1. Do problems 10.1, 10.2, 10.4, 10.5, and 10.6 from the textbook.

2. (Fall 1993, #4, CAS) You are given the following information about $q_x^{(j)}$:
   (i) In a double-decrement model:
      - $j = 1$ if the cause of death is beri-beri;
      - $j = 2$ if the cause of death is other than beri-beri
   (ii) $q_x^{(r)} = \frac{x}{100}$
   (iii) $q_x^{(1)} = \frac{1}{2} q_x^{(2)}$
   Calculate the probability that an individual age 20 will die from beri-beri within 3 years.

3. (Spring 2005, #27, SOA) (50) is an employee of XYZ Corporation. Future employment with XYZ follows a double decrement model:
   (i) Decrement 1 is retirement.
   (ii) $\mu_{50}^{(1)}(t) = \begin{cases} 0.00, & 0 \leq t < 5 \\ 0.02, & 5 \leq t \end{cases}$
   (iii) Decrement 2 is leaving employment with XYZ for all other causes.
   (iv) $\mu_{50}^{(2)}(t) = \begin{cases} 0.05, & 0 \leq t < 5 \\ 0.03, & 5 \leq t \end{cases}$
   (v) If (50) leaves employment with XYZ, he will never rejoin XYZ.
   Calculate the probability that (50) will retire from XYZ before age 60.

4. (Sample Question #103) For a multiple decrement model on (60):
   (i) $\mu_{60}^{(1)}(t), t \geq 0$, follows the illustrative Life Table.
   (ii) $\mu_{60}^{(r)}(t) = 2\mu_{60}^{(1)}(t), t \geq 0$
   Calculate $10|q_{60}^{(r)}$, the probability that decrement occurs during the 11th year.

5. (Sample Question #33) For a triple decrement table, you are given:
   (i) $\mu_{x}^{(1)}(t) = 0.3, t > 0$
   (ii) $\mu_{x}^{(2)}(t) = 0.5, t > 0$
   (iii) $\mu_{x}^{(3)}(t) = 0.7, t > 0$
   Calculate $q_x^{(2)}$. 