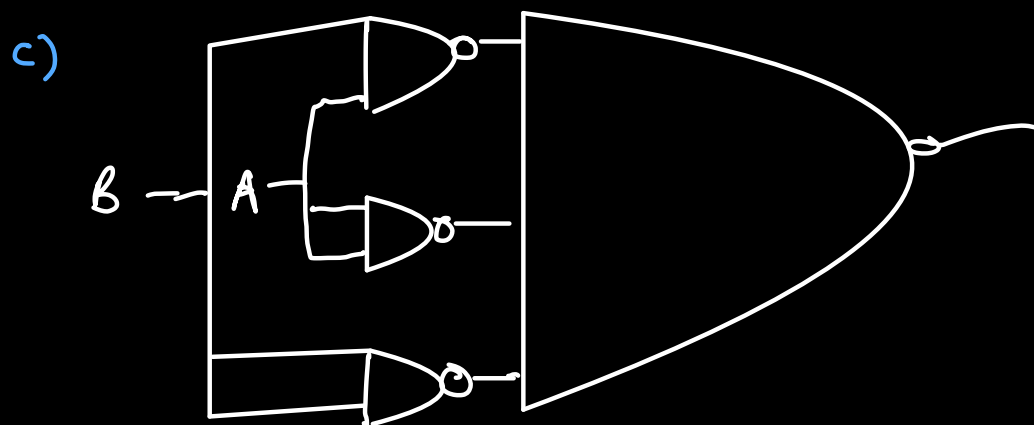
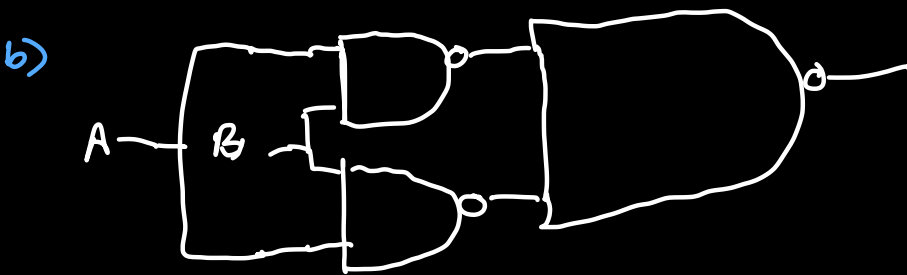
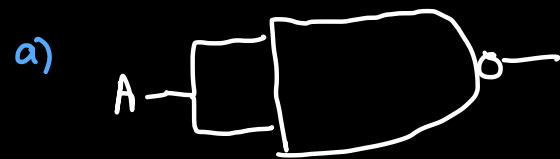


Assignment 1

Mission 1:



Mission 2:

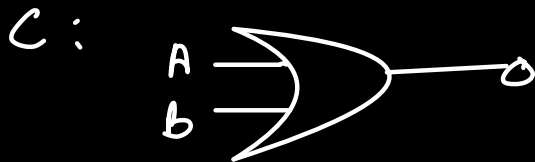
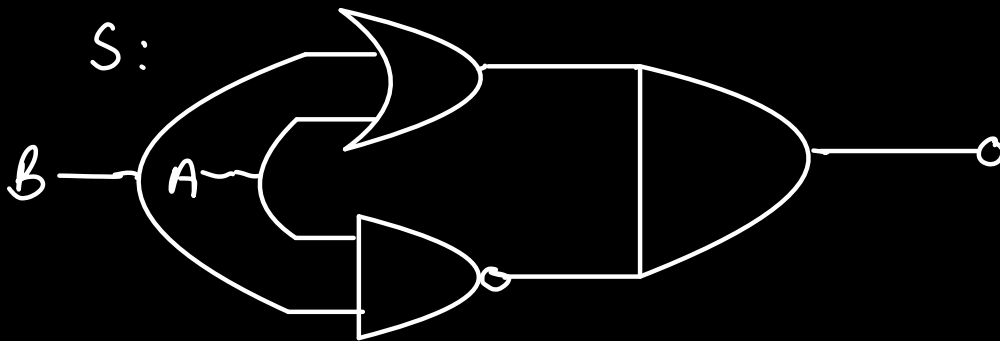
a)

A	B	S	C
1	1	0	1
1	0	1	0
0	1	1	0
0	0	0	0

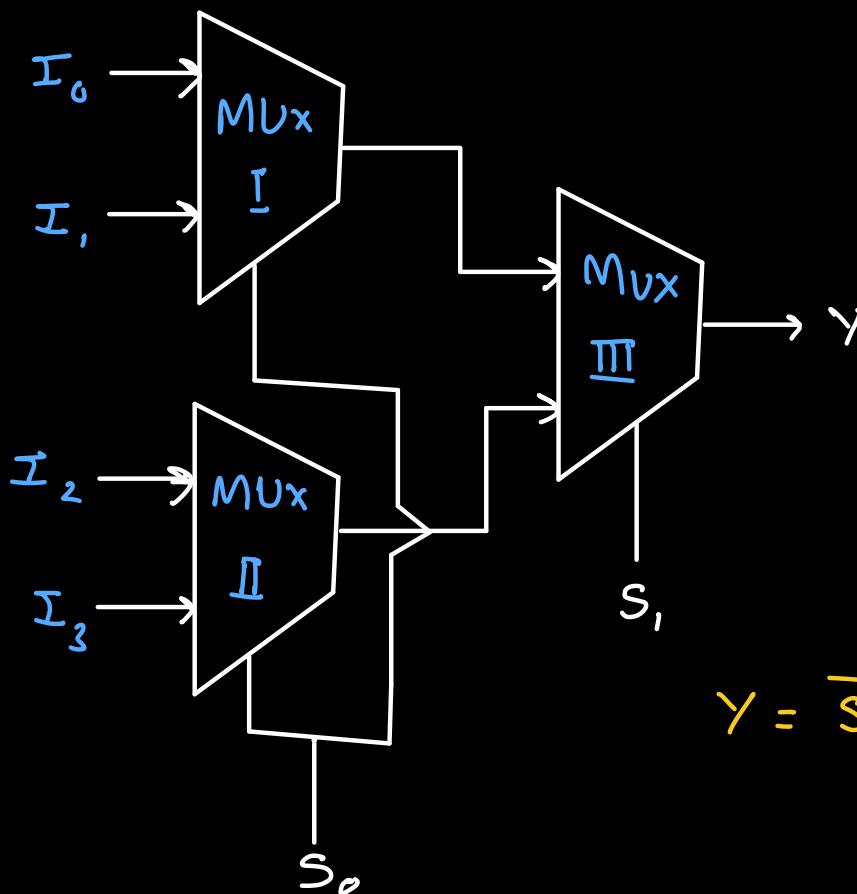
b) $S = (A+B) \cdot (\overline{A \cdot B})$

$C = A \cdot B$

c)



Mission 3:

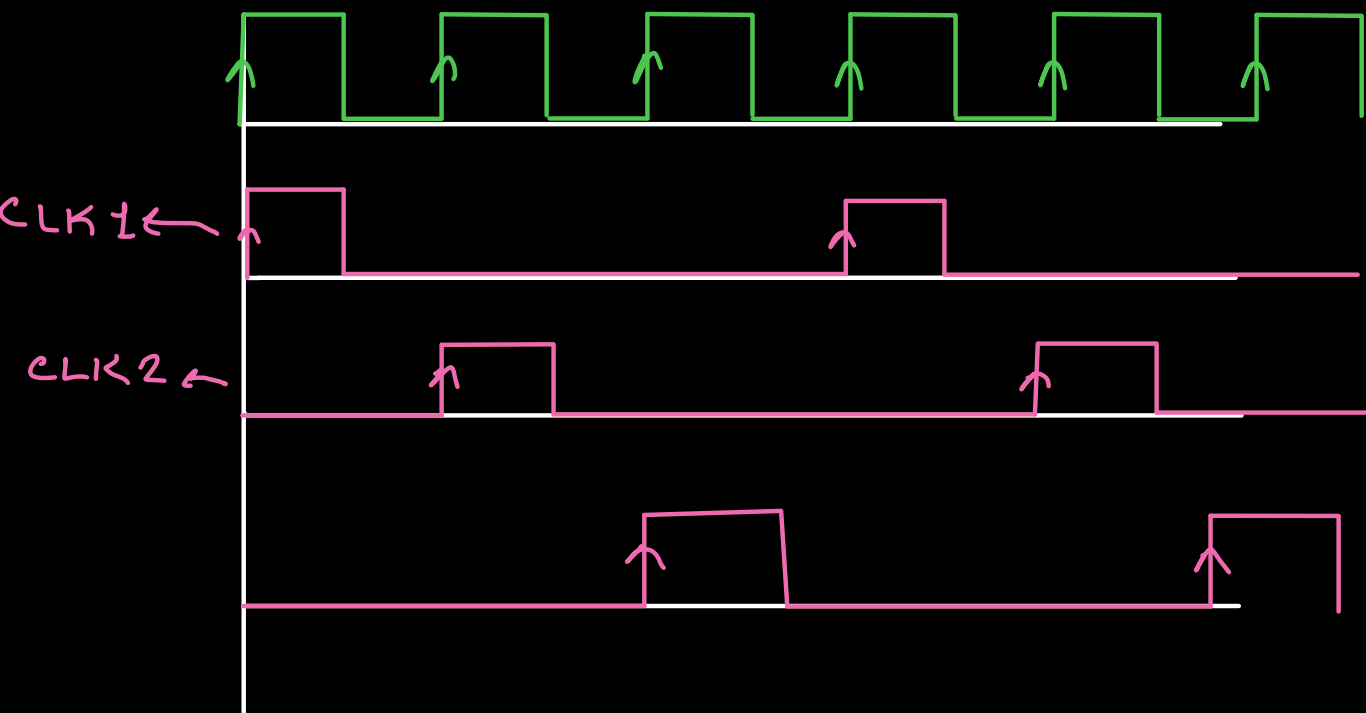
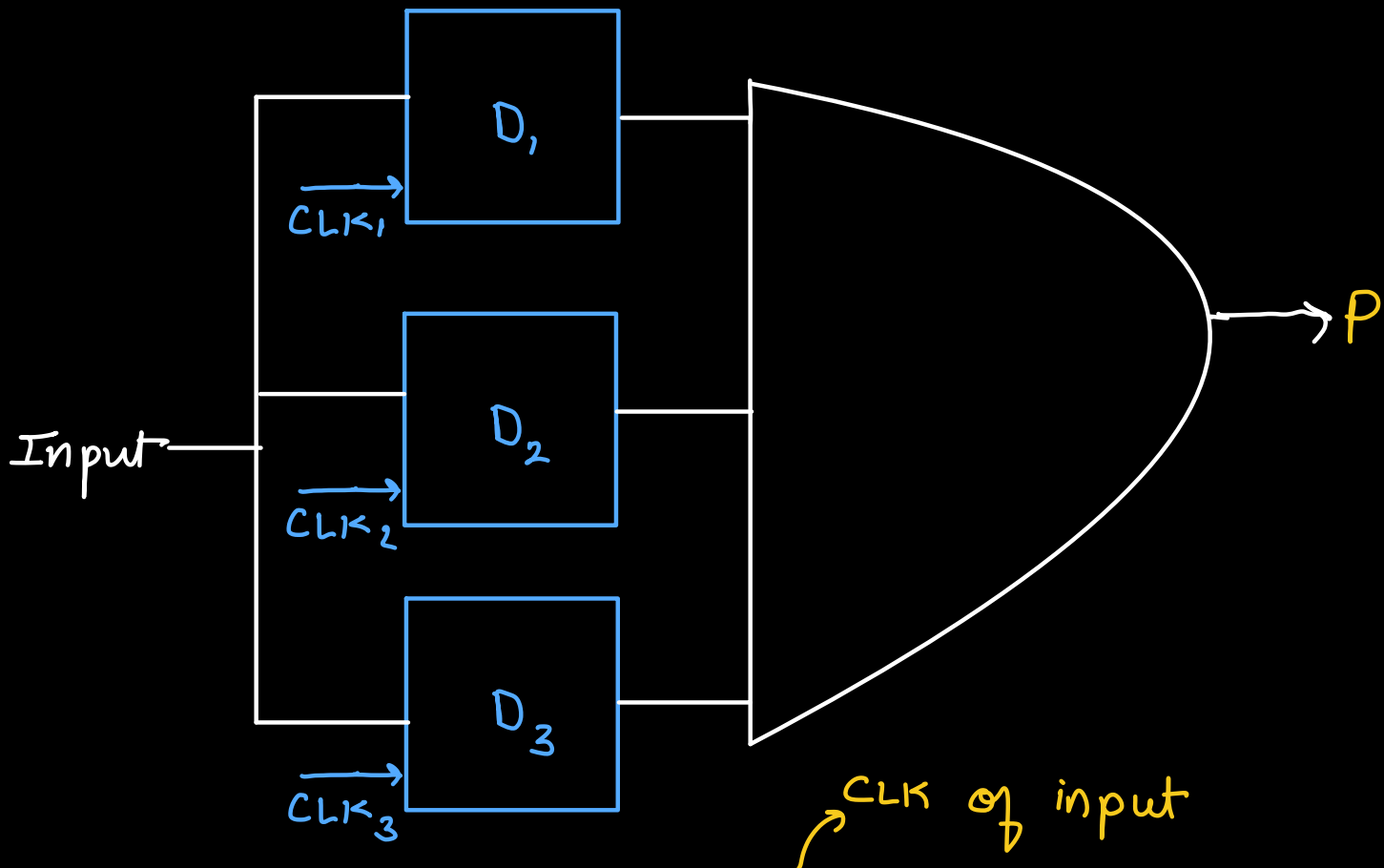


$$Y = \overline{S_0} \cdot (I_0 \cdot \overline{S_1} + I_2 \cdot S_1) + S_0 \cdot (I_1 \cdot \overline{S_1} + I_3 \cdot S_1)$$

Mission 4:

a) We need to save 3 bits of memory so we need 3 D flip flops.

b)



Mission 5:

a)

D_0	Q_n^0	Q_{n+1}^0	D_1	Q_n^1	Q_{n+1}^1
0	0	0	0	0	0
0	1	1	0	1	1
1	0	1	1	0	1
1	1	0	1	1	0

b)

$$Q_{n+1}^0 = (Q_n^0 + D_0) \cdot (\overline{Q_n^0 \cdot D_0})$$

$$Q_{n+1}^1 = (Q_n^1 + D_1) \cdot (\overline{Q_n^1 \cdot D_1})$$