Exam 3 will cover the following Chapters and Sections: Chapter 4, Chapter 6, 7.1, 7.2, , 8.1, 8.2, 8.4, 9.1, 9.2, 9.3, 9.5

(The first ten are things that will not be explicitly covered on the test but the student should be familiar with them.)

Test 1
1. sentences, atomic sentences, when a sentence is well-formulated

2. predicates, arguments, arity; function symbols; infix versus prefix; translations, tables on pgs 22 & 30

3. FOL of set theory, ∈, ⊂; how to define FOL for arithmetic

4. arguments, premises & conclusions (and identifying them), validity, sound; logical consequence, logical validity;

5. Fitch format, formal vs. informal proof; indescernibility of identicals, identity elimination, =Intro & =Elim & Ana Con (and when you can apply), proof of consequence and non-consequence, counterexamples

6. reflexive, symmetric, transitive and inverse relations

7. Boolean connectives/operators, truth tables (and the correct way!!); disjunction (exclusive and inclusive), conjunction, negation; literals, DeMorgan’s Laws, distributive laws

8. words expressing disjunction, conjunction, negation

9. tautology, logical necessity, logical possibility, TW-necessity, TW-possibility, TT-possibility (the way they relate and counterexamples)

10. Tarski’s World: what things are allowed, not allowed, which objects, sizes, and how the predicates relate them, columns and rows

Text 2
1. tautologies and logical truth, tautological and logical equivalence, tautological and logical consequence. Conjunctive and disjunctive form. Taut Con

2. Methods of proof: proof by cases (informal and formal/Fitch), Proof by contradiction. Proper and formal uses of subproof.
3. \(\land\) Elim, \(\land\) Intro, \(\lor\) Intro, \(\lor\) Elim, \(\rightarrow\) Elim, \(\neg\) Intro, \(\perp\) Intro, \(\perp\) Elim

4. \(\rightarrow\) (conditional), If \(P\) then \(Q\), \(P\) only if \(Q\), \(Q\) provided \(P\), \(Q\) if \(P\), \(Q\) is necessary for \(P\). (Also with negations: Unless \(P\), \(Q\); \(Q\) unless \(P\).) Conditional, inverse, converse, contrapositive. (Sufficient, etc.) Proving a conditional statement.

5. \(\leftrightarrow\) (biconditional), if and only if, iff. Proving biconditionals, proving a cycle of conditionals.

6. \(\rightarrow\) Elim, \(\rightarrow\) Intro, \(\leftrightarrow\) Elim, \(\leftrightarrow\) Intro

7. Know the proof on page 156. This proof show how to use fitch to obtain that \(A\) implies \(\neg\neg A\).

8. Use Tarski’s World for counterexamples.

9. variables and atomic wffs, \(\forall\), \(\exists\), Wffs and sentences, 4 Aristotelian Forms.

11. anything else we have covered in class or in the book and which is not here