MAP 4176 / 5178 Name:________________________________

Test 2 Date: January 27, 2016

Show all work for full credit, use correct notation., and clearly mark your answer.

1. Using ILT assumptions determine
   (a) the expected present value for a whole-life insurance of 5,000 issued to independent lives, both age 40, with benefit payable at the end of the year of the second death.

   (b) the variance of the present value random variable for the insurance in part (a)

2. Determine the actuarial present value of a 10-year term insurance issued to (40) with death benefit payable at the end of the year of death. The death benefit is $25000 - 1000n$ if death occurs during year n, for $n = 1,2, \dots, 10$.
   (You are given $A^{\;1}_{40:\overline{10|}} = 0.17094$ and $(IA)^{\;1}_{40:\overline{10|}} = 0.96728$.)

3. Using $i = .05$ and ILT mortality, determine the variance of the present value random variable for a 3-year discrete term insurance issued to (30) with death benefit equal to 3 in the first year, 5 in the second year, and 7 in the third year.

4. You are given:

j	$A_x^{(\text{Dec } j)}$	$A_{x:\overline{n}\rvert}^{(\text{Dec } j)}$
1	0.150	0.420
2	0.465	0.585

You are also given ${}_nE_x = 0.3$. A discrete whole life insurance issued to (x) pays 50 if departure occurs within n years by decrement 2, pays 100 if departure occurs after n years by decrement 1, and pays nothing otherwise. Determine the EPV of the insurance