

Discrete Structures for CS Final Study Guide

Review homework 8-10. Try similar odd-numbered problems at the end of each section; their solutions are at the end of the book. When in doubt of a problem or solution, ask.

Expect questions of the following type:

6.1-4 Counting

- Use the (general) pigeonhole principle
- Apply the product rule or sum rule
- Find the number of combinations or permutations
- Binomial Theorem
 - find the expansion of a binomial expression
 - find a coefficient of some term in a binomial expansion
- Show that a combinatorial identity holds using a combinatorial proof or algebraic manipulation

7.1,2,4 Discrete Probability

- Find the probability of one or more events occurring
 - if outcomes are equally likely or not equally likely
 - using the complement of the event
- Find the probability of an event A or event B occurring (union of events)
- Find the probability of an event A given F
- Determine if two events are independent
- The probability of exactly k successes in n independent Bernoulli trials
- Find the probability a random variable equals some value
- Find the expected value of a random variable (or sum of random variables)

Graphs (parts of ch. 10)

- Given a small graph
 - Find and describe a Eulerian path/cycle if it exists (if possible)
 - Explain why a Eulerian path/cycle cannot exist (if not possible)
- Given a small degree sequence
 - Construct a simple graph (if possible)
Explain why a simple graph could not be constructed (if not possible)
- Show two very small graphs are isomorphic by giving an edge-preserving bijection between vertices