

EES

Resolução do teste

Ponte II

Grupo 1

$\lambda$  - 96 chamadas/dia

$$\frac{1}{8 \text{ min}} = \frac{\mu}{16 \times 60} \quad (\Rightarrow) \quad \mu = \frac{16 \times 60}{8} = \frac{960}{8} = 120 \quad \mu = 120$$

$$p = \frac{96}{120} = \frac{4}{5} = 0,8$$

a) -

$$\pi_0 = 1 - 0,8 = 0,2$$

$$\pi_1 = 0,8 \times 0,2 = 0,16$$

$$\pi_2 = 0,8 \times 0,16 = 0,128$$

$$1 - (\pi_0 + \pi_1 + \pi_2) = 1 - (0,2 + 0,16 + 0,128) = 1 - 0,488 = 0,512$$

b) -

M/M/5  $\rightarrow$  M/M/2

$$p = \frac{\lambda}{2\mu} = \frac{96}{240} = \frac{2}{5} = 0,4$$

$$\pi_0 = \left[ \sum_{n=0}^{\infty} \frac{(2 \times 0,4)^n}{n!} + \frac{(2 \times 0,4)^2}{2!(1-0,4)} \right]^{-1}$$

$$= \left[ \frac{(0,8)^0}{0!} + \frac{(0,8)^1}{1!} + \frac{(0,8)^2}{2!} \right]^{-1}$$

$$= \left[ 1 + 0,8 + \frac{0,64}{1,2} \right]^{-1} = \left[ 1,8 + \frac{0,64}{1,2} \right]^{-1} = \left[ \frac{(1,8 \times 1,2)}{1,2} + \frac{0,64}{1,2} \right]^{-1}$$

$$= \left[ \frac{2,16}{1,2} + \frac{0,64}{1,2} \right]^{-1} = \left[ \frac{2,8}{1,2} \right]^{-1} = \frac{1,2}{2,8} = 0,428571 \approx \frac{3}{7}$$



$$L_g = \frac{2 \times 0,9 \times \frac{3}{7}}{2! (1-0,9)^2} = \frac{4 \times 0,069 \times \frac{3}{7}}{2 (0,6)^2} = \frac{\frac{0,768}{7}}{0,72} = \frac{0,768}{7 \times 0,72} = \frac{0,768}{5,04} = \frac{16}{105} = 0,152381$$

$$w_g = \frac{L_g}{\lambda} = \frac{\frac{16}{105}}{\frac{105 \times 96}{70}} = \frac{16}{105 \times 96} = \frac{16}{10080} = \frac{1}{630} = 0,001587$$

c)

Pona S=1

$$L_g = \frac{0,8^2}{0,2} = \frac{0,64}{0,2} = 3,2$$

Pona S=2

$$L_g = 0,152381$$

d. =

$$w_g = \frac{1}{630}$$

$$w = w_g + w_s$$

$$w_s = \frac{1}{120} \times 5$$

$$w = \frac{1}{630} + \frac{1}{120} \times 5 = \frac{120}{630 \times 120} + \frac{630}{630 \times 120} = \frac{750}{75600} = \frac{5}{504}$$

$$\frac{w_s}{w} = \frac{\frac{1}{120} \times 5}{\frac{5}{504}} = \frac{1}{120} \times \frac{504}{5} = \frac{504}{120 \times 5} = \frac{504}{600} = \frac{21}{25} = 0,84$$

$$\% = 0,84 \times 100 = 84\%$$



Grupo II

200	500	800
600	300	100
0	400	500
300	300	350

25	15	10	50
		40	40 = 40
35			35 = 35
	60		60 = 60
60	75	50	

$$\begin{aligned}
 600 + 800 - 200 - 100 &= 1100 \\
 300 + 800 - 500 - 100 &= 500 \\
 400 + 200 - 0 - 500 &= 100 \\
 500 + 200 - 0 - 800 &= -100 \\
 500 + 500 - 300 - 200 &= 500 \\
 350 + 500 - 800 - 300 &= -250
 \end{aligned}$$

25	25	0
		40
35		
	50	40

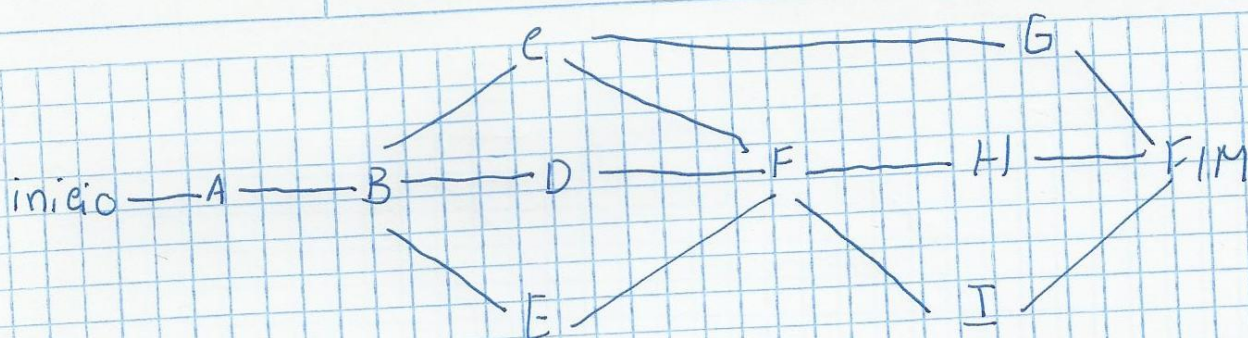
$$\begin{aligned}
 800 + 300 - 500 - 300 &= 250 \\
 300 + 350 - 100 - 300 &= 250 \\
 400 + 200 - 0 - 500 &= 100 \\
 500 + 500 - 200 - 300 &= 500
 \end{aligned}$$

$$\begin{aligned}
 &11 \quad 11 \quad 11 \\
 &66 \quad 75 \quad 50
 \end{aligned}$$

$$\begin{aligned}
 &25 \times 200 + 25 \times 500 + 40 \times 100 + 35 \times 0 + 50 \times 300 + 350 \times 10 = \\
 &5000 + 12500 + 4000 + 0 + 15000 + 3500 = 40000
 \end{aligned}$$



4)



5)

	Duração	TMC	TM T	FOLGA
inicio	0	0	0	0
A	3	0	3	0
B	3	3	7	1
C	5	6	6	0
D	6	6	9	3
E	3	12	12	0
F	3	11	19	0
G	1	15	18	0
H	2	15	15	0
I	5	20	20	0
FIM	0			

TEMPO Necessário : 26 Semanas  
 Tarefas críticas : A/B/D/F/I

c) Não desde que uma delas não demore 6 semanas.