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.

1. Given a two decrement model with $p_x^{\prime(1)} = 0.729$ and $p_x^{\prime(2)} = 0.81$, and assuming a constant force for each decrement during the year, determine $q_x^{(1)}$.

2. Given a two decrement model where each decrement is UDD in the double decrement table, if $q_x^{(1)} = 0.1$ and $q_x^{(2)} = 0.2$, determine $_{0.3}q_x^{\prime(2)}$

3. For a double decrement table where decrement 1 is SUDD and 30% of decrement 2 occurs at time 0.4 with the rest occurring at time 0.6, given $q_x^{\prime(1)} = 0.1$ and $q_x^{\prime(2)} = 0.2$ determine $q_x^{(1)}$ and $q_x^{(2)}$

4. Given a two decrement model with $p_{60}^{\prime(1)}=p_{60}^{\prime(2)}=0.80$ and $p_{61}^{\prime(1)}=p_{61}^{\prime(2)}=0.75$, if each decrement is UDD in its associated single decrement model, determine $_{1.3}q_{60}^{(1)}$.

5. For a triple decrement table where decrement 2 and decrement 3 are each UDD in their associated single decrement tables, and decrement 1 is EOY, given $q_x^{\prime(j)} = 0.2j$ for j = 1, 2, and 3, determine $q_x^{(1)}$, $q_x^{(2)}$, and $q_x^{(3)}$