LGIC 010 & PHIL 005
Problem Set 1
Spring Term, 2011

1. (33 points) Test the following schemata for validity.

   (a) $(p \oplus q) \supset ((p \equiv r) \oplus (q \equiv r))$ (Recall that "$\oplus$" represents exclusive disjunction.)

   (b) $((p \supset r) \wedge (q \supset r)) \supset ((p \vee q) \supset r)$

   (c) $(p \supset q) \vee (q \supset p)$

2. (55 points) In each case, determine whether the first schema implies the second.

   (a) $p \equiv q$ $\quad$ $(p \wedge r) \equiv (q \wedge r)$

   (b) $(\neg p \supset \neg q)$ $\quad$ $(p \supset q)$

   (c) $(\neg p \supset \neg q)$ $\quad$ $(q \supset p)$

   (d) $(p \vee q) \wedge r$ $\quad$ $p \vee (q \wedge r)$

   (e) $p \vee (q \wedge r)$ $\quad$ $(p \vee q) \wedge r$

3. (12 points) How many truth assignments to the six sentence letters $p_1, \ldots, p_6$ satisfy the following schema?

$$(p_1 \wedge p_2) \vee (p_3 \wedge p_4) \vee (p_5 \wedge p_6)$$