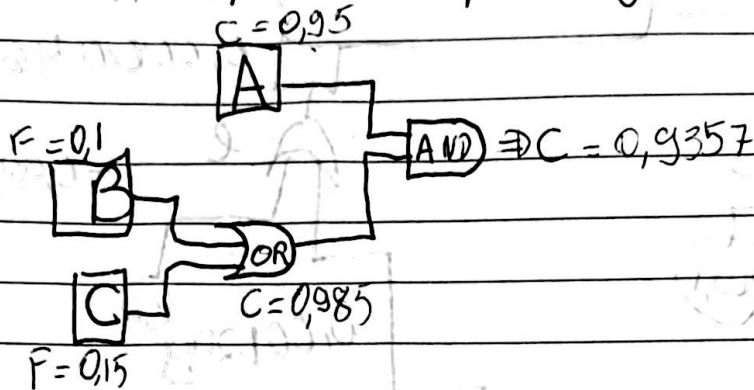
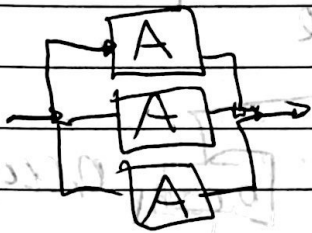


1/1/ Vinicius Felipe Botelho Barbosa

① Para garantir uma vazão mínima de  $360 \text{ m}^3/\text{h}$ , A não pode falhar e nem B ou C.



②



O sistema irá falhar quando os três componentes falharem. Após 10 anos a confiabilidade de cada componente será:

$$e^{-0,001 \cdot 10} = e^{-0,001} = 0,7408$$

$C_s = 1 - (0,2502)^3 = 0,9843$  com todos os componentes operando

$C_s = 0,7408$  com apenas 1 componente operando

③

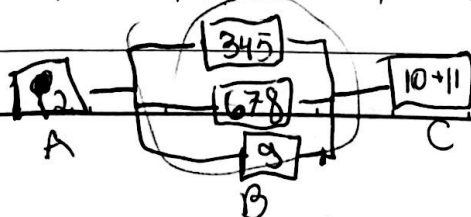
$$C_{12} = 0,92 \cdot 0,92 = 0,8464$$

$$C_{345} = 0,94 \cdot 0,9 \cdot 0,95 = 0,8037$$

$$C_{678} = 0,89 \cdot 0,85 \cdot 0,91 = 0,6884$$

$$C_{11} = 1 - (0,25)^3 = 0,9843$$

$$C_{10+11} = 0,94 \cdot 0,9843 = 0,9252$$



$$B = 1 - (0,1963 \cdot 0,3116 \cdot 0,08) = 0,9951$$

$$C_s = 0,8464 \cdot 0,9951 \cdot 0,9252 = 0,7792$$

4)  $C_{sampa} = e^{-\frac{1}{3000} \cdot 1500} = e^{-\frac{1}{2}} = 0,6065$

a)  $C_{fusivel} = e^{-\frac{1}{1000} \cdot 1500} = 0,829$

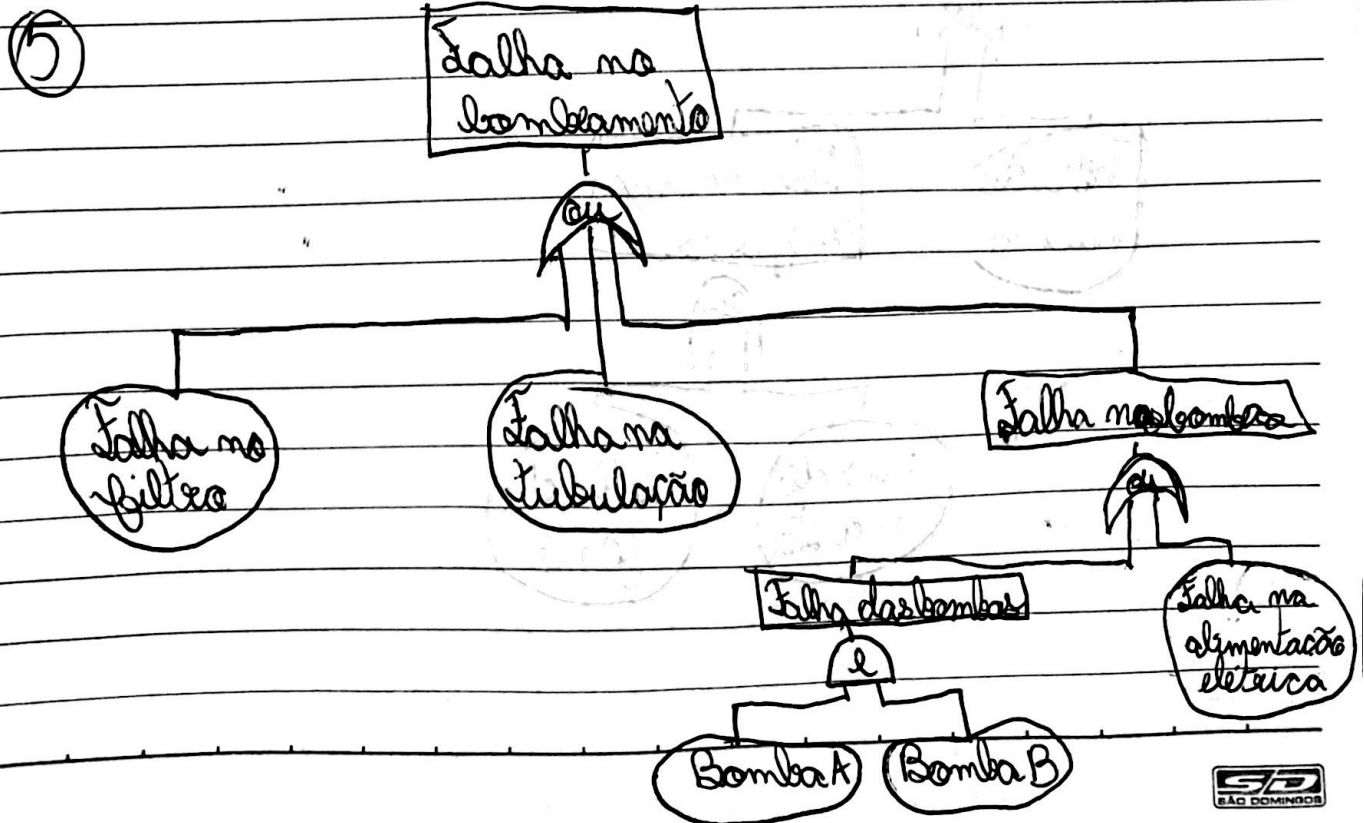
$C_{ponte} = e^{-\frac{1}{8000} \cdot 1500} = 0,8465$

$C_{interruptor} = e^{-\frac{1}{15000} \cdot 1500} = 0,8607$

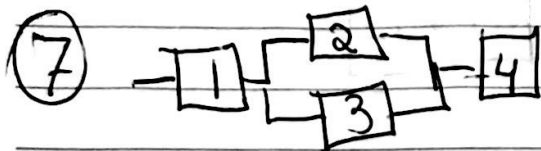
$$C_s = 0,6065 \cdot 0,829 \cdot 0,8465 \cdot 0,8607 = 0,3663$$

b)  $C_s = 0,604 \cdot (1 - 0,2935^3) = 0,5887$

*fusivel + ponte + interruptor*



$$(6) C_s = (1 - ((1 - p_1) \cdot (1 - p_2))) \cdot p_3$$



$$C_s = p^2 \cdot (1 - (1 - p)^2)$$

