

Philosophy 211 -- Assignment #6

I. Paraphrase these sentences into Predicate Logic. Use the following names and predicates: $S\alpha$: α is a student; $T\alpha$: α is a test; $P\alpha\beta$: α passed β ; m: Mary; g: George.

1. Mary passed every test that George passed.
2. Mary passed a test that George passed.
3. Mary passed no test that George passed.
4. Either George or Mary passed every test.
5. There is a test that neither George nor Mary passed.
6. Every student passed at least one test.
7. Every test was passed by at least one student.
8. At least one student passed every test.
9. No student passed every test.

II. Consider the rule \vee CA:

a, b j. $X \vee Y$

c, d k. $Z \vee \sim Y$

a,b,c,d l. $X \vee Z$ j, k \vee CA

Explain how the Soundness Theorem can be extended to cover the rule \vee CA.

III. Consider the rule \vee IA:

a, b k. $X \rightarrow Z$

a, b l. $(X \vee Y) \rightarrow Z$ k, \vee IA

Explain why the Soundness Theorem would be false if the rule \vee IA were added.

III. Recall that X is stronger than Y when Y is provable from X but X is not provable from Y . Prove that if X is a contingent sentence and Y is a theorem, then X is stronger than Y . You may assume that the Soundness Theorem is true.