

M.A. Examination in Logic May 2001

General Instructions: Answer *either* two questions from Part I and one from Part II, *or* one question from Part I and two from Part II. If you answer two questions from Part I, you may choose only one question from each sub-part.

Part I

Sub-Part A

1. State, *sketch a proof of*, and explain the logical and philosophical significance of the completeness theorem for first order logic.
2. State, *sketch a proof of*, and explain the logical and philosophical significance of Godel's second incompleteness theorem.
3. State, *sketch a proof of*, and explain the logical and philosophical significance of the fundamental theorem for canonical models in propositional modal logic.

Sub-Part B

4. State, *sketch a proof of*, and explain the logical and philosophical significance of the aleph-null-non-categoricity of first order arithmetic.
5. State, *sketch a proof of*, and explain the logical and philosophical significance of the existence of an enumerable, but not recursively enumerable set of sentences.
6. State, *sketch a proof of*, and explain the logical and philosophical significance of Tarski's "indefinability theorem."

Part II

1. What is the philosophical significance of Tarski's theory of truth?
2. Why might someone think that the logic of a language with vague predicates cannot be classical? Would such a thought be correct?
3. There has been much confusion over the philosophic ramifications of Godel's incompleteness theorems. What philosophic problems did these theorems engender, and what is the status of these problems now?
4. Is logic a compendium of the broadest traits of reality, or is it just an effect of linguistic convention? Must all right-minded men agree on logic, or is it every language for itself? Sketch and evaluate at least two opposing answers to these questions.

5. Quine, in "Ontological Relativity," seems to think that the Lowenheim-Skolem theorem has profound philosophical ramifications. What are these ramifications? Explain whether Quine is right or wrong about these supposed ramifications.