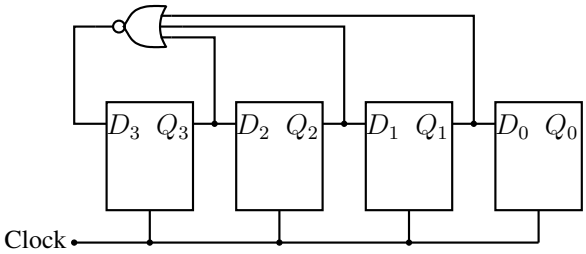
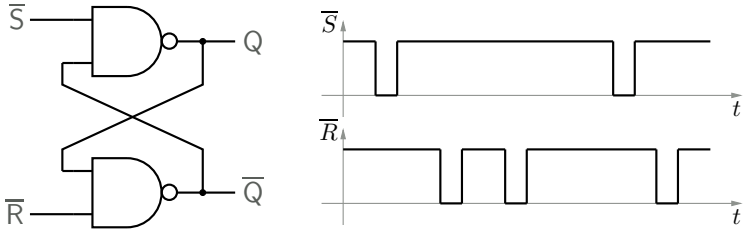
EE 112 (MBP): HW 3 (January 2017)

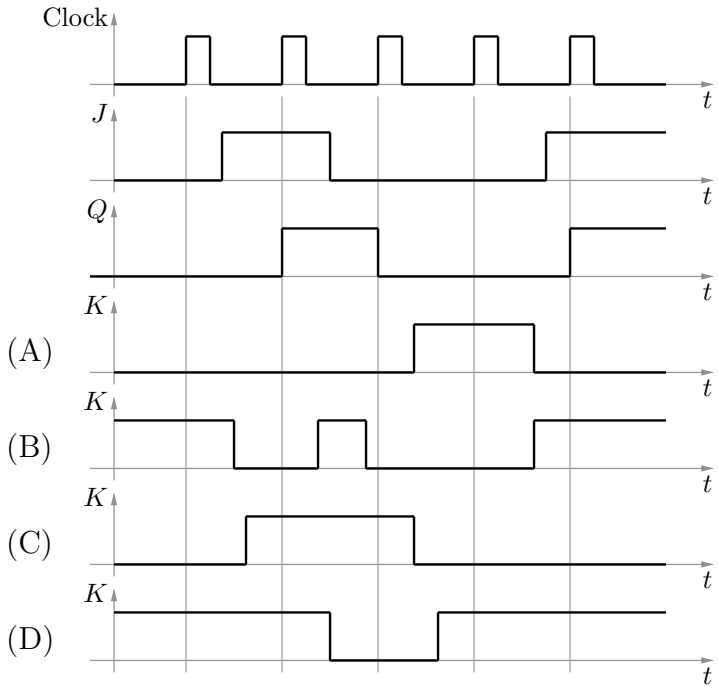
1. Given that $Q_3Q_2Q_1Q_0 = \texttt{1000}$ initially, find the state of the circuit shown in the figure for the first six clock pulses.



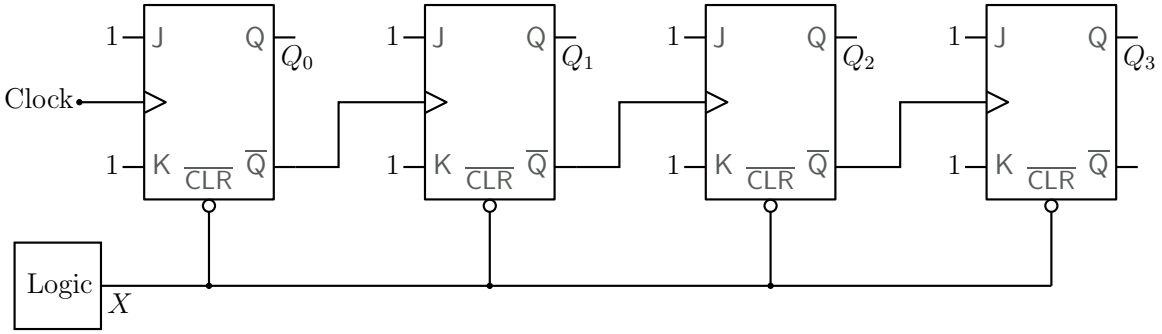
2. The $\overline{S}$ and $\overline{R}$ inputs shown in the figure are applied to a NAND latch. Assuming that Q is 0 initially, plot Q versus time.



3. The Clock and J waveforms shown in the figure are applied to a positive edge-triggered JK flip-flip with $Q = 0$ initially. The resulting Q waveform is also shown. Which of the K waveforms will result in the given Q waveform?



4. Find the logical function for X (in terms of Q_0, Q_1, Q_2, Q_3) for the counter shown in the figure to work as a mod-14 counter.



5. What is the mod number of the counter shown in the figure, given that $Q_C Q_B Q_A = 000$ is one of the counter states?