Due: April 18, 2005, in class

1. Explain the difference between semantical entailment and derivability.

2. Show that the following is a theorem of $SD$: ‘$A \lor \sim A$.’

3. Show that the following is a semantial entailment in $SI$: $\{P \equiv Q, \sim Q\} \models_{SI} \sim P$.

4. Suppose we were to add an impossibility operator ‘♦’ to $MSL$. Show how you would define the other modal operators in the syntax of $MSL$ in terms of it.

5. Give an example of an interpretation in the basic semantics in which ‘$\square (A \land B)$’ is true at one world but ‘$A$’ is false at that same world.