MAP 4176 / 5178   Name:_____

Test 8   Date: March 6, 2018

Each problem is worth 10 points. Show all work for full credit, and use correct notation.

1. You are given:

   (i) $d = 0.10$

   (ii) $q_{75} = 0.02$

   (iii) $A_{76} = 0.52$

   Determine A_{75}.

2. A company issues n independent identical continuous whole life insurances to 35-year olds with benefit of 10,000. Using $CF(\mu = 0.03, \delta = 0.03)$ actuarial assumptions and the normal approximation, the probability that the total present value of all benefits paid exceeds 2,500,000 is 0.5. Determine n.
   (You don't need the standard normal distribution table to complete this question.)

3. Determine the actuarial accumulated value at age 40 of a discrete 10-year term insurance of 10,000 issued to (20), using SULT actuarial assumptions.

4. A whole life annuity issued to (40) pays 500 at the end of each year. Using $i = 0.06$ and $DML(\omega = 90)$ actuarial assumptions, determine the probability that the sum of the payments made is greater than or equal to 10,000.

5. A 10-year deferred whole life insurance issued to (x) pays 100,000 at the end of the quarter of death. Using a constant force of mortality, $\mu = 0.03$, and $i = 0.05$, determine the probability that the present value of the benefit is less than 32,000.