3/4/2002 MA331 Applied Prob/Stats I Name:_____
Dr. Lunsford Quiz 6 (20 Points Total)

Each problem counts four points. Neatly show all of your work and clearly indicate your answers.

I. Let X be a random variable and $f(x) = c(x+1)^2$, $x = 0,1,2,3,4$. Find a value for the constant c so that f is a p.m.f. for X.

II. Let Y be a random variable and suppose that $E[Y-4] = 10$ and $E[(Y-4)^2] = 105$. Find each of the following:

(a) m_Y

(c) s_Y^2

III. Suppose there are 10 defective items in a lot of 100 items. An inspector tests 20 items selected at random. Let the random variable X denote the number of defective items in the 20 tested. Please answer the following:

(a) How is the random variable X distributed? You should provide the p.m.f. for the random variable and the possible values of X.

(b) Find the probability that at least one defective item is found in the 20 items inspected.

BONUS: On average, how many defective items should the inspector expect to find in the 20 items tested? (2 points)