48. Solution: E

Let X and Y denote the year the device fails and the benefit amount, respectively. Then the density function of X is given by

$$f(x) = (0.6)^{x-1}(0.4) \quad , \quad x = 1,2,3...$$

and

$$y = \begin{cases} 1000(5-x) & \text{if} \quad x = 1,2,3,4 \\ 0 & \text{if} \quad x > 4 \end{cases}$$

It follows that

$$\begin{aligned} E[Y] &= 4000(0.4) + 3000(0.6)(0.4) + 2000(0.6)^2(0.4) + 1000(0.6)^3(0.4) \\ &= 2694 \end{aligned}$$