Philosophy 225 -- Symbolic Logic

Midterm Exam

March 16, 2012

(1) (35 points) Show the following set of sentences to be consistent. (Please check your sentences very carefully against your final interpretation to make sure that each sentence is true.)

(x)(y)(Fxy  Gyx)

(x)(y)(z)[(Fxy  Fyz)  Fxz]

(x)(y)(Fxy  Fyx)

(x)(y) – Gxy

(2) (35 points) Using the interpretation specified, translate each of the following:

D = {x|x is a person}

L2: {x,y  | x loves y}

H2: {x,y  | x hates y}

R2: {x,y  | x respects y}

L1: {x|x is a lawyer}

(a) Only those with no self respect are unloved.

(b) If everybody whom no lawyer loves hates somebody, then nobody loves anybody.

(c) Although some who love are loved, not all who are loved love.

(3) (30 points) For each of the following, say whether it is valid, inconsistent, or neither. If it is not valid, then give an interpretation in which it is false. If it is not inconsistent, give an interpretation in which it is true. If it is neither then give an interpretation in which it is true **and** an interpretation in which it is false.

(a) (x)(y)Fxy  (y)(x)Fxy

(b) (x)[(y)Fxy  (z)Fzz]

(3) – (x)(y)Fxy  (x)(y)Fyx