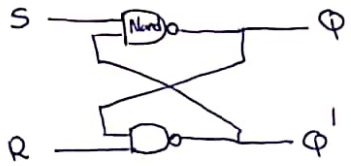
# Co 221 : Digital Design
## Lab 08 : Pre-lab

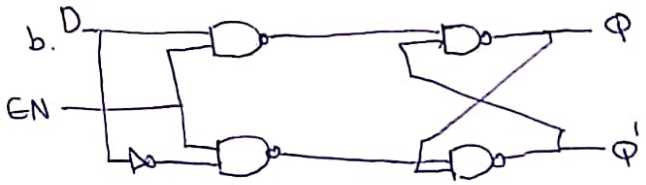
E/19/166
Jayathunga W.W.K.
Group 13

1 a.



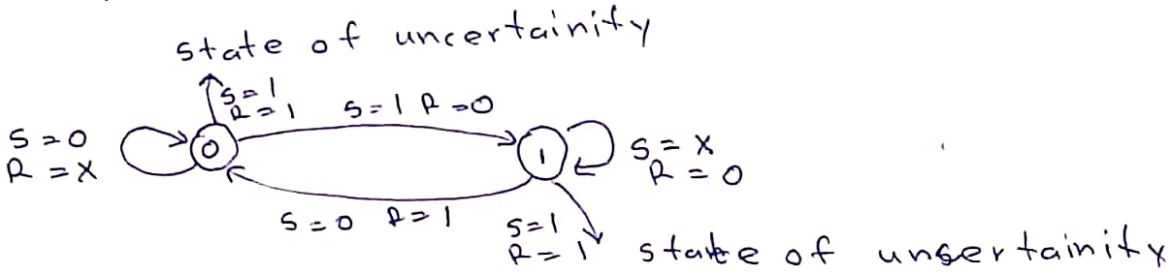

| S | R | Q | Q' |
|---|---|---|---|
| 1 | 0 | 0 | 1 |
| 1 | 1 | 0 | 1 |
| 0 | 1 | 1 | 0 |
| 1 | 1 | 1 | 0 |
| 0 | 0 | 1 | 1 |

b.

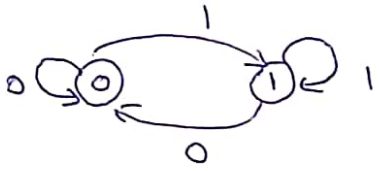



| En | D | Next state of Q |
|---|---|---|
| 0 | X | No change |
| 1 | 0 | 0 |
| 1 | 1 | 1. |

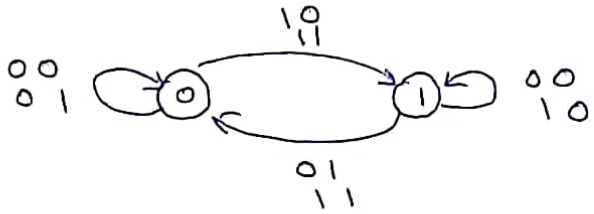
2 (a) S R flip-flop



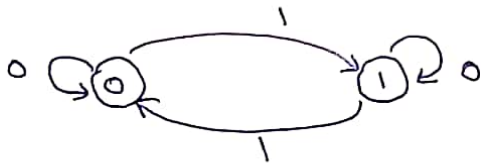

(b) D flip flop



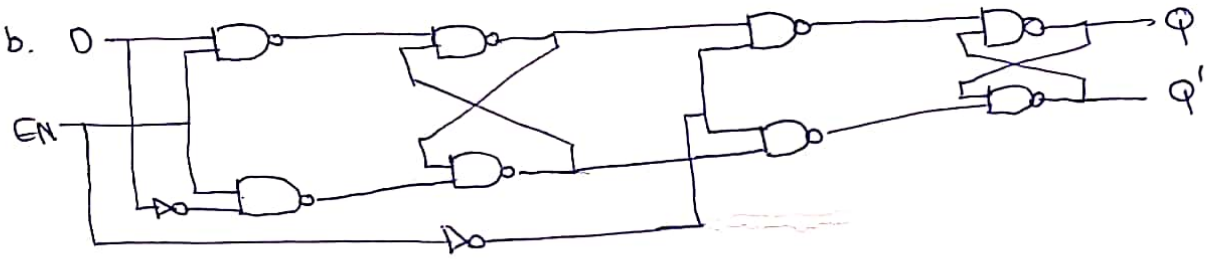
JK flip flop




T flip flop

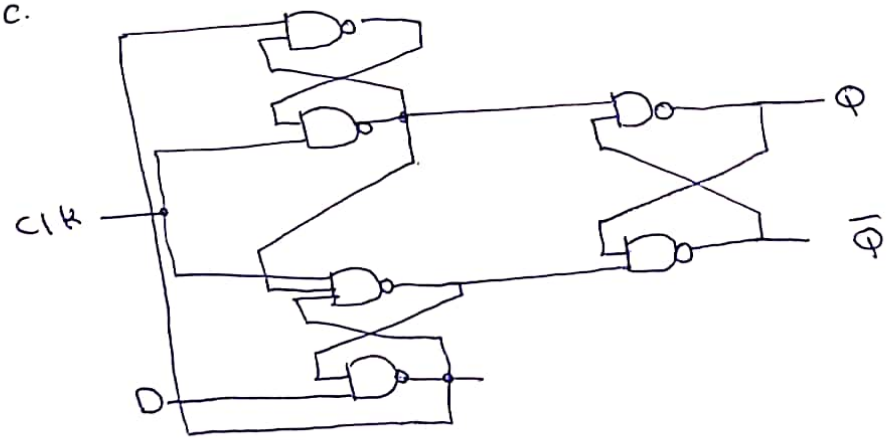



b.




| En | Q(t+1) | D |
|---|---|---|
| 0 | No change | X |
| 1 | 1 | 1 |
| 1 | 0 | 0 |

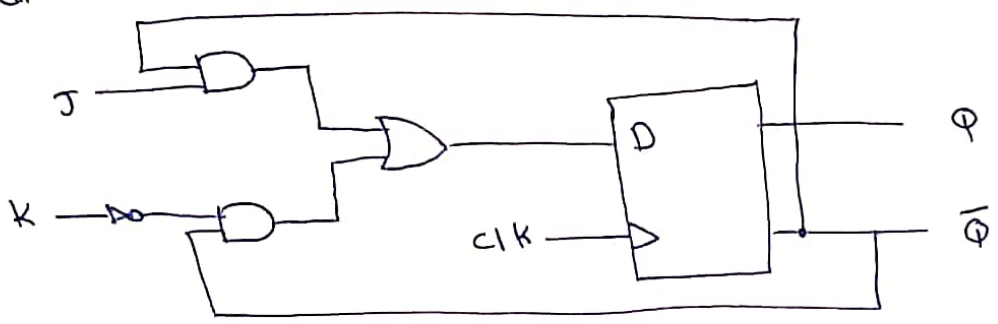
c.






CamScanner

d.

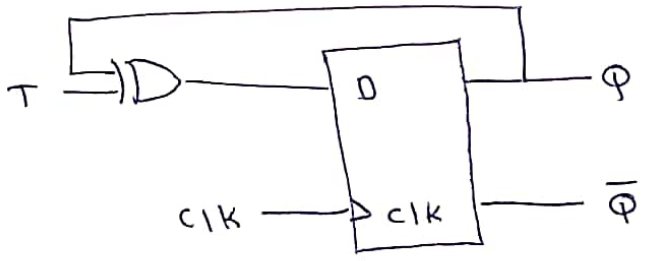



$D = Q(t+1)$

$D = J Q' + K' Q$

| J | K | Q(t+1) |
|---|---|---|
| 0 | 0 | Q |
| 0 | 1 | 0 |
| 1 | 0 | 1 |
| 1 | 1 | Q' |

e.




$D = Q(t+1)$

$D = T \oplus Q$

$= T' Q + Q' T$

| T | Q(t) | Q(t+1) |
|---|---|---|
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |



CamScanner