Final Examination
Philosophy 112
Winter 2003

Please work all the problems in the space provided. You may use only the techniques noted on the individual problems. Please be sure that you do everything that is asked for in each problem. Also, in each answer, bring out as much detail as possible.

Name________________________________

1. Symbolize the following argument, revealing as much structure as possible and providing a symbolization key, *with a UD that includes everything*. Show that it is valid in *PD* (which requires a derivation). (15 points)

Some people are vegetarians, and vegetarians do not eat meat. Therefore, some people do not eat meat.

Name________________________________

2. Symbolize the following argument, revealing as much structure as possible and providing a symbolization key. Using any *semantical* technique for *PL* (*not a derivation*), determine whether it is quantificationally valid or invalid and defend your answer. (15 points)

If everyone is going to the mall, then Jason is going.

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If anyone is going to the mall, then Jason is going.

Name________________________________

3. Using the definitions from the formal semantics, show that the following two sentences of *PL* are quantificationally equivalent. (15 points)

$(\exists y)Fy \vee (\exists x)Gx$
$(\exists y)(Fy \vee (\exists x)Gx)$

Name________________________________

4. Show that the following sentence is quantificationally indeterminate by constructing an interpretation on which it is true and one on which it is false. State, using either the formal or the informal semantics, why it is true on the interpretation on which it is true, and why it is false on the interpretation on which it is false. (15 points)

$(\exists x)((Fx \ \& \ (\forall y)(Fy \supset x = y)) \ \& \ Gx)$

5. Using the formal semantics for *PL*, determine the truth-value of the following sentence on the interpretation given. Show in detail how the truth-value is determined. (15 points)

$(\forall \mathrm{x})(\forall \mathrm{y})(\mathrm{Axxy} \supset \mathrm{Gyx})$

UD: The set of all positive integers
I(G) is $\{<\mathbf{u}_1,\mathbf{u}_2>$: $\mathbf{u}_1$ is greater than $\mathbf{u}_2\}$
I(A) is $\{<\mathbf{u}_1,\mathbf{u}_2,\mathbf{u}_3>$: $\mathbf{u}_1$ plus $\mathbf{u}_2$ equals $\mathbf{u}_3\}$

Name________________________________

6. Using either informal or formal semantics, show that the following sentence is quantificationally true in *PLI*. (15 points)

$(\forall x)(\forall y)(x = y \supset (Fx \equiv Fy))$

Name________________________________

7. Prove that the following argument is valid in *PD*. (10 points)

$\sim(\exists x)(Fx \ \& \ Gx)$

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