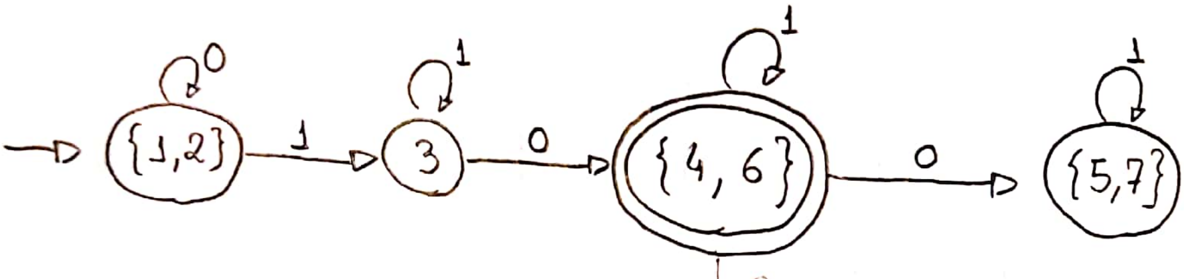
1) A) $S_0 = \{\{1,2,3,5,7,8\}, \{4,6\}\}$

$S_1 = \{\{1,2,5,7\}, \{3,8\}, \{4,6\}\}$

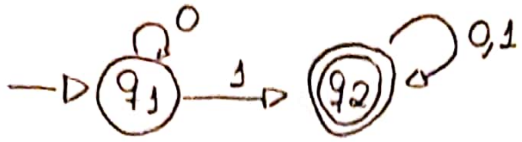
$S_2 = \{\{1,2\}, \{5,7\}, \{3\}, \{8\}, \{4,6\}\}$

$S_3 = \{\{1,2\}, \{5,7\}, \{3\}, \{8\}, \{4,6\}\}$

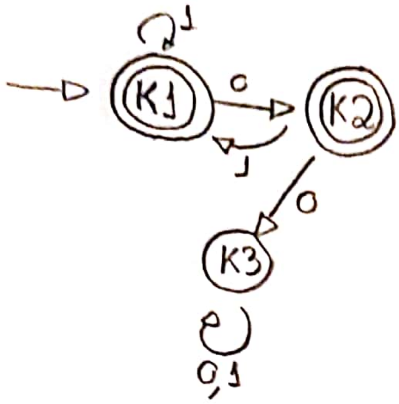


B) $L = \{ w \in \{0,1\}^* \mid \{0\}\{0\}^*\{1\}\{1\}^*\{0\}\{1\}^*$, ou seja, cada palavra w é formada por uma sequência de 0's uma sequencia de 1's e pode terminar em zero ou zero com uma sequência de 1's.

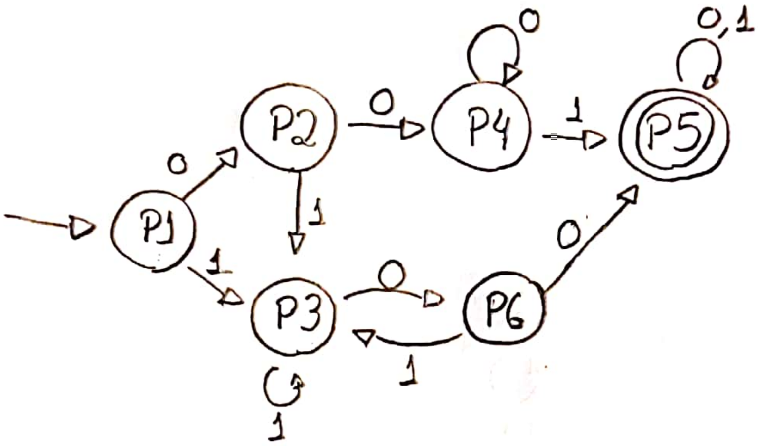
2) A)



B)



C)



3) Caso Base: $|w| = 0$

$$\hat{\delta}_3([e_1, e_2], \lambda) = [e_1, e_2]$$ → pela definição de $\hat{\lambda}$

$$= [\hat{\delta}_1(e_1, \lambda), \hat{\delta}_2(e_2, \lambda)]$$

Hipótese de Indução: $\hat{\delta}_3([e_1, e_2], y) = [\hat{\delta}_1(e_1, y), \hat{\delta}(e_2, y)]$

Queremos demonstrar que $\hat{\delta}_3([e_1, e_2], ay) = [\hat{\delta}_1(e_1, ay), \hat{\delta}_2(e_2, ay)]$

$$\hat{\delta}_3([e_1, e_2], ay) = \hat{\delta}_3(\hat{\delta}_3([e_1, e_2], a), y)$$

$$= \hat{\delta}_3([\hat{\delta}_1(e_1, a), \hat{\delta}_2(e_2, a)], y)$$

$$= [\hat{\delta}_1(\hat{\delta}_1(e_1, a), y), \hat{\delta}_2(\delta_2(e_2, a), y)]$$

$$= [\hat{\delta}_1(e_1, ay), \hat{\delta}_2(e_2, ay)]$$

C.Q.D.