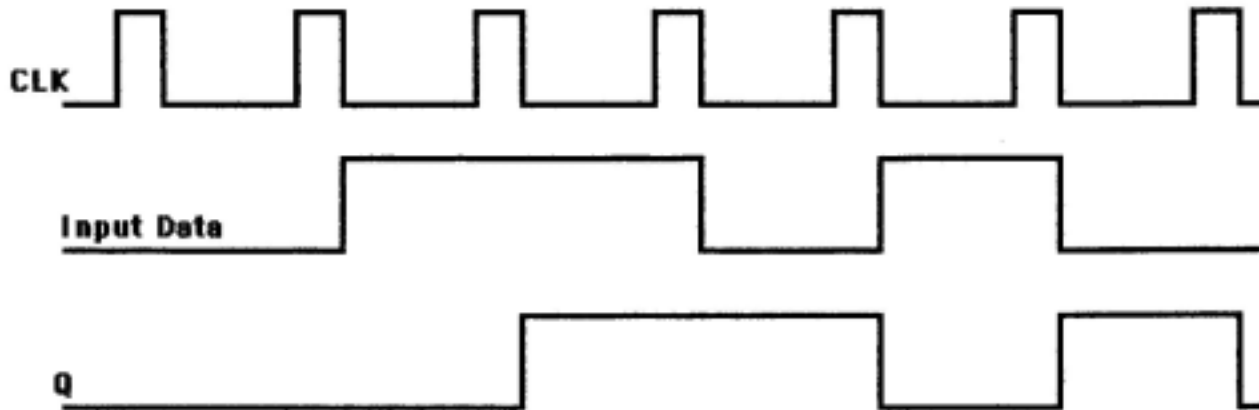


Spring 2003 Digital Systems HW#3 Solution

5.11 (a) Connect the J and K inputs permanently to HIGH. The Q output will be a square wave with a frequency of 5KHz.

(b) The Q output will be a square wave with a frequency of 2.5KHz.

5.13 (a) Since FF has $t_H=0$, the FF will respond to the value present on the D input just prior to the NGT of the clock.



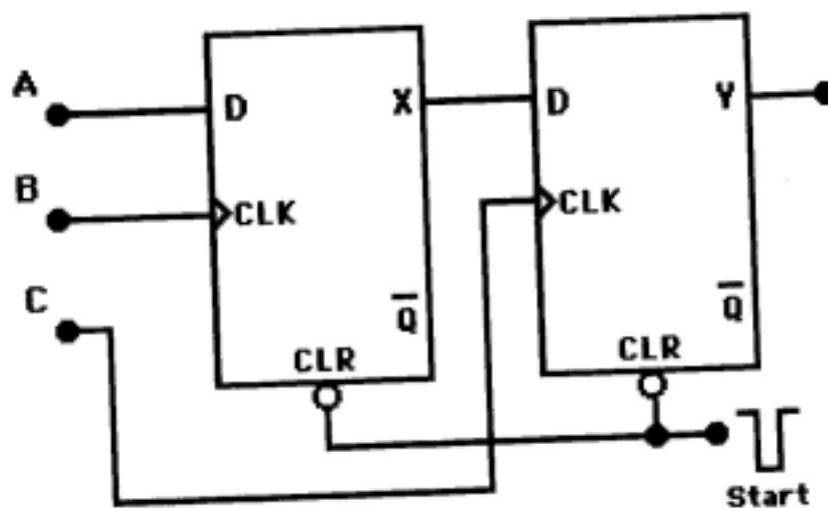
(b) Connect Q to the D input of a second FF, and connect the clock signal to the second FF. The output of the second FF will be delayed by 2 clock periods from the Input Data.

5.15 Q is a 500Hz square wave.

5.26 (a) Y can go HIGH only when C goes HIGH while X is already HIGH. X can go HIGH only if B goes HIGH while A is HIGH. Thus, the correct sequence is A,B,C.

(b) The START pulse initially clears X and Y to 0 before applying the A,B,C signals.

(c)



5.31

