

Question #135

Answer: D

$$\begin{aligned}\text{EPV of regular death benefit} &= \int_0^{\infty} (100000)(e^{-\delta t})(0.008)(e^{-\mu t})dt \\ &= \int_0^{\infty} (100000)(e^{-0.06t})(0.008)(e^{-0.008t})dt \\ &= 100000[0.008 / (0.06 + 0.008)] = 11,764.71\end{aligned}$$

$$\begin{aligned}\text{EPV of accidental death benefit} &= \int_0^{30} (100000)(e^{-\delta t})(0.001)(e^{-\mu t})dt \\ &= \int_0^{30} (100000)(e^{-0.06t})(0.001)(e^{-0.008t})dt \\ &= 100[1 - e^{-2.04}] / 0.068 = 1,279.37\end{aligned}$$

$$\text{Total EPV} = 11765 + 1279 = 13044$$