Indian Statistical Institute, Delhi Centre

Branching Processes

Fall 2009

Assignment # 5

Date Given: October 12, 2009 **Total Points: 20**
Date Due: October 19, 2009

1. Let $\{Z_n\}_{n\geq 1}$ be a GWBP with $\mathbf{P}(Z_0 = 1) = 1$. Let E be the event of extinction. Find the distribution of Z_1 given E. [10]

2. Let $\{X_n\}_{n\geq 1}$ and $\{Y_n\}_{n\geq 1}$ be two i.i.d. GWBPs. Show that $R_n := \frac{X_n}{X_n+Y_n}$ is a martingale. [10]