Question #248
Answer: D

$$\ddot{a}_{50:\overline{20}|} = \ddot{a}_{50} - {}_{20}E_{50}\,\ddot{a}_{70}$$
$$= 13.2668 - (0.23047)(8.5693)$$
$$= 11.2918$$

$$A_{50:\overline{20}|} = 1 - d\,\ddot{a}_{50:\overline{20}|} = 1 - \left(\frac{0.06}{1.06}\right)(11.2918)$$
$$= 0.36084$$

Expected present value (EPV) of benefits $= 10,000A_{50:\overline{20}|}$
$= 3608.40$

EPV of premiums $= 495\ddot{a}_{50:\overline{20}|}$
$= 5589.44$

EPV of expenses $= (0.35)(495) + 20 + (15)(10) + \left[(0.05)(495) + 5 + (1.50)(10)\right]a_{50:\overline{19}|}$
$= 343.25 + (44.75)(11.2918 - 1)$
$= 803.81$

EPV of amounts available for profit and contingencies
= EPV premium – EPV benefits – APV expenses
= 5589.44 – 3608.40 – 803.81
= 1177.23