Name:

IE 311.1 Mathematical Programming
Fall 2001
Quiz III

The World Health Council is devoted to improving health care in underdeveloped countries of the world. It has now five medical teams available to allocate among three such countries to improve their medical care, health education, and training programs. Therefore the council needs to determine how many teams (if any) to allocate to each of these countries to maximize the total effectiveness of the five teams. The measure of effectiveness used is the additional man-years of life. For a particular country, this measure equals the country's increased life expectancy in years times its population. The table below gives the estimated additional man-years of life (in multiples of 1000) for each country for each possible allocation of medical teams.

a. Give an integer programming formulation of this problem. (3 points).

b. Give a dynamic programming formulation, i.e., define clearly the stages, the states, the dynamic programming recursion, and the boundary conditions. (4 points).

c. Solve the problem by the DP recursion you defined in b. (3 points).