

# Assignment 3 of CS2209A

**Completion of the assignment must be an individual effort.**

**Due date: 2021.10.22 (by 11:55 pm)**

**This assignment is worth 10% towards your final mark.**

Please refer to [these pages](#) of the textbook for this written assignment (Note that this assignment does not need LogiCola. These questions would be similar to questions in exams).

Exercise 4.5a, 3%

On page 1 of the PDF file above, prove questions 2, 4, 6, each with

- a. Truth-table method
- b. S/I rules strictly
- c. Resolution

(Therefore, there are a total of 9 ways to answer these 3 questions. For c, you need to convert to clauses first.)

Exercise 4.5b, 4%

On page 2 of the PDF file above, prove questions 2, 4 and 7, each with

- a. Truth-table method
- b. S/I rules strictly
- c. Resolution

(Note: you need to first translate sentences to WFFs; the square in the file means “therefore”, or “to prove”)

Exercise 4.6a, 2%

On top part of page 5 of the PDF file, show the argument is invalid (by refuting it) for questions 2, and 7, each with

- a. Truth-table method
- b. S/I rules strictly
- c. Resolution

(Note: in exams, I may give you a question that you need to decide and show either the argument is valid by proving it, or invalid by refuting it).

1%:

- a. Given the standard set of connectives is adequate, prove that  $\{\sim, \vee\}$  is also adequate
- b. Prove that  $\{\vee\}$  alone is not adequate for propositional logic

## How to Submit:

Submit your writing in one PDF file via [OWL](#). You could use handwriting and/or drawing in the file but make sure they can be viewed clearly otherwise marks can be deducted.