

## CS4860 Fall 2012 Final Exam Review

Exam Wed. Dec 5, 7-9:30 pm Upson 315 (normal classroom) doors open @ 6:30 pm.

The exam will be closed book. It will be possible to finish in 90 minutes. You will however have the normal final exam time.

There will be several (5 to 7) short answer questions including definitions, giving evidence for formulas in iFOL, giving Boolean semantics for FOL. You should know how to do simple HA proofs and produce evidence. You should know the evidence term for induction (see Lect 22). You should know Peano Arithmetic (PA) as well,  $PA = HA + (P \vee \neg P)$ .

There will also be conceptual questions such as explaining why FOL and iFOL agree on finite models with decidable atomic predicates. These should be answered in essay form citing key definitions and theorems. You should be able to state the Diagonal Lemma and the undecidability theorem for  $\mathcal{Q}$  and its extensions.

No material from the last two lectures on type theory will be required but you might find it useful in conceptual questions.

Be sure to know the basic theorems covered from Smullyan and on the problem sets, e.g. the Fan Theorem and König's Lemma, etc. Know Smullyan's definition of validity and satisfiability for FOL (pages 46-50).