List of topics to be covered in the final exam

Chapter 1:
1.2 The Language of Sets
1.3 The Language of Relations and Functions

Chapter 2:
2.1 Logical Form and Logical Equivalence
2.2 Conditional Statements
2.3 Valid and Invalid Arguments

Chapter 3:
3.1 Predicates and Quantified Statements I
3.2 Predicates and Quantified Statements II
3.3 Statements with Multiple Quantifiers
3.4 Arguments with Quantified Statements

Chapter 4:
4.1 Direct Proof & Counterexample I: Introduction
4.2 Direct Proof & Counterexample II: Rational Numbers
4.3 Direct Proof & Counterexample III: Divisibility
4.4 Direct Proof & Counterexample IV: Cases, Quotient-Remainder Theorem
4.5 Direct Proof & Counterexample V: Floor and Ceiling.
4.6 Indirect Argument: Contradiction and Contraposition
4.7 Indirect Argument: Two Classical Theorems
4.8 Applications: The division and Euclid algorithms

Chapter 5:
5.1 Sequences
5.2 Mathematical Induction I
5.3 Mathematical Induction II
5.4 Strong Mathematical Induction
5.6 Defining Sequences Recursively

Chapter 6:
6.1 Set Theory: Definitions
6.2 Set Identities

Chapter 7
7.2 One-to-One and Onto functions (definition and examples only)

Chapter 9:
9.1 Counting and Probability: Introduction
9.2 The Multiplication Rule
9.3 The Addition Rule
9.4 The Pigeonhole Principle
9.5 Combinations
9.8 Expected Value
9.9 Conditional Probability and Bayes' Formula

Chapter 10:
10.1 Graphs: Definitions and Properties (Sections 1.4 and 4.9 in the 5th edition)
10.2 Trails, Paths, and Circuits (Section 10.1 in the 5th edition)
10.3 Matrix Representations of Graphs (Section 10.2 in the 5th edition)