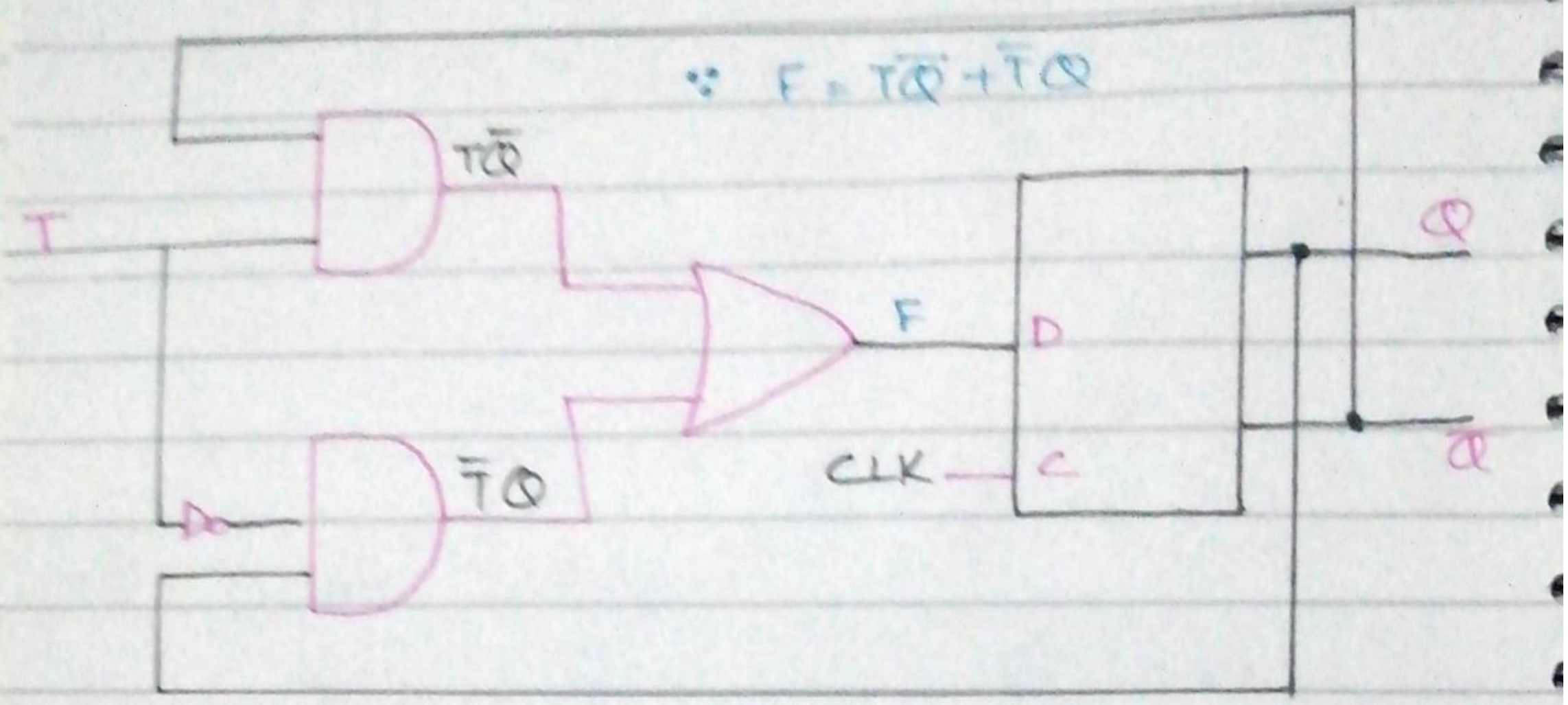
Homework

Analysis the circuit and complete the function table.

Circuit



Table

T	Q	Q(t+1)	
0	0	0	No change
0	1	1	No change
1	0	1	Complement
1	1	0	Complement

∵ we have to compare Q with Q(t+1)

T	Q(t+1)	operation
0	Q(t)	No change
1	$\bar{Q}(t)$	Complement

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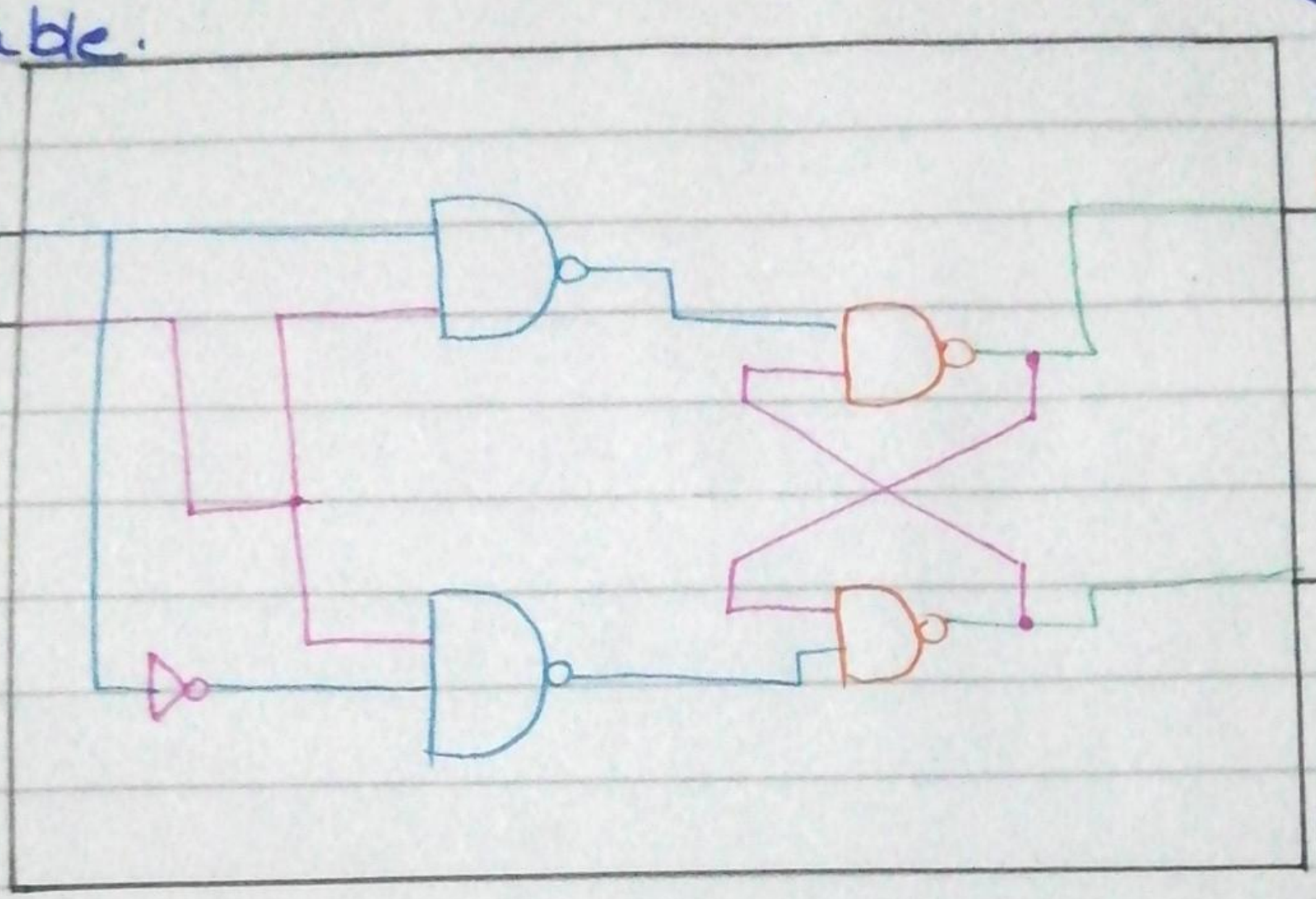
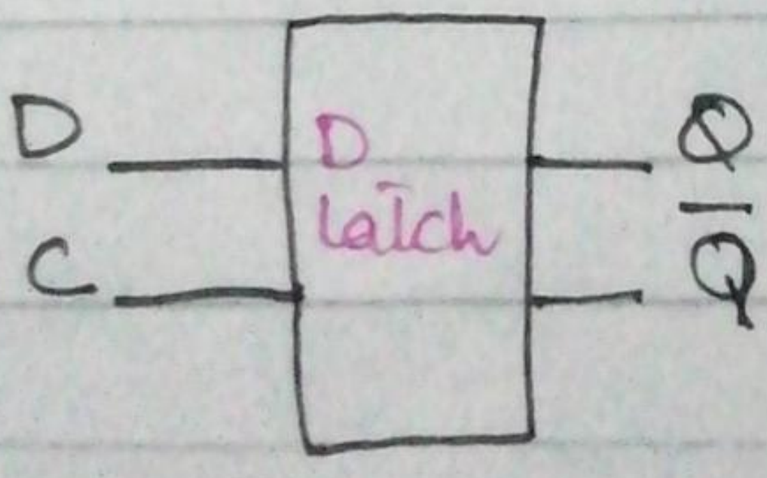
Lecture
6-5-2020

Analysis the circuit and mention the next states of Q in a given table.



C	D	Next state of Q
0	X	(no change)
1	0	0 Reset Q
1	1	1 set Q



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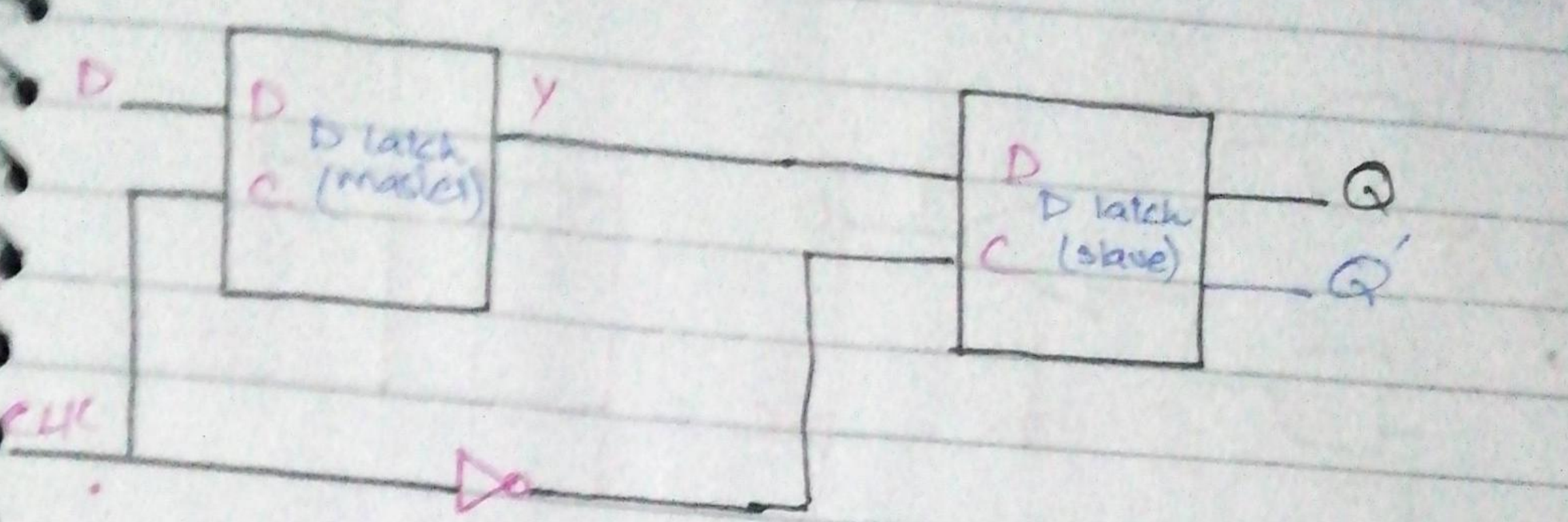
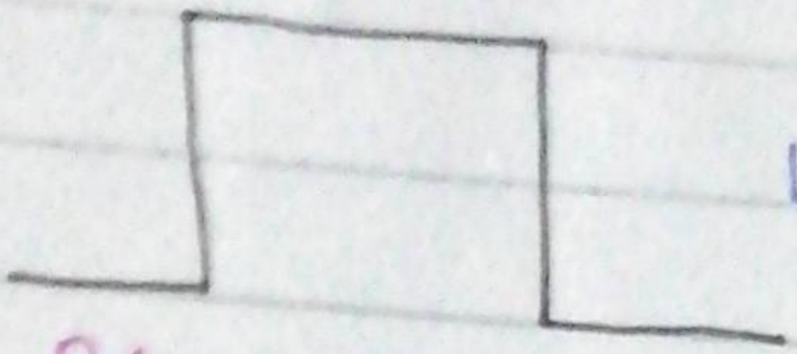
Flip-Flop (Master-Salve D Flip Flop)





Positive Edge Trigger
Negative Trigger.

Latch is level sensative and Flip Flop is edge trigger.

D	Q(t+1)	operation
0	0	Reset
1	1	Set

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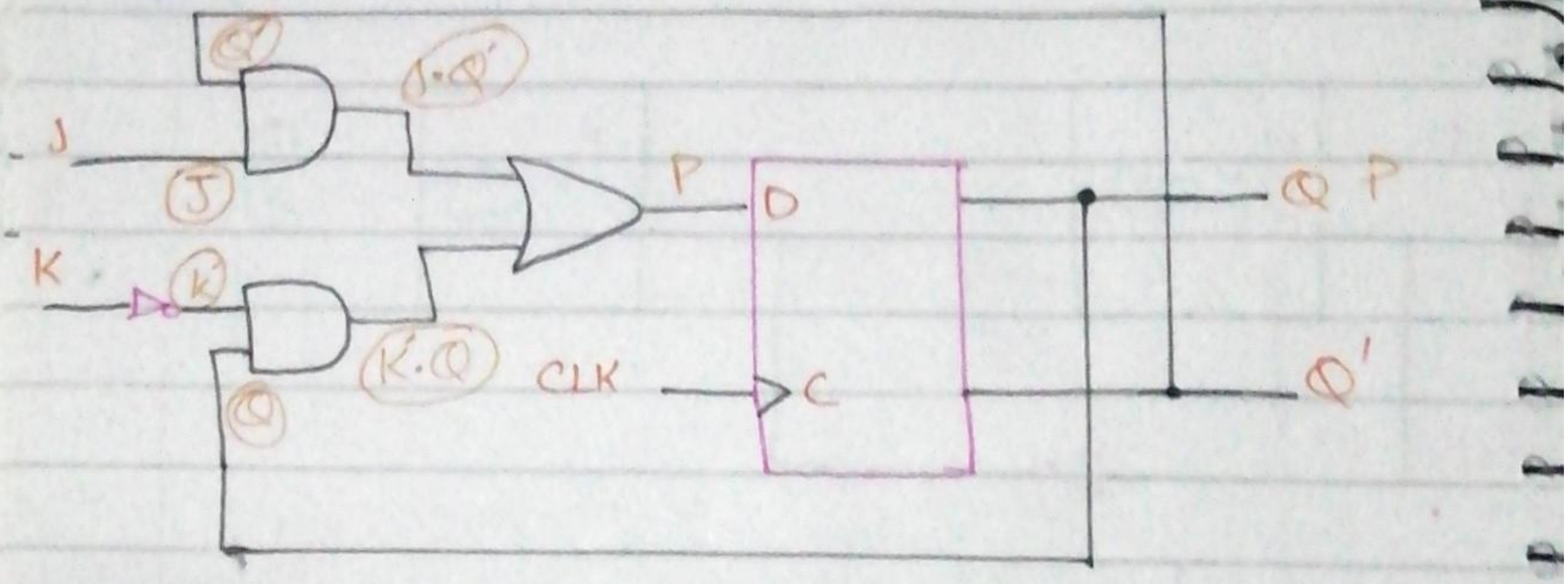
J-K Flip Flop

$P = J\bar{Q} + K'Q$

⇒ Circuit



⇒ Truth Table

J	K	Q	Q(t+1)	
0	0	0	0	No change
0	0	1	1	
0	1	0	0	Reset
0	1	1	0	
1	0	0	1	Set
1	0	1	1	
1	1	0	1	Compliment
1	1	1	0	

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DLD 13-5-2020

→ SR Latch

S	R	Q(t+1)	operation
0	0	No change	No change
0	1	0	Reset
1	0	1	Set
1	1	Intermediate	Compliment

⇒ JK Flip Flop

J	K	Q(t+1)	operation
0	0	Q	No change
0	1	0	Reset
1	0	1	Set
1	1	Q'	Compliment

⇒ Master Slave D-Flip Flop

D	Q(t+1)	Operation
0	0	Reset
1	0	Set

⇒

T	Q(t+1)	operation
0	Q	No-change
1	Q'	Compliment

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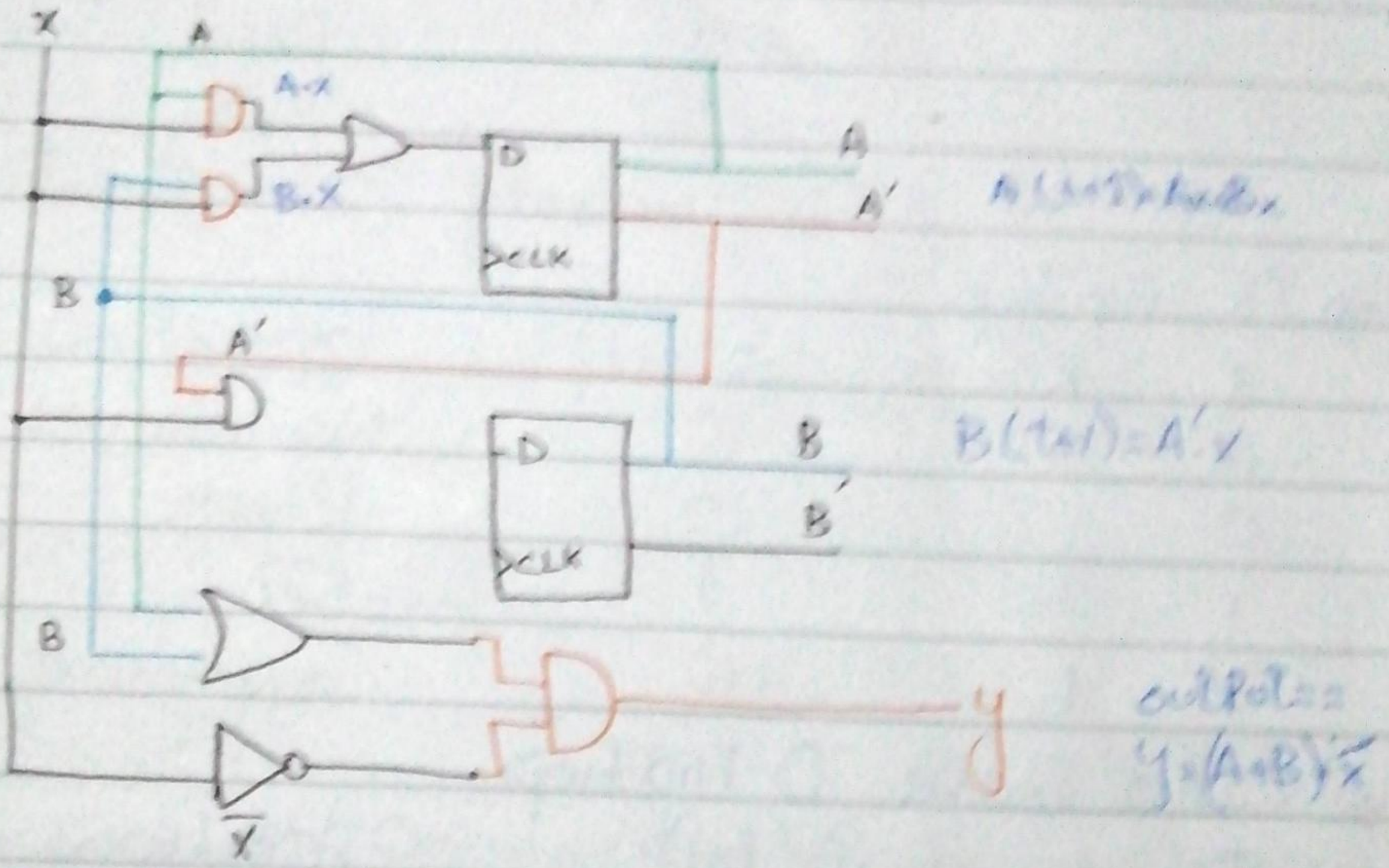
Analysis of Clocked Sequential Circuit



Equations

$$A(t+1) = Ax + Bx$$
$$B(t+1) = \bar{A}x$$
$$y = (A+B)\cdot\bar{x}$$

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> First state of Table:

Input			Next State		Output
A	B	x	A	B	y
0	0	0	0	0	0
0	0	1	0	1	0
0	1	0	0	0	1
0	1	1	1	1	0
1	0	0	0	0	1
1	0	1	1	0	0
1	1	0	0	0	0
1	1	1	1	0	0

> Second State Table

Present		when x=0		when x=1		x=1	x=0
A	B	A	B	A	B	y	y
0	0	0	0	0	1	0	0
0	1	0	0	1	1	0	1
1	0	0	0	1	0	0	1
1	1	0	0	1	0	0	1

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