Due: May 21, 2007, in class

1. Explain the difference between a universal relation and an equivalence relation, and why that difference is suppressed in the semantical system *S5I*.

2. Using a derivation, show that the following is a theorem in *S5D*:
$\vdash_{S5D} \Diamond(P \wedge \Box Q) \equiv (\Diamond P \wedge \Box Q)$.

3. Show that the following is a semantical entialment in *S5I*: $\{\Diamond \Box \Diamond P\} \vDash_{S5I} \Diamond P$.

4. Prove the following result: $\nvDash_{S5I} \Diamond \Diamond \alpha$.

5. Show that the following entailment holds in the Carnapian semantical system (which we here call "C"): $\{\Diamond \Box P\} \vDash_C \Box P$.