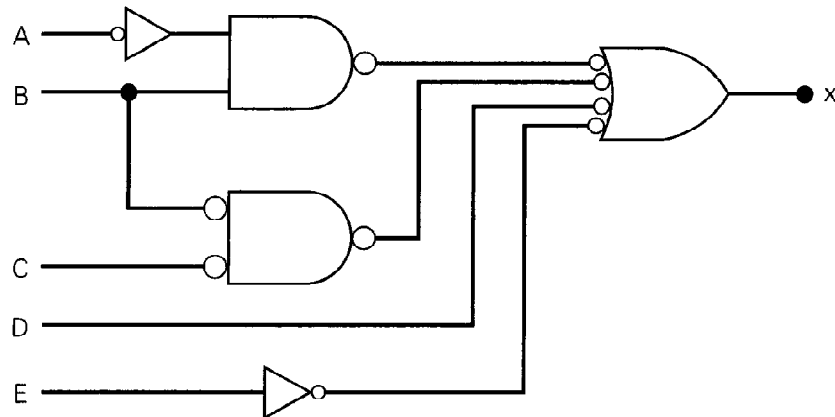# Digital Logic Design Assignment

1.

Determine the input conditions needed to cause the output in Figure 3-47 to go to its active state.

FIGURE 3-47

2.

Figure 4-48 shows a diagram for an automobile alarm circuit used to detect certain undesirable conditions. The three switches are used to indicate the status of the door by the driver's seat, the ignition, and the headlights, respectively. Design the logic circuit with these three switches as inputs so that the alarm will be activated whenever either of the following conditions exists:

- The headlights are on while the ignition is off.
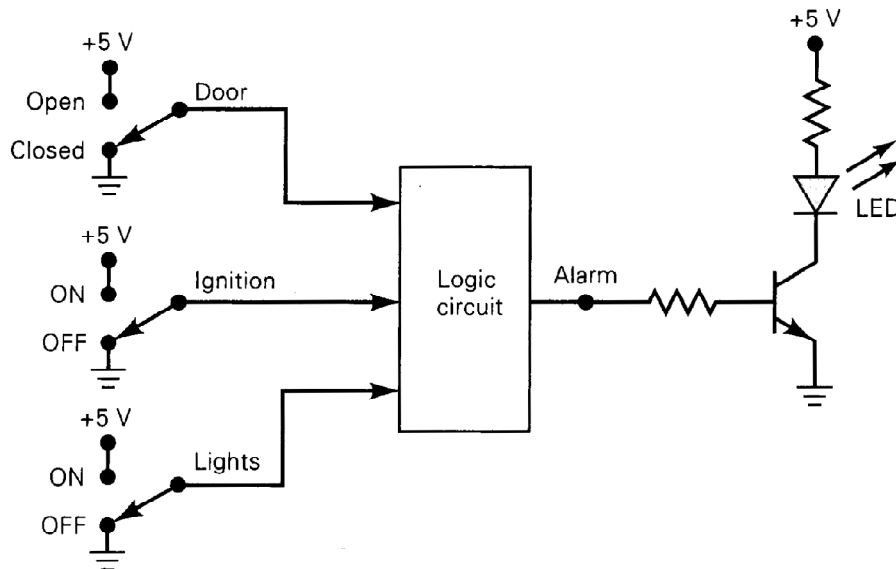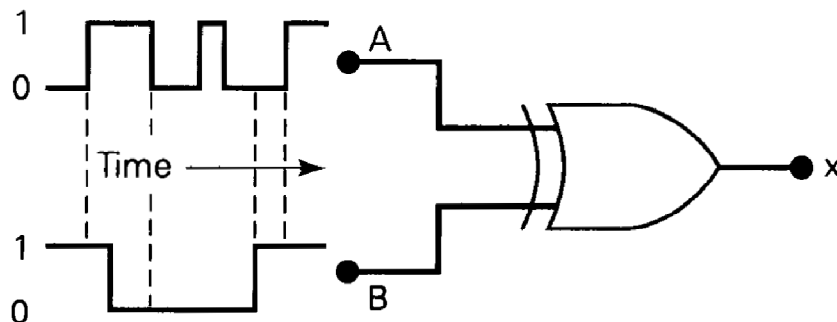- The door is open while the ignition is on.

FIGURE 4-48

3.
(a) Determine the output waveform for the circuit of Figure 4-52.
(b) Repeat with the *B* input held LOW.
(c) Repeat with *B* held HIGH.

FIGURE 4-52

4.
Refer to the counter shown in Figure 7-63. How can you tell that it is a down counter? It has been modified so that it does *not* count through the entire binary sequence 111 to 000. Determine the actual sequence it counts through.

All J, K inputs are HIGH

FIGURE 7-63

5.
A technician wires up the counter circuit of Figure 7-62. He applies an accurate 8.64-kpps signal to the input and measures a frequency of 54 pps at *X* instead of the expected 60 pps. What is the most probable wiring error that he made?
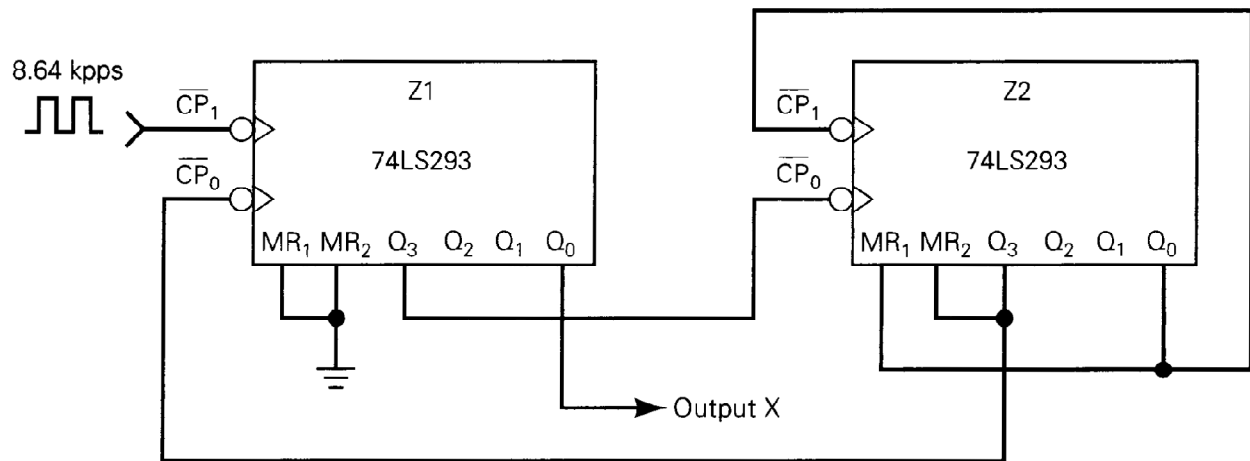
FIGURE 7-62

6.

Figure 9-62 shows how a multiplexer can be used to generate logic waveforms with any desirable pattern. The pattern is programmed using eight SPDT switches, and the waveform is repetitively produced by pulsing the MOD-8 counter. Draw the waveform at Z for the given switch positions.
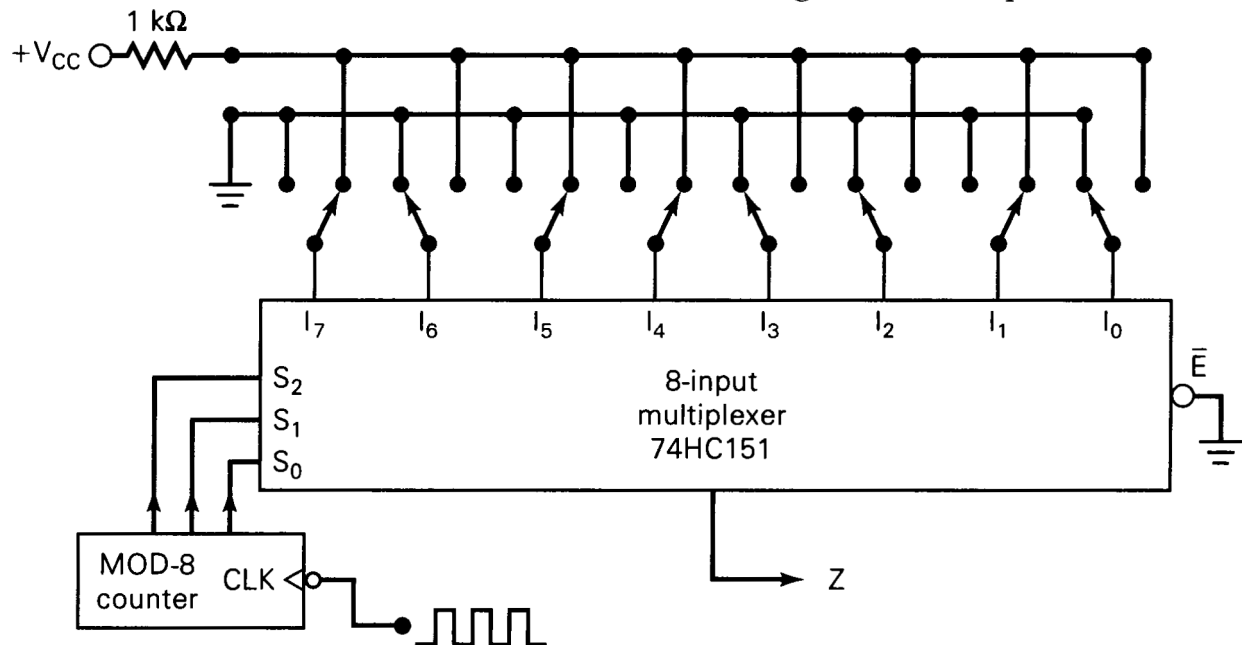

FIGURE 9-62