



BITS Pilani

Hyderabad Campus

Department of Electrical Engineering



Digital Design

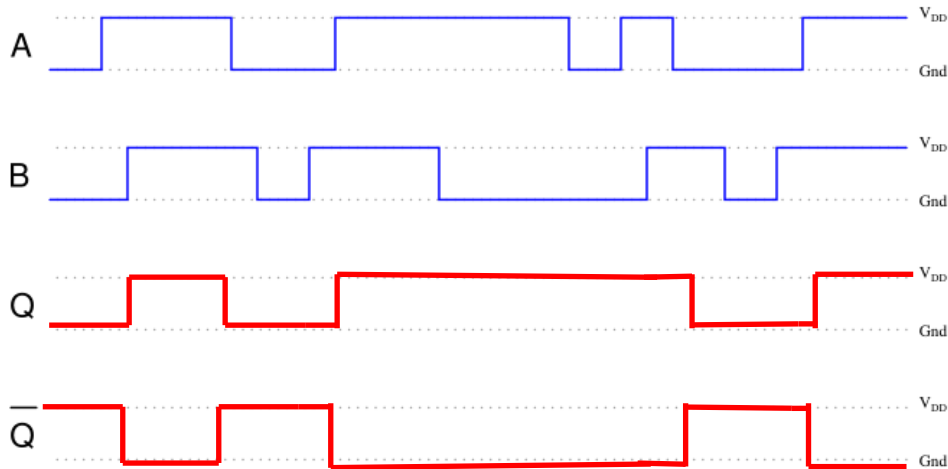
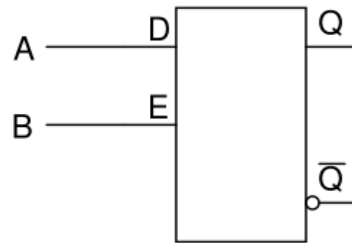
First Semester 2020-21

Tutorial : 07

Flip-Flops

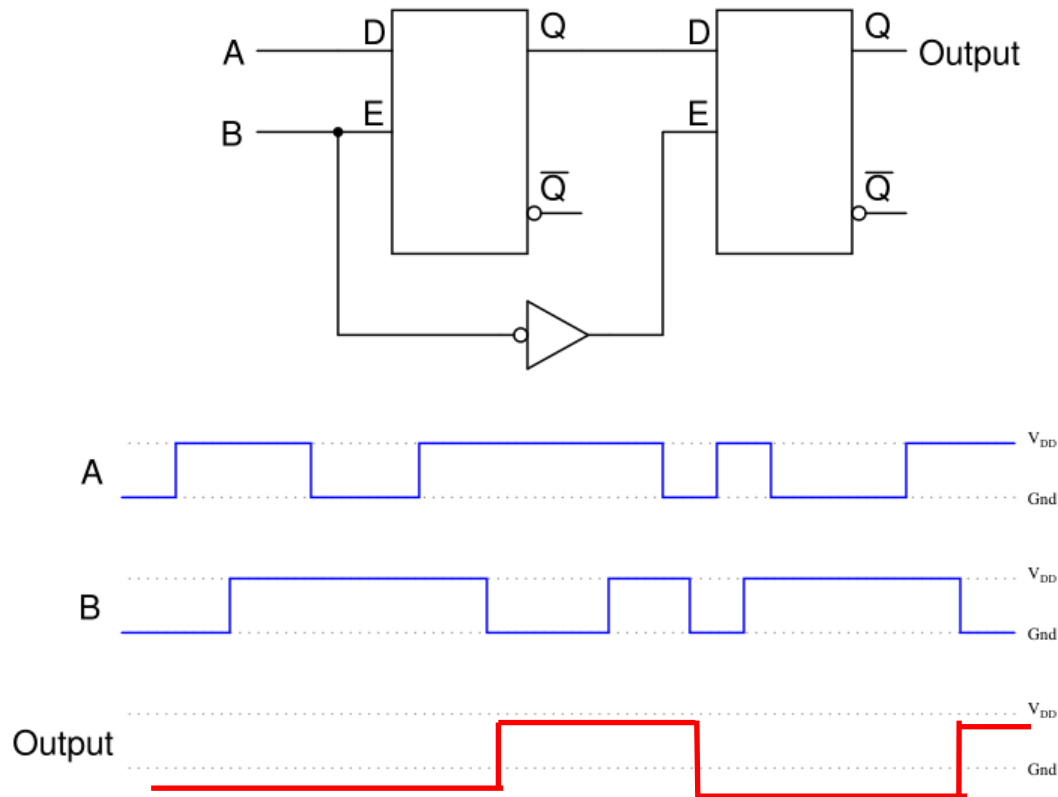
Digital Design Tutorial : 07

1 . Determine the Q and \bar{Q} output states of this D-type gated latch, given the following input conditions:



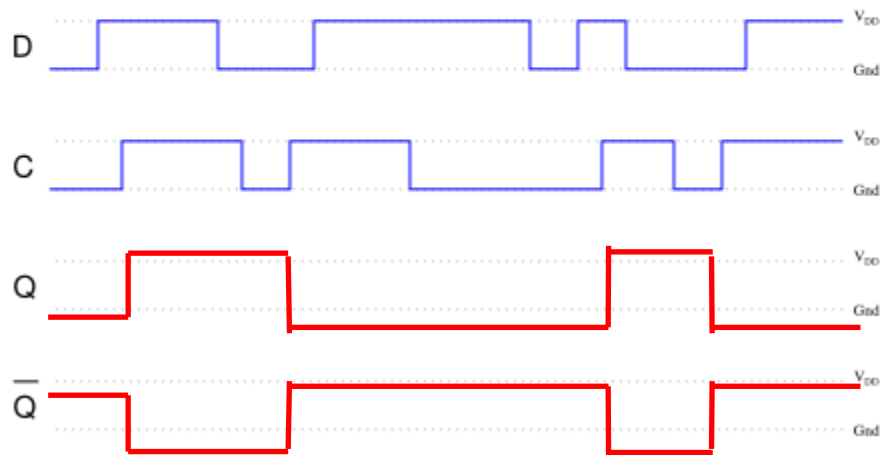
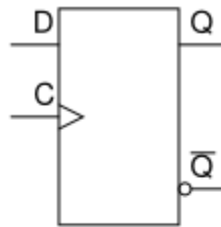
Digital Design Tutorial : 07

2 . Determine the Q output state of this D-type gated latch, given the following input conditions:



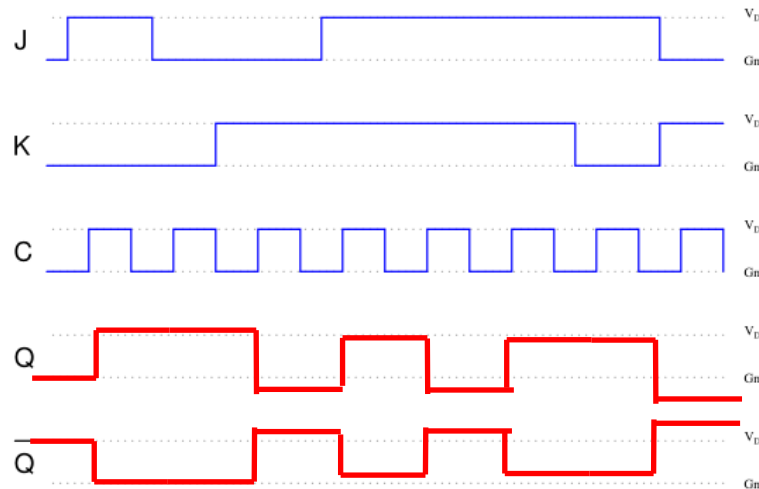
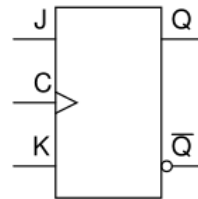
Digital Design Tutorial : 07

3 . Determine the output states for this +ve edge-triggered D flip-flop, given the pulse inputs shown:



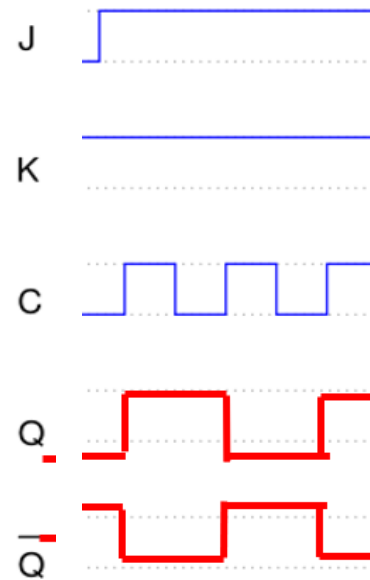
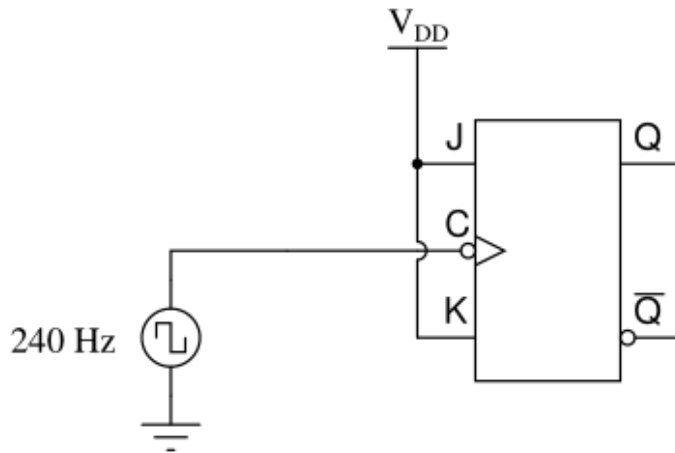
Digital Design Tutorial : 07

4 . Determine the output states for this positive edge triggered J-K flip-flop, given the pulse inputs shown:



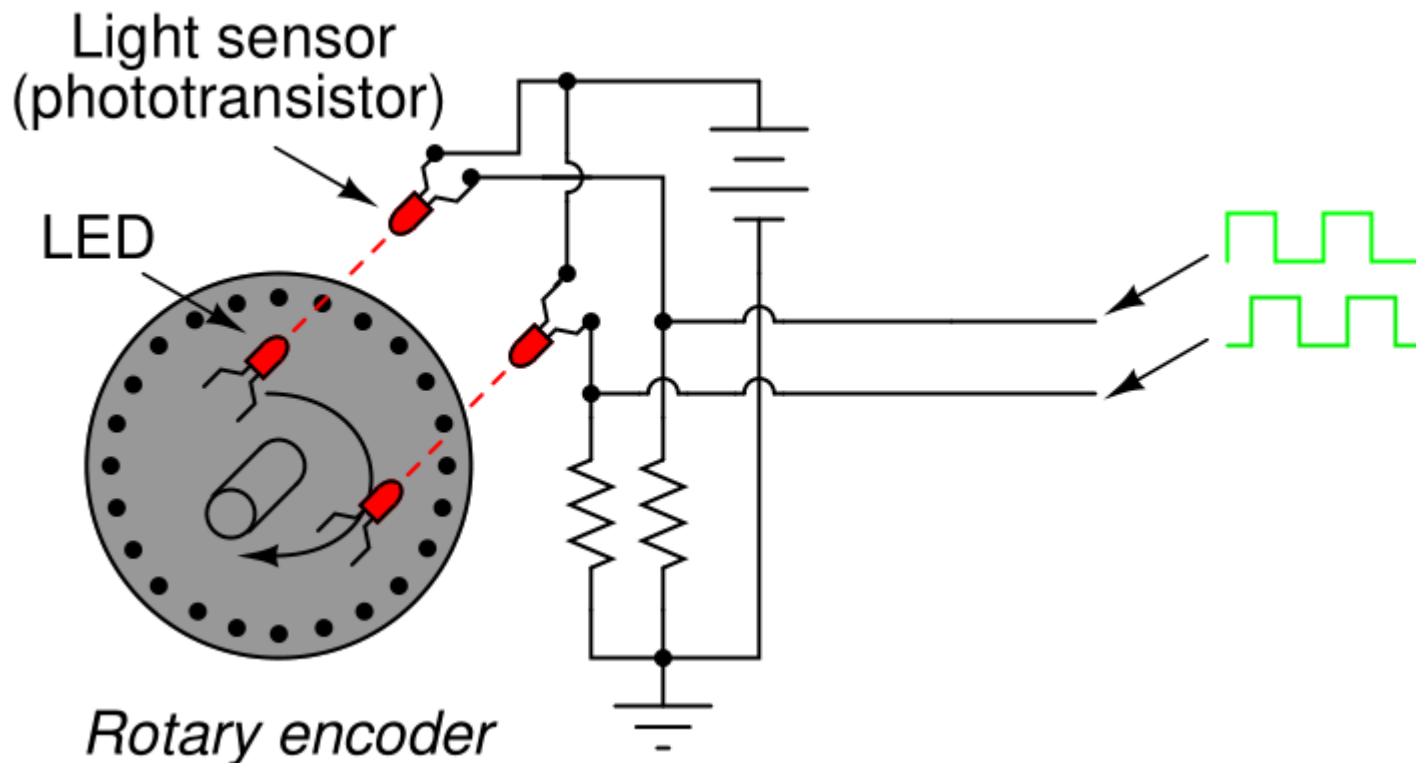
Digital Design Tutorial : 07

5 . If the clock frequency driving this flip-flop is 240 Hz, what is the frequency of the flip-flop's output



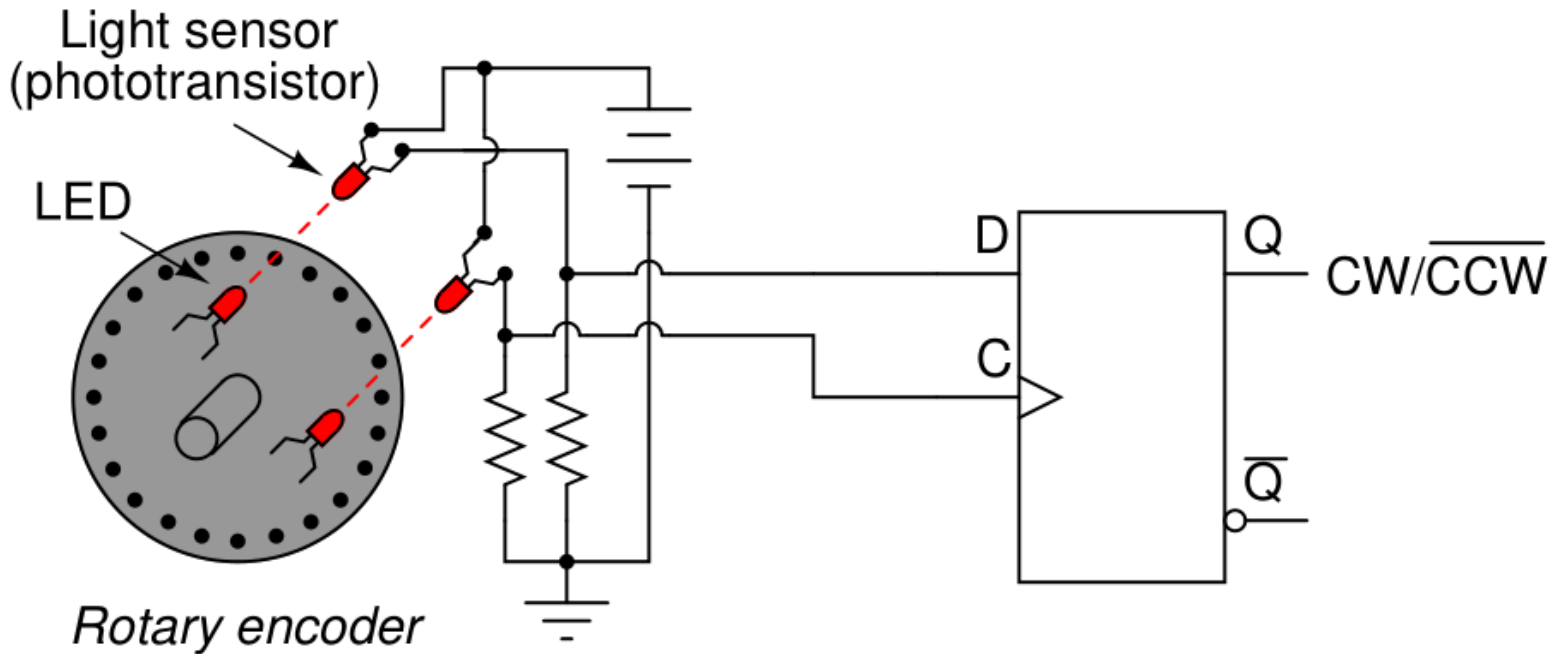
Digital Design Tutorial : 07

6 . A common type of rotary encoder is one built to produce a quadrature output as Shown in Fig below. Design a circuit to indicate Clockwise/ Anti-Clockwise direction of rotation.



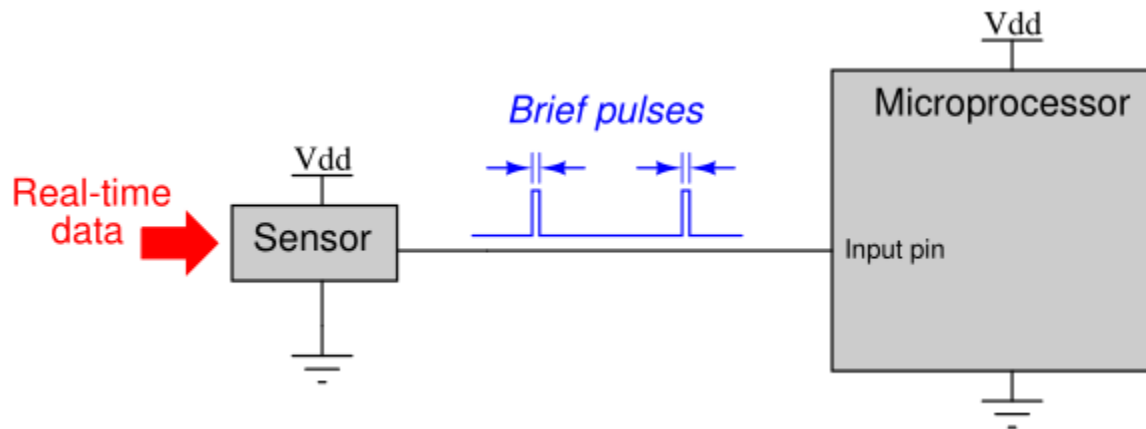
Digital Design Tutorial : 07

6 . A common type of rotary encoder is one built to produce a quadrature output as Shown in Fig below. Design a circuit to indicate Clockwise/ Anti-Clockwise direction of rotation.



Digital Design Tutorial : 07

7. A scientist is using a microprocessor system to monitor the boolean (“high” or “low”) status of a particle sensor in her high-speed nuclear experiment. The problem is, the nuclear events detected by the sensor come and go much faster than the microprocessor is able to sample them. Simply put, the pulses output by the sensor are too brief to be “caught” by the microprocessor every time:



Recommend a solution to the problem.

Digital Design Tutorial : 07

7. A scientist is using a microprocessor system to monitor the boolean (“high” or “low”) status of a particle sensor in her high-speed nuclear experiment. The problem is, the nuclear events detected by the sensor come and go much faster than the microprocessor is able to sample them. Simply put, the pulses output by the sensor are too brief to be “caught” by the microprocessor every time:

