked to prove something, you must give a formal, rigorous, and complete a proof as possible. Each step in your proof must contain explanation that would allow us to understand what theorem/logic you have applied to arrive at that step.
- You are to work individually, and all work should be your own. Check partner policy below.
- The CSE academic dishonesty policy is in effect (see `http://cse.unl.edu/ugrad/resources/academic_integrity.php`).

Partner Policy You may work in pairs, but you must follow these guidelines:

1. You must work *all* problems *together*. You may not simply partition the work between you.
2. You must use LaTeXand you may divide the typing duties however you wish.
3. You may not discuss the problems with other groups or individuals.
4. Hand in only one hard copy with both author's names.