Assignment 5

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15.12 Given $\lambda t = 0.163$,

$$\begin{aligned} P &= e^{-0.163} + (0.163)e^{-0.163} \\ &= 0.85 + (0.163)(0.85) \\ &= 0.98855 \end{aligned}$$

15.13

$$\begin{aligned} P &= 0.85\left(1 + 0.163 + \frac{(0.163)^2}{2!}\right) \\ &= 0.85(1.163 + 0.0133) \\ &= 0.85 \times 1.176 \\ &= 0.9998 \end{aligned}$$

15.14 Given $\lambda t = 0.1335$,

$$\begin{aligned} P &= e^{-0.267}\left(1 + 0.267 + \frac{(0.267)^2}{2!}\right) \\ &= 0.7656(1.267 + 0.0356) \\ &= 0.997 \end{aligned}$$

15.15 Given $= 0$, $\lambda = 0.01$, $t = 20$,

$$\begin{aligned} n\lambda t &= (10)(0.01)(20) \\ &= 2.0 \end{aligned}$$

Using the value $r = 2$ and *Figure 15.7* on page 517 we find that $P = 0.9999$.

15.16 Given $K = 30$, $\lambda = 0.0001$, $T = 90$, $P = 0.95$, we determine that

$$\begin{aligned} K\lambda T &= 30 \times 0.0001 \times 90 \times 24 \\ &= 6.48 \end{aligned}$$

Using *Figure 15.8b* on page 519 we find that the number of spares, s, required is approximately 11. This is supported by use of the formula (*15.8*) given on page 518 which yields the following table of values:

Number Of Spares	Probability Of Success
10	0.934271
11	0.966775
12	0.984327