40회

5. (1) 연납평준순보험료

P =?

$P\ddot{a}_{50:\overline{10}|} = {}_{10}E_{50}\ddot{a}_{60} + \ddot{a}_{45} - \ddot{a}_{50:45}$

$\ddot{a}_{50:\overline{10}|} = \ddot{a}_{50} - {}_{10}E_{50}\ddot{a}_{60}$

$= 13.3 - 0.51 \times 11.1 = 7.639$

$P = \frac{0.51 \times 11.1 + 14.1 - 12.5}{7.639} \approx 0.951$

(2-1) 5보험년도 50생존, 45사망

${}_5V_{=5}E_{55}\ddot{a}_{60} - P\ddot{a}_{55:\overline{5}|}$

$\ddot{a}_{55:\overline{5}|} = \ddot{a}_{55} - {}_5E_{55}\ddot{a}_{60}$

$= 12.3 - 0.708 \times 11.1 \approx 4.441$

${}_5V_{=}0.708 \times 11.1 - 0.951 \times 4.441 \approx 3.635$

(2-2) 15보험년도

${}_{15}V_{=}a_{\overline{65:60}} = \ddot{a}_{65} + \ddot{a}_{60} - \ddot{a}_{65:60}$

$= 9.9 + 11.1 - 6.2 = 14.8$

6. 전기 연납평준 순보험료

$v = \frac{1}{1.04} \approx 0.962, v^2 \approx 0.925$

$A_{60:\overline{2}|} = P\ddot{a}_{60:\overline{2}|}$

$\ell_{61} = 1 - q_{60}^{(1)} - q_{60}^{(2)} = 0.78$

$A_{60:\overline{2}|} = (1000q_{60}^{(1)} + {}_1Vq_{60}^{(2)})v + 1000\ell_{61}q_{61}^{(1)}v^2$

${}_1V = \ell_{61}(1000q_{61}^{(1)}v - P)$

$= 0.78(1000 \times 0.03 \times 0.962 - P)$

$= 22.511 - 0.78P$

$\ddot{a}_{60:\overline{2}|} = 1 + (1 - q_{60}^{(1)} - q_{60}^{(2)})v$

$= 1 + 0.78 \times 0.962 = 1.75$

$A_{60:\overline{2}|} = (20 + 0.2(22.511 - 0.78P) \times 0.962 + 1000 \times 0.78 \times 0.03 \times 0.925$

$A_{60:\overline{2}|} = (20 + 0.2(22.511 - 0.78P) \times 0.962 + 21.645$

$= 45.216 - 0.15P$

$50.692 = 1.75P + 0.15P = 1.9P$

$P = \frac{45.216}{1.9} = 23.798$