

Question #58

Answer: A

$$\mu_{x+t}^{(\tau)} = 0.100 + 0.004 = 0.104$$

$${}_t p_x^{(\tau)} = e^{-0.104t}$$

Expected present value (EPV) = EPV for cause 1 + EPV for cause 2.

$$2000 \int_0^5 e^{-0.04t} e^{-0.104t} (0.100) dt + 500,000 \int_0^5 e^{-0.04t} e^{-0.104t} (0.400) dt$$

$$= (2000(0.10) + 500,000(0.004)) \int_0^5 e^{-0.144t} dt = \frac{2200}{0.144} (1 - e^{-0.144(5)}) = 7841$$