MAP 4175 / 5177   Name:_____
Quiz 6   Date: October 7, 2015

Show all work for full credit, and use correct notation. Simplify answers completely.
Unless told or implied otherwise, assume all lives are independent.

1. You are given:

    (i)   Male mortality follows DeMoivre's Law with terminal age 100

    (ii)   Female mortality follows a Constant Force model with $\mu = .02$

Determine $_{5|10}q_{20:30}$ where (20) is female and (30) is male.

2. Given $_tp_{\overline{xy}} = (1.05)^{-t}$, determine $e_{\overline{xy}:\overline{20|}}$

3. Mortality for smokers and non-smokers each follow a constant force model, but the
force of mortality for smokers is twice the force of mortality for non-smokers. (x) is a
smoker and (y) is a non-smoker. Given $_{10}q_{xy} = .6$, determine $_{30}p_y$.

4. Mortality for non-smokers follows DeMoivre's Law with terminal age 100. Mortality for smokers follows Generalized DeMoivre's Law with $\alpha = 2$ and terminal age 90. Determine an expression for $_np_{40:50}$ where (40) is a smoker and (50) is a non-smoker.

5. Given $q_{90} = .1$ and $q_{91} = .2$

(a) determine $e_{90:\overline{2}|}$

(b) if $e_{92} = {}^{13}/_9$, determine e_{90}