LGIC 010 & PHIL 005 Problem Set 2 Spring Term, 2010

1. (25 points) Let S be the following truth-functional schema:

$$(p_1 \oplus q_1) \land (p_2 \supset q_2) \land (p_3 \oplus q_3) \land (p_4 \supset q_4) \land (p_5 \oplus q_5)$$

How many truth assignments to the ten sentence letters $p_1, \ldots, p_5, q_1, \ldots, q_5$ satisfy the schema S?

- 2. (25 points) How long a list of truth-functional schemata involving only the sentence letters "p," "q," and "r" can you write down so that no two schemata on the list are equivalent and no schema on the list implies " $p \lor q \lor r$ "?
- 3. (25 points) How long a list of truth-functional schemata involving only the sentence letters "p," "q," "r," and "s" can you write down so that each schema on the list is implied by, but does not imply, the schema following it?

4. (25 points) How long a list of truth-functional schemata involving only the sentence letters "p" and "q" can you write down so that no schema on the list implies any other schema on the list?