Phil 5312
Fall 2024

**Assignment 1:**
Read MacFarlane chapter 1.1. Then do the exercises below. Answers should be uploaded into Blackboard by Monday, Sept 9th. This can be typed up or parts can be written and then you can upload a picture or scan. If you don't know how to do the problems, you should talk to me and/or your fellow students. Collaboration is totally fine (and encouraged). But the final work product should be your own work.

We are aiming for mastery of chapter 1. So if you make a good faith effort and still can't solve a problem or make a mistake, I will allow you to redo some problems.

**Part 1:** Do exercise 1.1 on page 5. NOTE: For #4, don't just say 'yes' or 'no', explain your answer.

**Part II:**
Multiple choice: Pair up each sentence on the first list with an English translation on the second list. (This is not a 1-1 pairing.) A list of answers is fine, but if you get any incorrect and want redo credit you will have to produce a truth-table to prove your answer.

      First list:
1) $A \lor B \lor C$
2) $\neg(A \land B) \land \neg(A \land C) \land \neg(B \land C)$
3) $(A \land \neg B \land \neg C) \lor (\neg A \land B \land \neg C) \lor (\neg A \land \neg B \land C)$
4) $(A \land B) \lor (A \land C) \lor (B \land C)$
5) $(A \lor B) \land (A \lor C) \land (B \lor C)$
6) $(A \land B \land \neg C) \lor (A \land C \land \neg B) \lor (B \land C \land \neg A)$
7) $(A \lor B \lor C) \supset (A \land B \land C)$
8) $(A \supset B) \land (B \supset C) \land (C \supset A)$
9) $A \equiv (B \equiv C)$
10) $((\neg A \land \neg B) \lor (\neg A \land \neg C) \lor (\neg B \land \neg C))$
11) $(A \supset (\neg B \land \neg C)) \land (B \supset (\neg A \land \neg C)) \land (C \supset (\neg A \land \neg B))$
12) $(\neg A \supset (B \land C)) \land (\neg B \supset (A \land C)) \land (\neg C \supset (A \land B))$
13) $(A \supset (B \lor C)) \land (\neg A \supset (B \land C))$
14) $A \equiv (B \equiv \neg C)$

Second list:
A) At least one of A, B, and C is true
B) At least two of A, B, and C is true
C) At most one of A, B, and C is true
D) At most two of A, B, and C is true
E) Exactly one of A, B, and C is true
F) Exactly two of A, B, and C is true

G) Either all or none of A, B, and C is true
H) Either exactly one or exactly two of A, B, C is true
I) None of A-H could be acceptably transcribed as the sentence in question.

**Part III:** Do exercise 1.2 on page 15.

Also, give a proof in MacFarlane's proof system of the following:

$$\vdash \neg(A \land \neg B) \equiv (A \supset B)$$

Use only his primitive proof rules. No shortcut rules (skipping reits is fine).