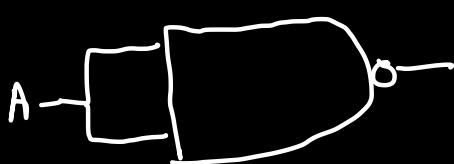


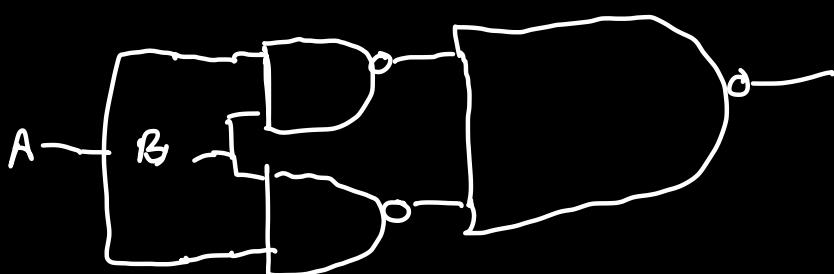
Assignment 1

Mission 1:

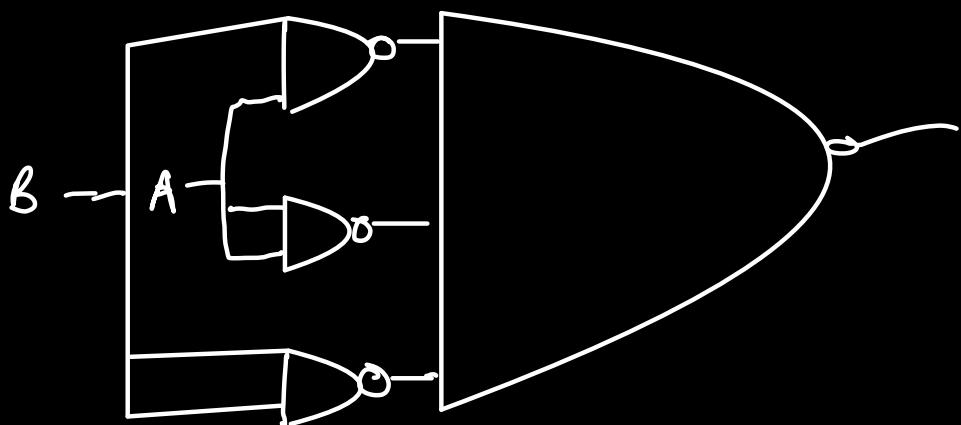
a)



b)



c)



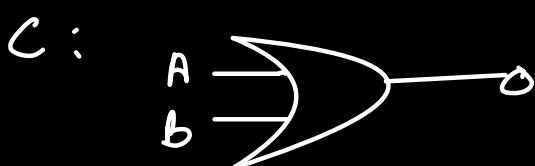
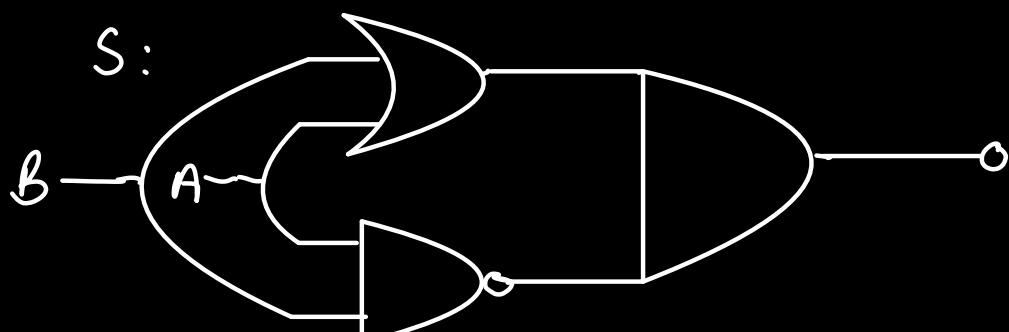
Mission 2:

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

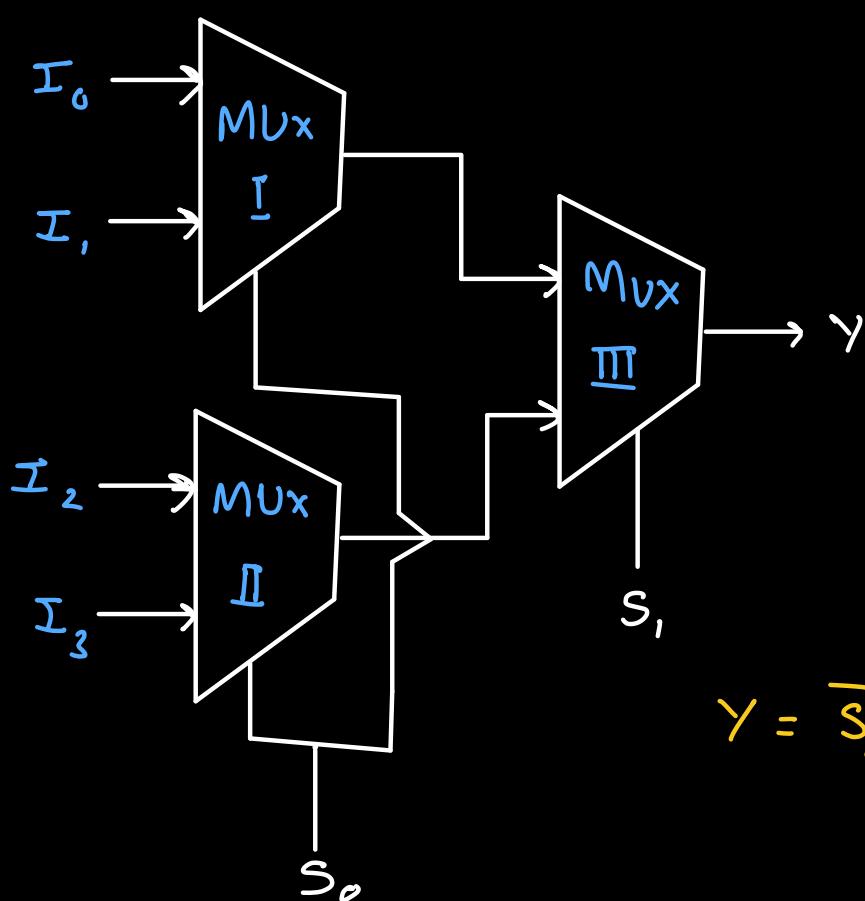
$$b) S = (A+B) \cdot (\overline{A} \cdot \overline{B})$$

$$C = A \cdot B$$

c)



Mission 3 :

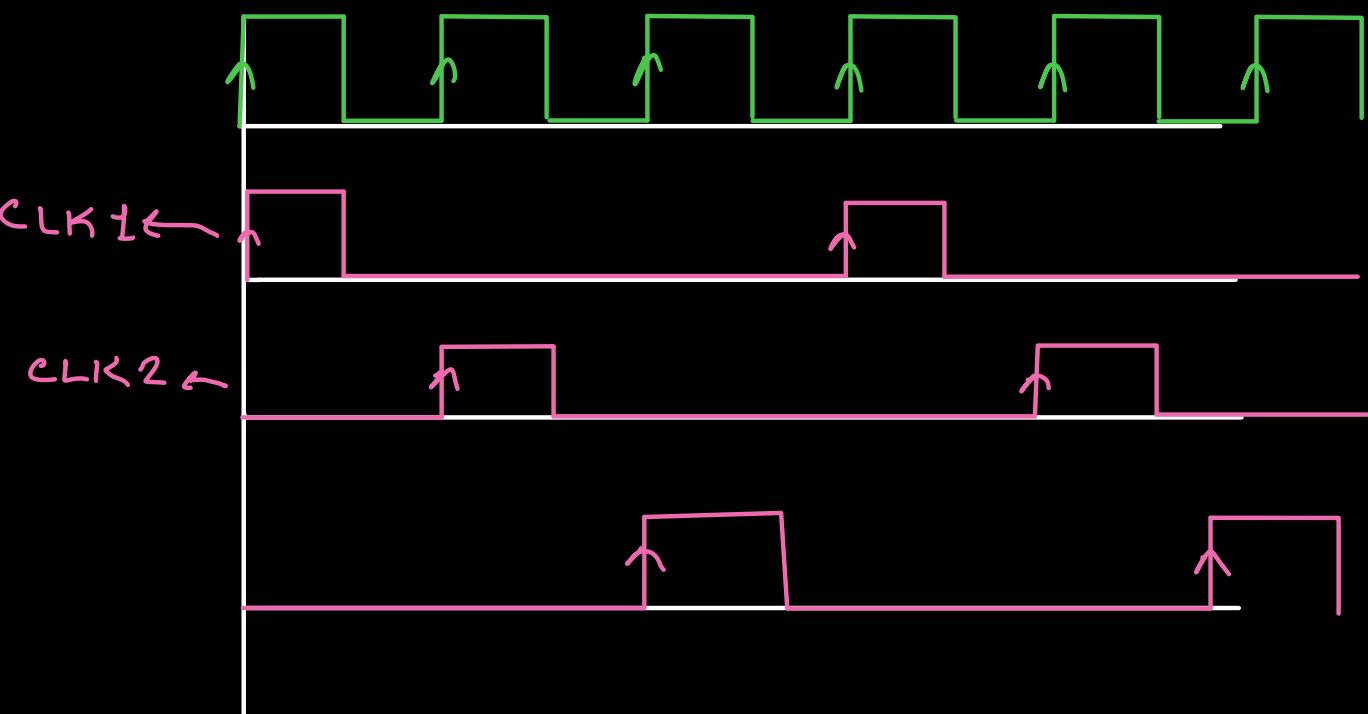
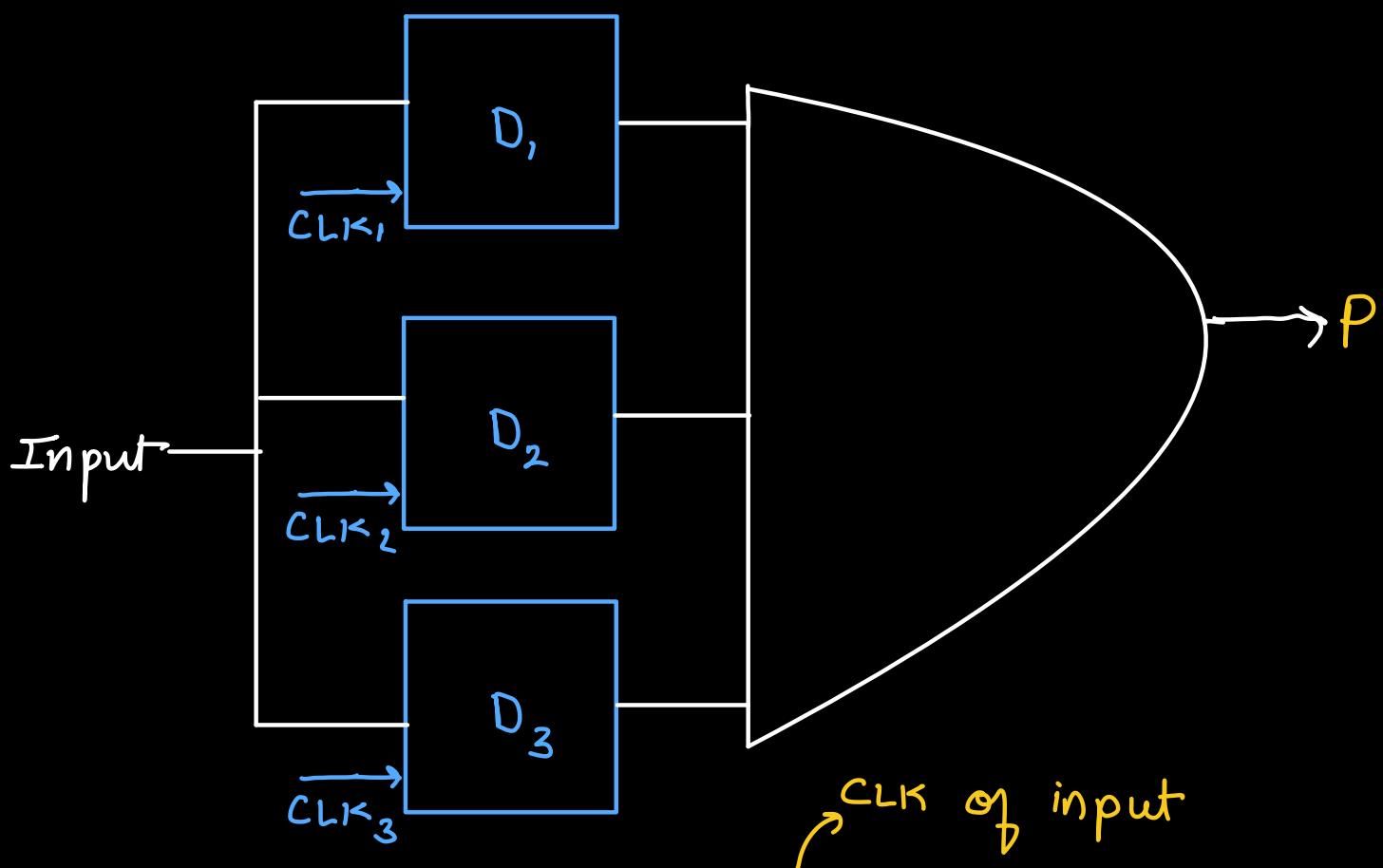


$$Y = \overline{S_0} \cdot (I_0 \cdot \overline{S_1} + I_2 \cdot S_1) \\ + S_0 \cdot (I_1 \cdot \overline{S_1} + I_3 \cdot S_1)$$

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_{0n}	$Q_{0,n+1}$	D_1	Q_{1n}	$Q_{1,n+1}$
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) $Q_{0n+1} = (Q_{0n} + D_0) \cdot (\overline{Q_{0n}} \cdot D_0)$

$$Q'_{n+1} = (Q'_{n+1} + D_1) \cdot (\overline{Q'_{n+1}} \cdot D_1)$$