## ECE M16 Homework 2

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## Problem 1

(a)

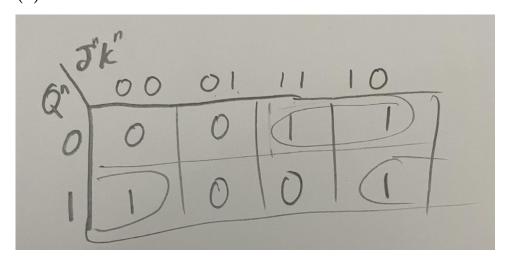
It will toggle, if the latch is reset, ie Q=0 and  $\bar{Q}=1$ . Then the output will be Q=1 and  $\bar{Q}=0$  following the clock pulse

(b)

J	K	Q current	Q next
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

Therefore this is like a SR latch however it will toggle at J=K=1, unlike the SR latch.

(c)



$$Q^{n+1} = J^n.\overline{Q^n} + \overline{K^n}.Q^n$$

(d)

The transition table of the D latch is:

$\mid C \mid$	D	Q next
0	X	Q
1	0	0
1	1	1

Which is the same as the transition table of the JK latch with  $J = \bar{K} = D$ .

C	J=D	$K = \bar{D}$	Q next
0	X	X	Q
1	0	1	0
1	1	0	1