Logic Comprehensive Exam Reading List

You can completely prepare for the exam by using your lecture notes from Philosophy 405 and Philosophy 406 and by practicing with the corresponding homework problems. If you did not take one or both of those courses, or if you want a reminder about what material was covered, the reading list is as follows:

I. You should be prepared to do homework-type problems in connection with all of the following:

1. Translations from English into first-order logic: *The Logic Book*, by Bergmann, Moor, and Nelson, chapter 7.

2. Informal semantics for first-order logic, the construction of interpretations (or models), and the definitions of logical notions such as logical truth, validity, consistency, and so on: *The Logic Book*, by Bergmann, Moor, and Nelson, sections 8.1-8.4.

3. Derivations in sentential logic: *The Logic Book*, by Bergmann, Moor, and Nelson, chapter 5.

4. Turing Machines: *Computability and Logic*, by Boolos, Burgess, and Jeffrey, chapter 3.

II. You should be prepared to answer essay questions on at least four of the following:

5. Formal (Tarskian) semantics for first-order logic: *The Logic Book*, by Bergmann, Moor, and Nelson, section 8.7.

6. The completeness and soundness theorems for first-order logic: *The Logic Book*, by Bergmann, Moor, and Nelson, chapter 11 (most notably, sections 11.1, 11.3, and 11.4).

7. Cantor's proof of the existence of nondenumerable sets: *Computability and Logic*, by Boolos, Burgess, and Jeffrey, chapter 2 (some background is given in chapter 1).

8. Church's Thesis, Turing's Thesis, and the Church-Turing thesis: *Computability and Logic*, by Boolos, Burgess, and Jeffrey, chapters 3 and 6.

9. The Skolem-Löwenheim theorem: *Computability and Logic*, by Boolos, Burgess, and Jeffrey, section 12.3.

10. Undecidability and Gödel's incompleteness theorem: *Computability and Logic*, by Boolos, Burgess, and Jeffrey, chapter 17 (and the preliminaries in chapters 15-16).