

Spring 2023 COT 3100 Exam #1 Review

Exam Format - In Class

Exam will be split into three parts:

Logic (25 pts)

Sets (25 pts)

Recitation Topics (25 pts)

75 pts total

***1) YOU WILL BE PROVIDED THE Exam 1 REFERENCE SHEET
2) YOU MAY BRING 1 SHEET OF NOTES (FRONT + BACK, 8.5" x 11" paper, typed or written)***

Exam Outline

I. Logic and Proof

- a. Boolean variables, operators
- b. Implication and related statements
 - i. inverse
 - ii. converse
 - iii. contrapositive
- c. Truth Tables
- d. Logic Laws and application
- e. Predicates and Quantifiers
- f. Nested Quantifiers
 - i. When order matters
 - ii. How to disprove a nested quantifier statement
- g. Rules of Inference
- h. Some Definitions and Preliminaries
 - i. Divisibility
 - ii. Algebra with expressions (completing square, etc.)
- i. Proof Techniques
 - i. Direct Proof
 - ii. Proof by Contradiction
 - iii. Proof of Contrapositive
 - iv. Proof by cases

II. Sets

- a. Definitions ($\in, \subseteq, \subset, \cap, \cup, \bar{A}, -, \times, \emptyset$)
- b. Set Table
- c. Laws
- d. Operations
- e. Set Proofs/Disproofs
- f. Inclusion/Exclusion Principle (2 and 3 set versions)

III. Recitation Material

- a. Distance = Rate x Time Problems (setting up equations, solving)
- b. Log Rules, Problems with Logs, System of Equations with Logs

Exam Procedure

Please try to come early.

If you come by 1:25 pm, please do NOT sit in the first two rows. These seats are for late-comers.

At 1:25 pm, we'll start passing out the exams. Three of us will each pass out one sheet of paper. MAKE SURE YOU PUT YOUR NAME ON ALL THREE SHEETS.

If you come late, wait till we finish passing out the exam to the rest of the class. Then, we'll give you all three parts separately.

If you finish early, please come up front and turn in the three parts and the formula sheet in separate stacks.

If you are working until time is called, please bring up all four sheets together and hand them directly to one of the proctors. We will sort everything out later.