

**23.** Michel, age 45, is expected to experience higher than standard mortality only at age 64. For a special fully discrete whole life insurance of 1 on Michel, you are given:

- (i) The benefit premiums are not level.
- (ii) The benefit premium for year 20,  $\pi_{19}$ , exceeds  $P_{45}$  for a standard risk by 0.010.
- (iii) Benefit reserves on his insurance are the same as benefit reserves for a fully discrete whole life insurance of 1 on (45) with standard mortality and level benefit premiums.
- (iv)  $i = 0.03$
- (v) The benefit reserve at the end of year 20 for a fully discrete whole life insurance of 1 on (45), using standard mortality and interest, is 0.427.

Calculate the excess of  $q_{64}$  for Michel over the standard  $q_{64}$ .

- (A) 0.012
- (B) 0.014
- (C) 0.016
- (D) 0.018
- (E) 0.020