CIS507: Design & Analysis of Algorithms
Quiz 4, Spring 2012

Duration: 20 minutes
Total weight: 5%

Student Name: –

Student ID: –

Problem	Points Obtained	Points Possible
1		2
2		3
Total		5

1 Hashing (2 points)

You are given a hash table with n keys and m slots, with the simple uniform hashing assumption (each key is equally likely to be hashed into each slot). Collisions are resolved by chaining. What is the probability that the first slot ends up empty? (write the formula)

2 Spanning Tree (3 points)

Let T be an undirected spanning tree on n vertices and m edges. Prove that $m = n - 1$. (*Hint:* Use induction on n.)