

**Question #165****Key: A**

<u>S</u>	<u><math>(S-3)_+</math></u>	
0	0	$E[(S-3)_+] = E[S] - 3 + 3f_S(0) + 2f_S(1) + 1f_S(2)$
1	0	$E[S] = 2 \times [0.6 + 2 \times 0.4] = 2.8$
2	0	$f_S(0) = e^{-2}$
3	0	$f_S(1) = e^{-2} \times 2 \times (0.6) = 1.2e^{-2}$
4	1	$f_S(2) = e^{-2} \times 2(0.4) + \frac{e^{-2}2^2}{2} \times (0.6)^2 = 1.52e^{-2}$
5	2	
6	3	
$\vdots$	$\vdots$	

$$\begin{aligned} E[(S-3)_+] &= 2.8 - 3 + 3 \times e^{-2} + 2 \times 1.2e^{-2} + 1 \times 1.52e^{-2} \\ &= -0.2 + 6.92e^{-2} \\ &= 0.7365 \end{aligned}$$