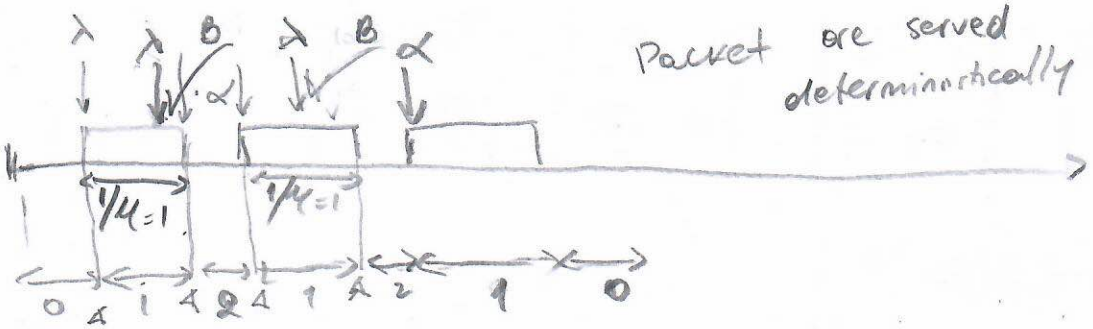
HOMEWORK 16

JUAN PABLO ROYO SALES

16.1

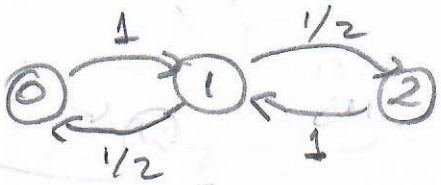
16.1.A



Because it is transmiting or not

16.1.B

0: Both Thinking
1: 1 Transmiting
2: 1 Blocklogged



Q

	0	1	2
0	-1	1	0
1	1	-2	1
2	0	1	-1

EMC

0	1	0	
1/2	0	1/2	
0	1	0	

16.1.C

$$\left.\begin{aligned} \Pi_0 &= \Pi_1 \tfrac{1}{2} \\ \Pi_1 &= \Pi_2 \\ \textstyle\sum \Pi_i &= 1 \end{aligned}\right\} \quad \Pi_1^e = \frac{1}{1+\frac{1}{2}+1} = \boxed{\frac{2}{5}} = \Pi_2^e$$

$$\boxed{\Pi_0^e = \frac{1}{5}}$$

16.1 D

$E[H_1] = \frac{1}{\mu} = 1$ $E[H_2] = \frac{1}{\alpha} = \frac{4}{3}$

$E[H_0] \frac{1}{\lambda_0} = 4$ $\sum \pi_i^e E[H_i] = G$

$G = \frac{1}{5} \cdot 4 + 1 \cdot \frac{2}{5} + \frac{4}{3} \cdot \frac{2}{5} = \frac{26}{15}$

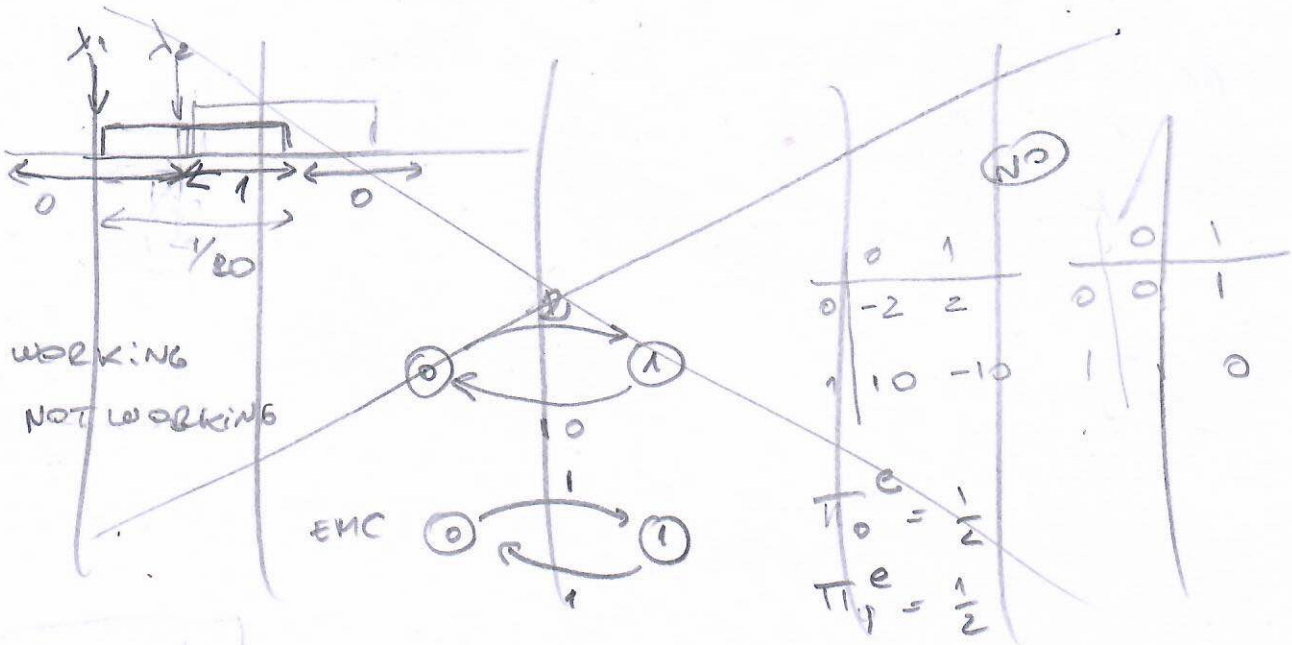
$\pi_0 = \frac{6}{13}$ $\pi_1 = \frac{3}{13}$ $\pi_2 = \frac{4}{13}$

16.1 E

$S = \pi_1 * 10 = \frac{30}{13}$ Mbps.

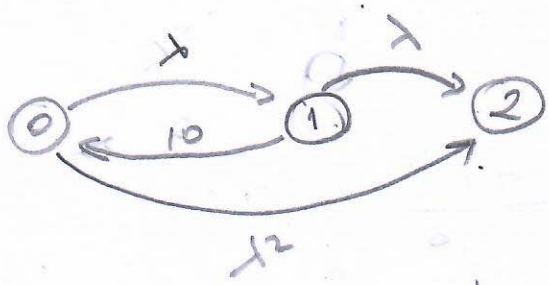
$S_1 = S/2 = \frac{15}{13}$ Mbps

$T = \frac{10 \text{ Mbytes}}{S_1} = \frac{10 \times 8 \text{ Mbits}}{15/13 \text{ Mbps}} = 69,33$ sec



16.2 A

0 : 2 WORKING
1 : 1 failed
2 : NOT WORKING



$$P = \begin{array}{c|ccc} & 0 & 1 & 2 \\ \hline 0 & 0 & 1/2 & 1/2 \\ 1 & 19/11 & 0 & 1/11 \\ 2 & 0 & 0 & 0 \end{array} \qquad Q = \begin{array}{c|ccc} & 0 & 1 & 2 \\ \hline 0 & -2 & 1 & 1 \\ 1 & 10 & -11 & 1 \\ 2 & 0 & 0 & 0 \end{array}$$

$$m_{02} = \frac{1}{2} + \frac{1}{2} m_{12} + \frac{1}{2} \Rightarrow m_{02} = 1 + \frac{1}{22} + \frac{5}{11} m_{02}$$

$$m_{12} = \frac{1}{11} + \frac{10}{11} m_{02}$$

$$= \frac{\frac{23}{22}}{1 - \frac{5}{11}} = \boxed{\frac{23}{12}}$$

1.92 years

16.2.B

NOT SURE HOW TO PROCEED