Assignment 1, Part 1: The Logic of Compound Statements

Start Assignment

Due Tuesday by 11:59pm **Points** 100 **Submitting** a text entry box or a file upload
File Types pdf **Available** until Jan 18 at 11:59pm

Purpose

The purpose of this assignment is to study propositional calculus by simplifying and evaluating compound logic statements using truth tables and the properties of logic (**CLO 1 (https://canvas.oregonstate.edu/courses/1946372/pages/start-here-overview)** , **MLO 1 (https://canvas.oregonstate.edu/courses/1946372/pages/week-1-overview)**).

Instructions

This assignment is due by Tuesday (Week 2) at Midnight. A late assignment must be submitted no more than 48 hours after the original deadline (with a 15% penalty every 24 hours).

Write complete answers to each of the following questions. All are from the ends of the indicated sections in our text; for these, you **MUST** provide complete answers in accordance with the directions given **(in the rubric**). Show your work, when appropriate, for possible partial credit. This is not a group project; do your own work. You must follow the header format as below -

First name Last name

CS-225: Discrete Structures in CS

Homework 1, Part 1

Exercise Set #: Problem # (.....)

Lastly, you do not have to rewrite the questions.

Homework Problems

Exercise Set 2.1 of the required textbook: Problem #5(b, c, d), #8(c), #10(e), #30, #37, #39, #42, #49, #54

Canvas Problem: Verify the following logical equivalence with laws:
$((\sim p \wedge q) \vee (\sim p \wedge \sim q)) \vee (\sim p \wedge q) \equiv \sim p$

Submission Details

Assignments should be submitted to Canvas in .pdf format. You are allowed to submit scanned handwritten answers saved in .pdf format as well.

Academic Integrity Reminder

Note: completion of this assignment using work from external sources (e.g. other students or websites) is likely to cause unintended academic misconduct violations. Examples of these may include **plagiarism (https://canvas.oregonstate.edu/courses/1946372/pages/academic-integrity-at-osu)** and/or **cheating (https://canvas.oregonstate.edu/courses/1946372/pages/academic-integrity-at-osu)** .

We recognize that, in the process of completing your work, you may wish to consult various sources. Please refer to the resources in the **Academic Integrity Module (https://canvas.oregonstate.edu/courses/1946372/modules/3118541)** , or contact your instructor if you are not sure if your work is compliant with the **Code of Student Conduct (https://studentlife.oregonstate.edu/pre-student-conduct-community-standards)** .

Grading Criteria

Below is the rubric that would be used to grade this assignment. This assignment will be graded within **5** days of its *due date.*

HW1, Part1

Criteria	Ratings		Pts
HW 1, part 1: Set 2.1 - Q#5 (b, c, d) Determining which of the provided sentences are propositions/statements. You must provide a justification if a sentence is not a proposition/ statement. 2-3 pts will be deducted for each incorrect or incomplete answer.	**15 to >12.0 pts** **Full Marks** All the answers are correct.	**12 to >0 pts** **Partial Credit** One or more answers are incorrect.	15 pts
HW 1, part 1: Set 2.1 - #8(c), #10(e) Writing the statements in logical forms using symbols and logical connectives. 3-5 pts will be deducted for each incorrect answer.	**10 to >8.0 pts** **Full Marks** All the answers are correct.	**8 to >0 pts** **Partial Credit** One or more answers are incorrect.	10 pts
HW 1, part 1: Set 2.1 - Q#(30, 37, 39) Writing the negations for the statements. 3 pts will be deducted for each incorrect answer.	**15 to >12.0 pts** **Full Marks** All the answers are correct.	**12 to >0 pts** **Partial Credit** One or more answers are incorrect.	15 pts
HW1, part 1: Set 2.1 - Q#42 Determining whether the statement form is a tautology or a contradiction using a truth table. Showing your work and providing a conclusion (why is this statement form a tautology or a contradiction) are necessary. 3-10 points will be deducted for an incorrect and incomplete answer.	**15 to >12.0 pts** **Full Marks** The answer is correct.	**12 to >0 pts** **Partial Credit** The table is incorrect.	15 pts
HW1, part 1: Set 2.1 - Q#49, #54 Showing logical equivalences using Theorem 2.1.1. You must mention the law that you have used on each step. 1.5 pts will be deducted for each incorrect or incomplete step.	**30 to >27.0 pts** **Full Marks** All the steps are correct and complete.	**27 to >0 pts** **Partial Credit** Rules are applied incorrectly or the steps are not complete or the final answer is incorrect.	30 pts
HW1, part 1: Canvas Problem Showing a logical equivalence using Theorem 2.1.1. You must mention the law that you have used on each step. 1.5 pts will be deducted for each incorrect or incomplete step.	**15 to >13.5 pts** **Full Marks** All the steps are correct and complete.	**13.5 to >0 pts** **Partial Credit** Rules are applied incorrectly or the steps are not complete or the final answer is incorrect.	15 pts

Criteria	Ratings		Pts
General Deductions Late Penalty- 15% deduction for each day late up to two days.	**0 pts** **Deduction Rules** The submission is – - Late by 1 – 24 hours (-15 points) - Late by 25 – 48 hours (-30 points) - Late by >48 hours (-100 points)	**0 pts** **Full Marks**	0 pts
			Total Points: 100