

181. For a multi-state model of a special 3-year term insurance on (x) :

- (i) Insureds may be in one of three states at the beginning of each year: active (State 0), disabled (State 1), or dead (State 2). The annual transition probabilities are as follows for $k = 0, 1, 2$:

State i	P_{x+k}^{i0}	P_{x+k}^{i1}	P_{x+k}^{i2}
Active (0)	0.8	0.1	0.1
Disabled (1)	0.1	0.7	0.2
Dead (2)	0.0	0.0	1.0

- (ii) A 100,000 benefit is payable at the end of the year of death whether the insured was active or disabled.
- (iii) Premiums are paid at the beginning of each year when active. Insureds do not pay any annual premiums when they are disabled at the start of the year.
- (iv) $d = 0.10$

Calculate the level annual benefit premium for this insurance.

- (A) 9,000
- (B) 10,700
- (C) 11,800
- (D) 13,200
- (E) 20,800