Due: Friday, Feb 24, 2023

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

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

Problem	Page	Notes	Points	Score
1.6:4 (all)	82		5	
1.6:10 (a,b,c,d,e)	82		5	
1.6:14 (all)	83		8	
1.6:16 (b,c)	83		8	
1.6:24	84		6	
1.6:28	84		4	
Problem A	-	See below	2	
Problem B	83	Modified from textbook. See below	7	
Typesetting (bonus)			5	
Total			45	

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

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

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

Problem B (Modified from Exercise 1.6.12)

1. Rewrite the following axioms in Conjunctive Normal Form: **(3 points)** $(p \wedge t) \to (r \vee s)$, $q \to (u \wedge t)$, $u \to p$, and $\neg s$.

2. Apply equivalence and inference rules, particularly   **(4 points)** disjunctive syllogism (i.e., unit resolution) and the resolution rule, to prove that $q \to r$.

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

- The homework must be submitted on paper. Homework *neatly* formatted in LaTeX will 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 LaTeX and 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.