MAP 4176 / 5178 Name:_____

Test 3 Date: January 30, 2019

Each problem is worth 10 points. Show all work for full credit, and use correct notation. Simplify answers completely. See other side for additional problems.

For Numbers 1 and 2, determine the APV of the annuity described, using constant force actuarial assumptions with $\mu = 0.02$ and $\delta = 0.04$.

1. a continuous 10-year temporary annuity with annual payment rate of 500 issued to (45)

2. a continuous 20-year certain-and-life annuity paying 3000 per year issued to (60)

3. Given independent lives (x) and (y) with $\mu_x = 0.04$, $\mu_y = 0.14$, and $\delta = 0.02$, determine the actuarial present value of a continuous annuity issued to (x) and (y) that pays 7,500 per year until the last of the death of (x) and (y).

4. Under certain actuarial assumptions, you are given:

   (i) $\alpha(\infty) = 1.00076$

   (ii) $\beta(\infty) = 0.51627$

   (iii) $a_x = 5.439$

   Using the UDD assumption, determine $\bar{a}_x$

5. Using the actuarial assumptions in the Standard Sickness-Death Model in the L-TAM Tables, determine the APV of a 10-year deferred continuous annuity issued to a healthy 50-year old that pays 5,000 per year while the annuitant is healthy.