10. For a fully discrete whole life insurance of 1000 on (40), the gross premium is the level annual benefit premium based on the mortality assumption at issue. At time 10, the actuary decides to increase the mortality rates for ages 50 and higher.

You are given:

(i) $d = 0.05$

(ii) Mortality assumptions:

At issue	${}_{k\|}q_{40} = 0.02, \ k = 0,1,2,...,49$
Revised prospectively at time 10	${}_{k\|}q_{50} = 0.04, \ k = 0,1,2,...,24$

(iii) ${}_{10}L$ is the prospective loss random variable at time 10 using the gross premium.

(iv) K_{40} is the curtate future lifetime of (40) random variable.

Calculate $\mathrm{E}[{}_{10}L \,|\, K_{40} \geq 10]$ using the revised mortality assumption.

(A) Less than 225

(B) At least 225, but less than 250

(C) At least 250, but less than 275

(D) At least 275, but less than 300

(E) At least 300