

**LGIC 010 & PHIL 005**

**Problem Set 4**

**Spring Term, 2013**

1. (25 points) How long a list of pure monadic schemata involving only the predicate letters “ $F$ ,” “ $G$ ,” and “ $H$ ” can be constructed so that no two schemata on the list are equivalent and no schema on the list is implied by “ $(\exists x)(Gx \wedge Hx)$ ”?
2. (25 points) How long a list of pure monadic schemata involving only the predicate letters “ $F$ ,” “ $G$ ,” and “ $H$ ” can be constructed so that each schema on the list implies the next schema on the list, but is not implied by it?
3. (25 points) How long a list of pure monadic schemata involving only the predicate letters “ $F$ ,” “ $G$ ,” and “ $H$ ” can be constructed so that each schema on the list implies the next schema on the list, but is not implied by it, and each schema on the list implies “ $(\forall x)(Fx \supset Gx)$ ”?
4. (25 points) How long a list of pure monadic schemata involving only the predicate letters “ $F$ ” and “ $G$ ” can be constructed so that no two schemata on the list are equivalent and each schema on the list is satisfied by at most 20 structures with universe of discourse  $\{1, 2, 3, 4\}$ .