

Spring 2017 COT 3100 Exam #2 Review

Exam Date and Time

Date: THURSDAY, MARCH 23, 2017

Time: 3:00 – 4:15 pm

Location: CB1-121

Exam Format

3 Induction Questions (15 pts each)

Several Counting Questions (55 pts total)

*NO EXAM AIDS ALLOWED
NO CALCULATOR, NO NOTES*

Exam Outline

I. Mathematical Induction

- a. Base Case
- b. Inductive Hypothesis
- c. Inductive Step
- d. Summation Rules
- e. Not all induction problems use summations
- f. How to deal with inequalities
- g. Divisibility Problems
- h. Matrix Problems
- i. Familiarity with Fibonacci numbers and Harmonic numbers
- g. Strong Induction

II. Counting

- a. Sum Principle
- b. Product Principle
- c. Division Principle
- d. Proof of formulas for permutation, combination
- e. *Subtraction Principle*
- f. Grid Walking Problem
- g. Ascending Password Problem and Variants
- h. Binomial Theorem
- i. Combinations with Repetition Proof and Formula