CS105L: Discrete Structures
I semester, 2005-06

Homework # 3

Due before class on **Friday, August 26, 2005**

Instructor: Amitabha Bagchi

August 19, 2005

1. Given Zorn's Lemma prove Bernstein's Theorem i.e. Given Zorn's Lemma show that given two sets X and Y there is either a bijection from a subset of X to Y or a bijection froma subset of Y to X.

2. How many ways can we pick a k element multiset out of a n element set such that each element that is picked is picked at least twice? What is the general formula for this number if we want every element that is picked to be picked at least l times? What fraction is this of the total number of ways in which we can pick a k element multiset of an n-element set?

3. Given any set A of ten integers between 1 and 99, show that there are two non-empty disjoint subsets of A whose elements sum up to the same number.