40. Losses come from a mixture of an exponential distribution with mean 100 with probability p and an exponential distribution with mean 10,000 with probability $1-p$.

Losses of 100 and 2000 are observed.

Determine the likelihood function of p.

(A) $\left(\frac{pe^{-1}}{100}\cdot\frac{(1-p)e^{-0.01}}{10{,}000}\right)\cdot\left(\frac{pe^{-20}}{100}\cdot\frac{(1-p)e^{-0.2}}{10{,}000}\right)$

(B) $\left(\frac{pe^{-1}}{100}\cdot\frac{(1-p)e^{-0.01}}{10{,}000}\right)+\left(\frac{pe^{-20}}{100}\cdot\frac{(1-p)e^{-0.2}}{10{,}000}\right)$

(C) $\left(\frac{pe^{-1}}{100}+\frac{(1-p)e^{-0.01}}{10{,}000}\right)\cdot\left(\frac{pe^{-20}}{100}+\frac{(1-p)e^{-0.2}}{10{,}000}\right)$

(D) $\left(\frac{pe^{-1}}{100}+\frac{(1-p)e^{-0.01}}{10{,}000}\right)+\left(\frac{pe^{-20}}{100}+\frac{(1-p)e^{-0.2}}{10{,}000}\right)$

(E) $p\cdot\left(\frac{e^{-1}}{100}+\frac{e^{-0.01}}{10{,}000}\right)+(1-p)\cdot\left(\frac{e^{-20}}{100}+\frac{e^{-0.2}}{10{,}000}\right)$

END OF EXAMINATION