PHILOSOPHY 120: SYMBOLIC LOGIC I

MID-TERM EXAMINATION
Fall 2005
Answers to Symbolizations

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Read over the test carefully, and make sure you copy the problems down correctly. You have 80 minutes. Good luck!

SYMBOLIZATION (20 points)

Symbolize the following English sentences using the scheme of abbreviation provided below. You do *not* need to show your work.

A:	Libby
B:	Cheney
F:	is a criminal
G:	lied to the FBI
H:	lied to the Grand Jury
J:	is a White House staffer
K:	is immune from prosecution
L:	smeared political opponents

1. **If Libby lied to the FBI or to the Grand Jury and no White House staffer is immune from prosecution, then he is a criminal just in case Cheney is.**

If Libby lied to the FBI or Libby lied to the Grand Jury and *for all x, if x is a White House staffer, then x is not immune from prosecution*, then Libby is a criminal just in case Cheney is a criminal

[Libby lied to the FBI or Libby lied to the Grand Jury and *for all x, if x is a White House staffer, then x is not immune from prosecution* → Libby is a criminal just in case Cheney is a criminal]

[((Libby lied to the FBI ∨ Libby lied to the Grand Jury) ∧ ⋀x (x is a White House staffer → x is not immune from prosecution)) → (Libby is a criminal ↔ Cheney is a criminal)]

[((GA ∨ HA) ∧ ⋀x (Jx → ~ Kx)) → (FA ↔ FB)]

2. Any White House staffer who lied to the FBI only if he smeared political opponents is a criminal if he is not immune from prosecution.

For all x, IF x is a White House staffer AND x lied to the FBI only if x smeared political opponents, THEN x is a criminal if x is not immune from prosecution.

/\x [(x is a White House staffer ∧ (x lied to the FBI → x smeared political opponents)) → (x is not immune from prosecution → x is a criminal)]

/\x [(Jx ∧ (Gx → Lx)) → (~ Kx → Fx)]