

Question #147**Answer: A**

$$\begin{aligned}A_{30:\overline{3}}^1 &= 1000vq_{30} + 500v^2 {}_1|q_{30} + 250v^3 {}_2|q_{30} \\ &= 1000\left(\frac{1}{1.06}\right)\left(\frac{1.53}{1000}\right) + 500\left(\frac{1}{1.06}\right)^2 (0.99847)\left(\frac{1.61}{1000}\right) + 250\left(\frac{1}{1.06}\right)^3 (0.99847)(0.99839)\left(\frac{1.70}{1000}\right)\end{aligned}$$

$$= 1.4434 + 0.71535 + 0.35572 = 2.51447$$

$$\ddot{a}_{30:\overline{1}}^{(2)} = \frac{1}{2} + \frac{1}{2}\left(\frac{1}{1.06}\right)^{\frac{1}{2}} (1 - \frac{1}{2}q_{30}) = \frac{1}{2} + \frac{1}{2}(0.97129)\left(1 - \frac{0.00153}{2}\right)$$

$$= \frac{1}{2} + \frac{1}{2}(0.97129)(0.999235)$$

$$= 0.985273$$

$$\begin{aligned}\text{Annualized premium} &= \frac{2.51447}{0.985273} \\ &= 2.552\end{aligned}$$

$$\begin{aligned}\text{Each semiannual premium} &= \frac{2.552}{2} \\ &= 1.28\end{aligned}$$