

LGIC 010 & PHIL 005
Problem Set 3
SECOND DRAFT
Spring Term, 2018
DUE IN CLASS MONDAY, FEBRUARY 5

For the purposes of this problem set, we restrict attention to monadic quantificational schemata (abbreviated MQ-schemata) all of whose predicate letters are among F , G and H , and to structures which interpret exactly these predicate letters. We employ the following terminology in the problems below.

- If S and T are MQ-schemata we say that a structure A is a *counterexample* to the claim that S implies T if and only if $A \models S$ and $A \not\models T$.

Let S be the schema

$$(\forall x)(Fx \equiv (Gx \vee Hx))$$

and let T be the schema

$$(\forall x)(Fx \equiv Gx) \vee (\forall x)(Fx \equiv Hx).$$

1. (25 points) How many structures with universe of discourse $\{1\}$ are counterexamples to the claim that S implies T ?
2. (25 points) How many structures with universe of discourse $\{1\}$ are counterexamples to the claim that T implies S ?
3. (25 points) How many structures with universe of discourse $\{1, 2\}$ are counterexamples to the claim that S implies T ?
4. (25 points) How many structures with universe of discourse $\{1, 2\}$ are counterexamples to the claim that T implies S ?