**LGIC 010 & PHIL 005**
**Problem Set 3**
**Spring Term, 2014**

1. (25 points) How many structures with universe of discourse $\{1, 2, 3, 4, 5, 6\}$ interpreting only the monadic predicate letters "$F$" and "$G$" make true the schema

$$(\forall x)(Fx \supset Gx).$$

2. (25 points) Is there a satisfiable schema involving only the monadic predicate letters "$F$", "$G$", and "$H$" which is satisfied by no structure with universe of discourse $\{1, 2, \ldots, 7\}$?

3. (25 points) How many structures with universe of discourse $\{1, 2, 3, 4, 5, 6\}$ interpreting only the monadic predicate letters "$F$" and "$G$" make true the schema

$$(\exists x)(Fx \oplus Gx).$$

4. (25 points) How many structures with universe of discourse $\{1, 2, 3, 4, 5, 6\}$ interpreting only the monadic predicate letters "$F$", "$G$", and "$H$"make true the schema

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