278-282. Use the following information for questions 278-282.

A 30-year term insurance on Janet age 30 and Andre age 40 provides the following benefits:

- A death benefit of 140,000 if Janet dies before Andre and within 30 years.
- A death benefit of 180,000 if Andre dies before Janet and within 30 years.

You are given:

(i) Mortality for both Janet and Andre follows $l_x = 100 - x, 0 \le x \le 100$.

(ii) Their future lifetimes are independent.

(iii) $i = 0$

(iv) The death benefit is payable at the moment of the first death.

(v) Premiums are payable continuously at rate P while both are alive, for a maximum of 20 years.

278. Calculate the probability that at least one of Janet and Andre will die within 10 years.

(A) 1/42

(B) 1/12

(C) 1/7

(D) 2/7

(E) 13/42

279. Calculate ${}_{10}q^{2}_{30:40}$.

(A) 0.012

(B) 0.024

(C) 0.042

(D) 0.131

(E) 0.155

280. Calculate the probability that the second death occurs between times 10 and 20.

(A) 0.071

(B) 0.095

(C) 0.293

(D) 0.333

(E) 0.357

281. Calculate the expected present value at issue of the death benefits.

(A) 81,000

(B) 110,000

(C) 116,000

(D) 136,000

(E) 150,000

282. Calculate the expected present value at issue of premiums in terms of P.

(A) 11.2P

(B) 14.4P

(C) 16.9P

(D) 18.2P

(E) 19.3P