18101009

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A SECTION

4TH YEAR

1ST SEMESTER

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CSE-401

18161009
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My id 18161009 ,, Here, id = odd ;

So, M/D/1 model

Here, ~~$\lambda = \frac{9 \text{ customers}}{5 \text{ min}} =$~~

Here, $\lambda = 9$ customers/5 min $= \frac{5}{9} = 0.56$ min.

$\mu = 10$ customers/5 min $= \frac{5}{10} = 0.5$ min.

$$p = \frac{\lambda}{\mu} = \frac{0.56}{0.5} = 1.12$$

w_s = expected waiting time per customers in system

w_q = expected waiting time per customers in queue

l_s = expected number of customers in system.

" " " queue.

l_q = "

For M/D/1 model

$$W_q = \frac{\lambda}{2\mu|(\mu-\lambda)|}$$

$$= \frac{0.56}{2*0.5|(0.5-0.56)|}$$

$$= \frac{0.56}{2*0.5*0.06} = 9.333\ldots$$

$$\simeq 9.33 \text{ min.}$$

(Ans)

$$W_s = W_q + \frac{1}{\mu}$$

$$= 9.33 + \frac{1}{0.5}$$

$$= 11.33 \text{ min (Ans)}$$

$$L_q = \frac{\lambda^2}{2\mu(\mu-\lambda)}$$

$$= \frac{(0.56)^2}{2*0.5(0.5-0.56)}$$

$$= 5.22666\ldots$$

$$\simeq 5.2267 \quad \text{(Ans)}$$

$$L_s = L_q + \frac{\lambda}{\mu} = 5.2267 + \frac{0.56}{0.5}$$

$$= 6.3467 \text{ (Ans)}$$