53. The mortality of (x) and (y) follows a common shock model with states:

State 0 – both alive
State 1 – only (x) alive
State 2 – only (y) alive
State 3 – both dead

You are given:

(i) $\mu_{x+t} = \mu^{02}_{x+t:y+t} + \mu^{03}_{x+t:y+t} = \mu^{13}_{x+t:y+t} = g$, a constant, $0 \le t \le 5$

(ii) $\mu_{y+t} = \mu^{01}_{x+t:y+t} + \mu^{03}_{x+t:y+t} = \mu^{23}_{x+t:y+t} = h$, a constant, $0 \le t \le 5$

(iii) $p_{x+t} = 0.96, 0 \le t \le 4$

(iv) $p_{y+t} = 0.97, 0 \le t \le 4$

(v) $\mu^{03}_{x+t:y+t} = 0.01, 0 \le t \le 5$

Calculate the probability that (x) and (y) both survive 5 years.

(A) 0.65

(B) 0.67

(C) 0.70

(D) 0.72

(E) 0.74