

HW10 extra problems - SOLUTIONS.

ECE 331 -

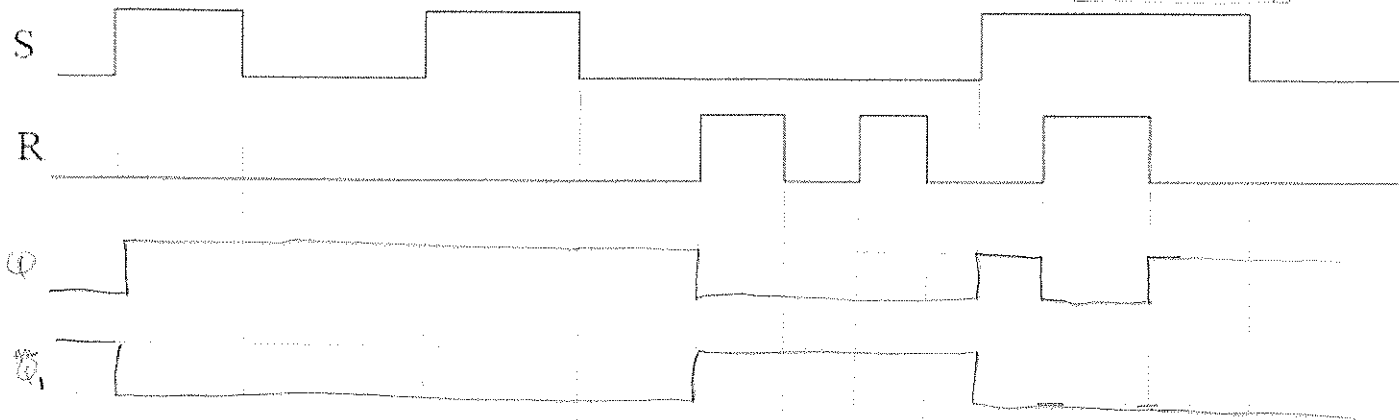
04/11/20 NP.

① (a) FLIP-FLOPS -
R-S latch

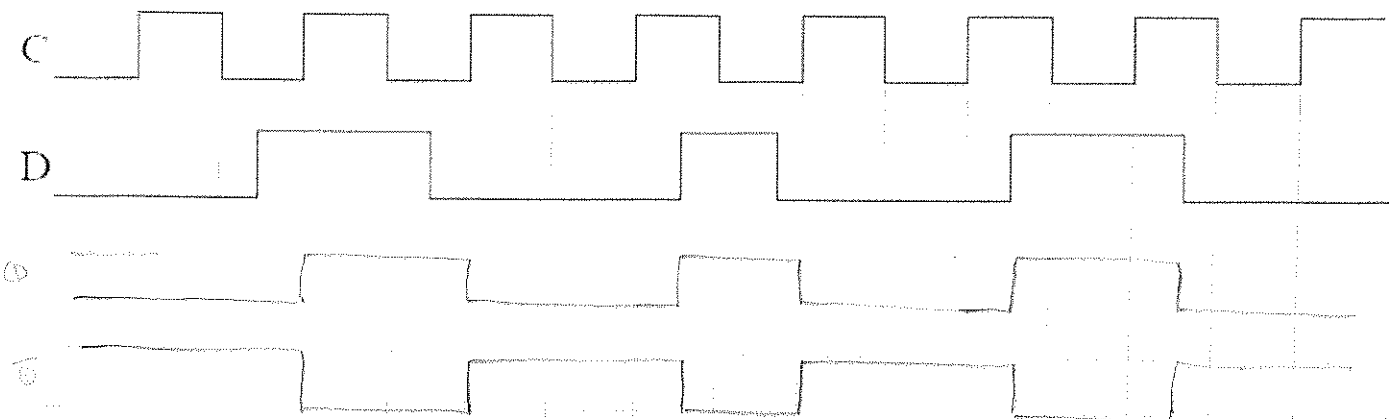
Obs -
OUTPUTS Q and \bar{Q} follow this table:

S	R	Q	\bar{Q}
0	0	0	1
0	1	1	0
1	0	0	1
1	1	0	0

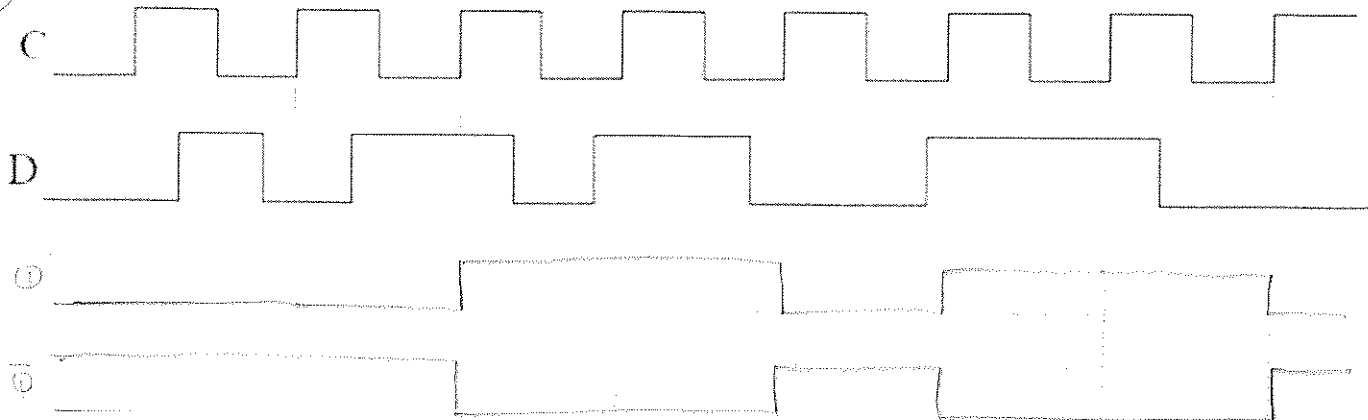
UNSTABLE!



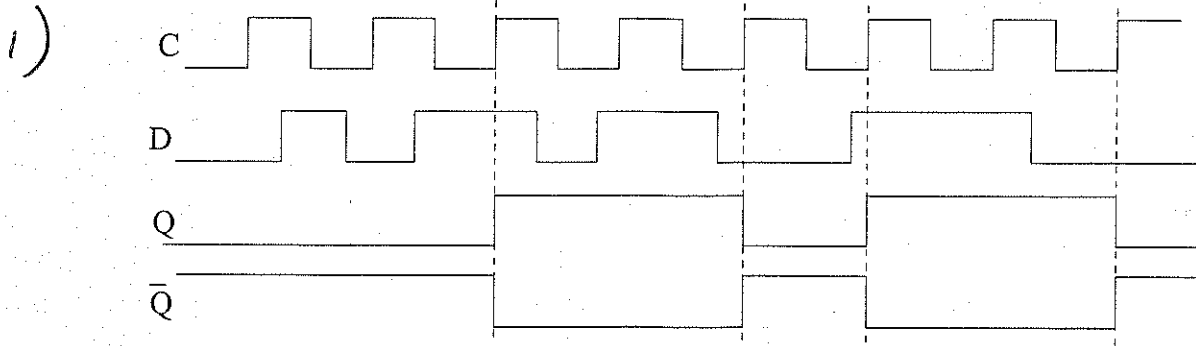
② (b) D latch (we did this in class!)



③ (c) D - rising edge (we did this in class too!)

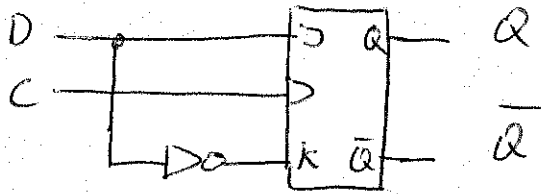


HW 11 Solution

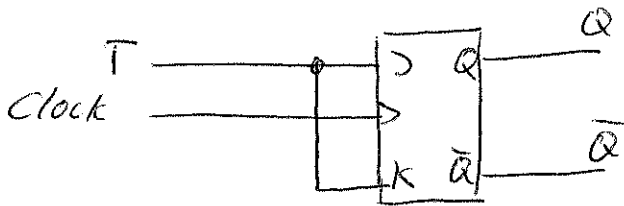


2) a) JK Flip-Flop

1) D Flip-Flop



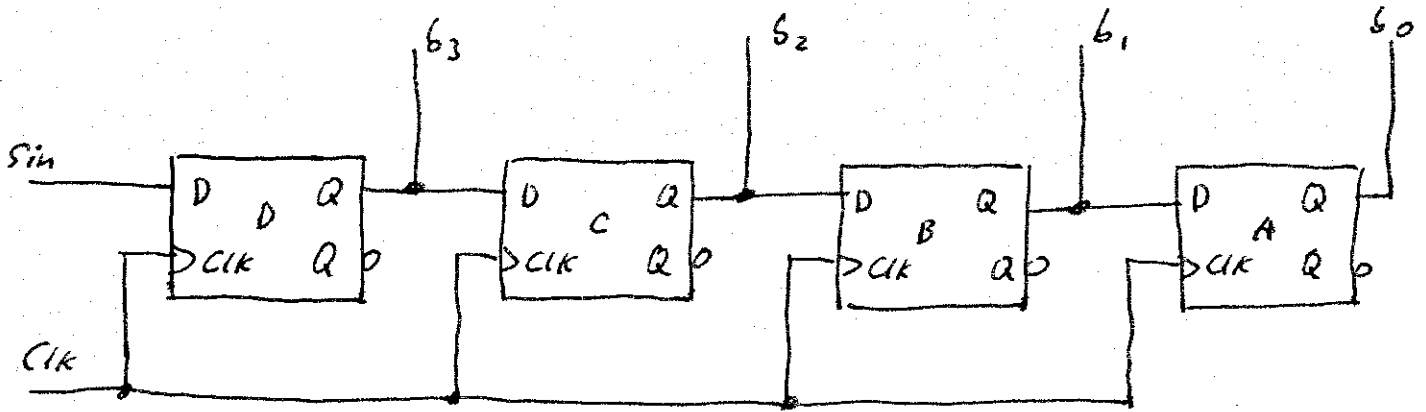
2) T Flip-Flop



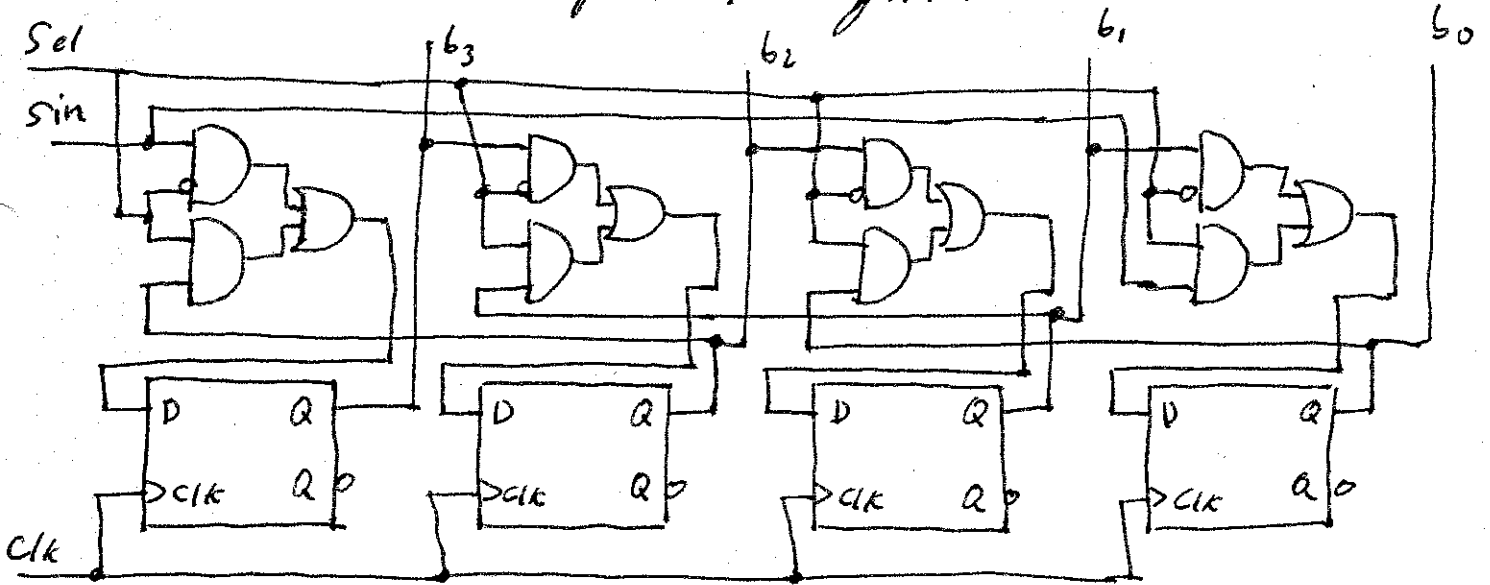
b) c) no solution given

3) Shift Register

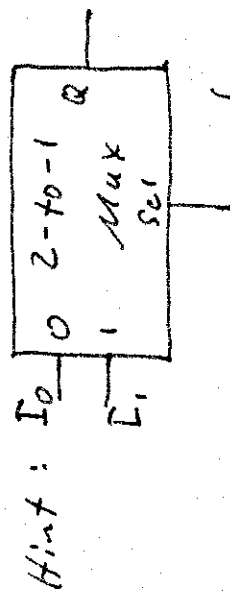
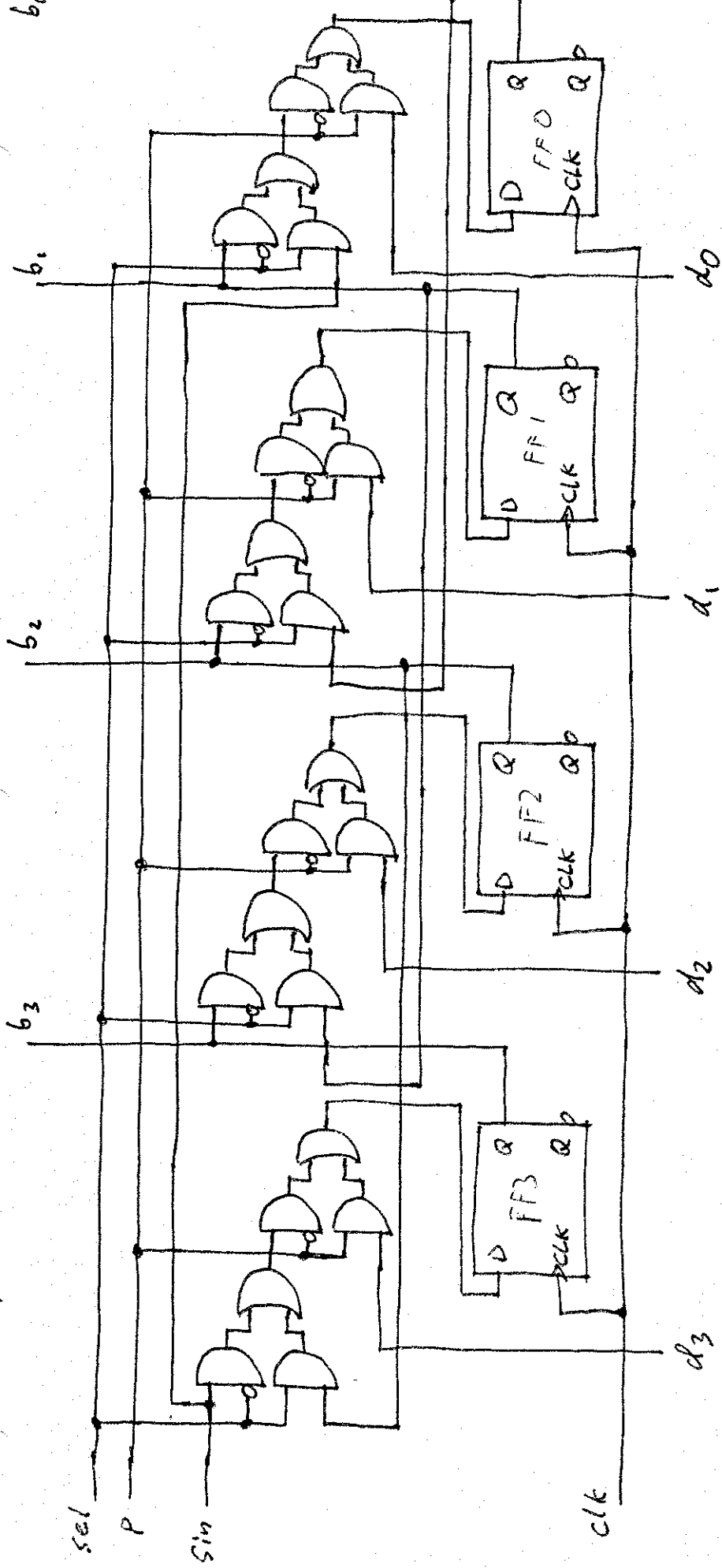
a) 4-bit right shift register



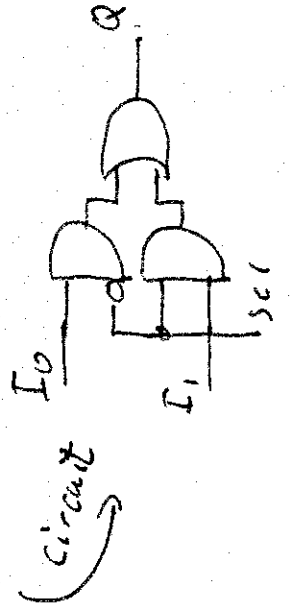
b) 4-bit left-right shift register



c) b) with parallel load



if sel = "0" then $Q = I_0$
 if sel = "1" then $Q = I_1$



$$Q = sel I_1 + \overline{sel} I_0$$