

## Question # 44

Answer: B

$$\begin{aligned}L &= F(1000)^7 [F(2000) - F(1000)]^6 [1 - F(2000)]^7 \\&= (1 - e^{-1000/\theta})^7 (e^{-1000/\theta} - e^{-2000/\theta})^6 (e^{-2000/\theta})^7 \\&= (1 - p)^7 (p - p^2)^6 (p^2)^7 \\&= p^{20} (1 - p)^{13}\end{aligned}$$

where  $p = e^{-1000/\theta}$ . The maximum occurs at  $p = 20/33$  and so  $\hat{\theta} = -1000 / \ln(20/33) = 1996.90$ .