Question #95
Answer: D

$$\mu_{x+t}^{(\tau)} = \mu_{x+t}^{(1)} + \mu_{x+t}^{(2)} = 0.01 + 2.29 = 2.30$$

$$P = P\int_0^2 v^t\ {}_t p_x^{(\tau)} \mu_{x+t}^{(2)}\ dt + 50,000\int_0^2 v^t\ {}_t p_x^{(\tau)} \mu_{x+t}^{(1)}\ dt + 50,000\int_2^\infty v^t\ {}_t p_x^{(\tau)} \mu_{x+t}^{(\tau)}\ dt$$

$$P = P\int_0^2 e^{-0.1t} e^{-2.3t} \times 2.29 dt + 50,000\int_0^2 e^{-0.1t} e^{-2.3t} \times 0.01 dt + 50,000\int_2^\infty e^{-0.1t} e^{-2.3t} \times 2.3 dt$$

$$P\left[1 - 2.29 \times \frac{1 - e^{-2(2.4)}}{2.4}\right] = 50000\left[0.01 \times \frac{1 - e^{-2(2.4)}}{2.4} + 2.3 \times \frac{e^{-2(2.4)}}{2.4}\right]$$

P = 11,194