Question #7
Answer: C

$$A_{70} = \frac{\delta}{i}\bar{A}_{70} = \frac{\ln(1.06)}{0.06}(0.53) = 0.5147$$

$$\ddot{a}_{70} = \frac{1 - A_{70}}{d} = \frac{1 - 0.5147}{0.06/1.06} = 8.5736$$

$$\ddot{a}_{69} = 1 + vp_{69}\ddot{a}_{70} = 1 + \left(\frac{0.97}{1.06}\right)(8.5736) = 8.8457$$

$$\ddot{a}_{69}^{(2)} = \alpha(2)\ddot{a}_{69} - \beta(2) = (1.00021)(8.8457) - 0.25739$$
$$= 8.5902$$

Note that the approximation $\ddot{a}_x^{(m)} \cong \ddot{a}_x - \frac{(m-1)}{2m}$ works well (is closest to the exact answer, only off by less than 0.01). Since m = 2, this estimate becomes $8.8457 - \frac{1}{4} = 8.5957$