

Math 343 - APPLIED DISCRETE MATHEMATICS (Fall 2005)

Assignment 2

Due: October 13

Question 1. [5 Marks]

Exercise 2.1 on page 64 of the textbook.

Question 2. [5 Marks]

Exercise 2.3 on page 64 of the textbook.

Question 3. [5 Marks]

Let $A^{n,k}$ denote the list defined recursively on page 48. Let n be an integer greater than or equal to 6. What are the first five subsets in the list $A^{n,2}$, and what are the last five subsets in this list? Prove your answer.

Question 4. [5 Marks]

Let π be the permutation $[3, 5, 1, 6, 7, 4, 2]$. Find the successor of π in the lexicographic order and find the rank of π in this ordering.

Question 5. [5 Marks]

Determine $\text{unrank}(3000)$ in the list of all permutations of $\{1, 2, 3, 4, 5, 6, 7\}$ in the lexicographic order.

Question 6. [5 Marks]

For each positive integer n determine the first and the last entry of the list T^n produced by the Trotter-Johnson algorithm.