Solution to Problem 2.8

(a) This is the same as the earlier problem (2.7) substituting $e^{-a/m}$ instead of the variable a used there.

(b) For a ® ¥, the system degenerates to a queue with only two states 0 and 1 with $l_0 = l$, $l_1=0$, $m_0=0$ and $m_1=m$. This may be easily solved to get

$$p_0 = \frac{1}{1+r} \quad p_1 = \frac{r}{1+r} \text{ with } r = \frac{l}{m}$$

The average number in the system $N = \frac{r}{1+r}$