作业批改链接

Homework 2

Due 14:20, Tuesday @ Week 4

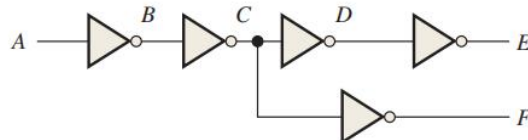"Digital Fundamentals", **11th Edition**

Chapter 3, Problems

2, 6, 12, 16, 20, 24, 26, 28

Make sure that the output diagram is aligned with the input diagram.

T2

2. A combination of inverters is shown in Figure 3–77. If a LOW is applied to point A, determine the net output at points E and F.
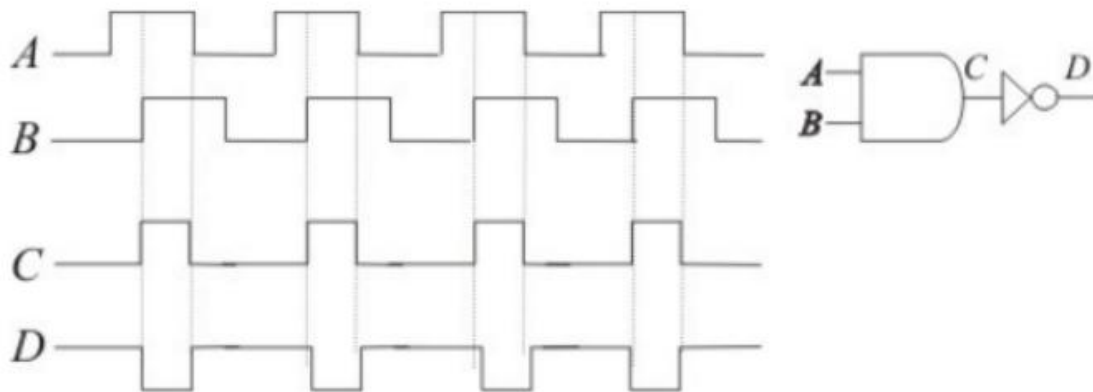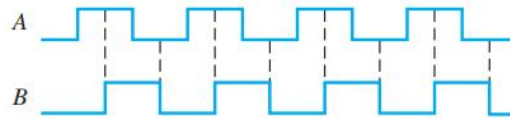

B=1 ,C=0, D=1, E=0, F=1
Output at E=0 and F=1

T6 followed by an inverter

6. The waveforms in Figure 3–79 are applied to points A and B of a 2-input AND gate followed by an inverter. Draw the output waveform.
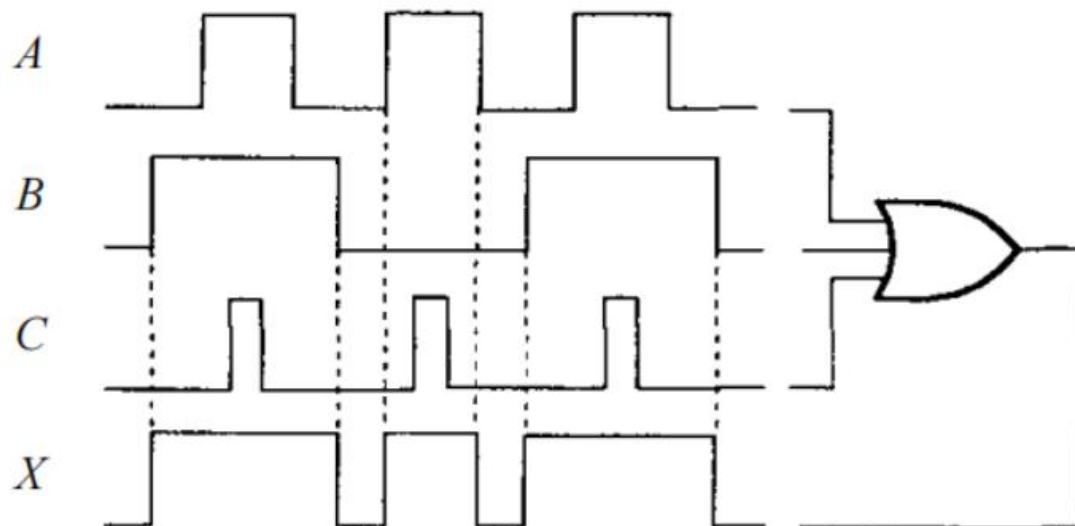

T12

12. Repeat Problem 7 for a 3-input OR gate.

7. The input waveforms applied to a 3-input AND gate are as indicated in Figure 3–80. Show the output waveform in proper relation to the inputs with a timing diagram.
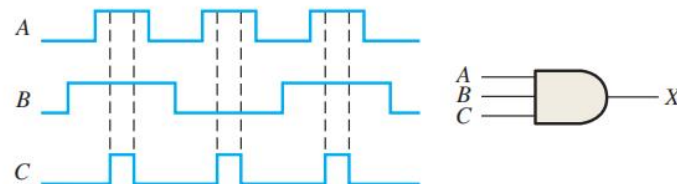
**T16 followed by an inverter**

16. Show the truth table for a system of a 3-input OR gate followed by an inverter.

A	B	C	Output
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	0

T20 truth table

20. As you have learned, the two logic symbols shown in Figure 3–86 represent equivalent operations. The difference between the two is strictly from a functional viewpoint. For the NAND symbol, look for two HIGHs on the inputs to give a LOW output. For the negative-OR, look for at least one LOW on the inputs to give a HIGH on the output. Using these two functional viewpoints, show that each gate will produce the same output for the given inputs.
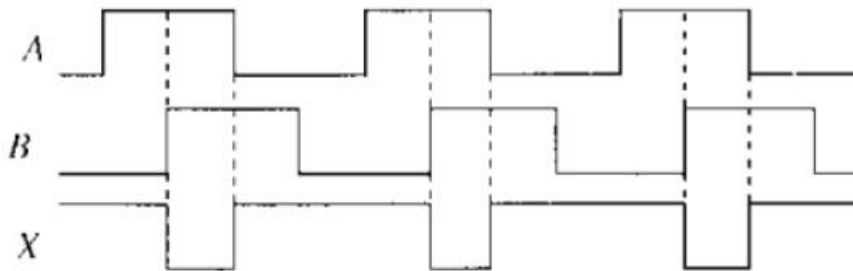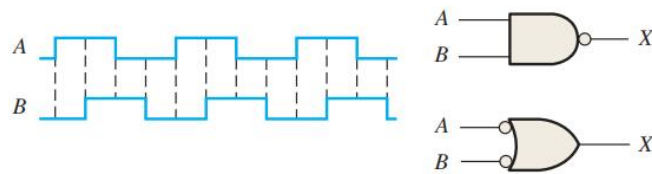
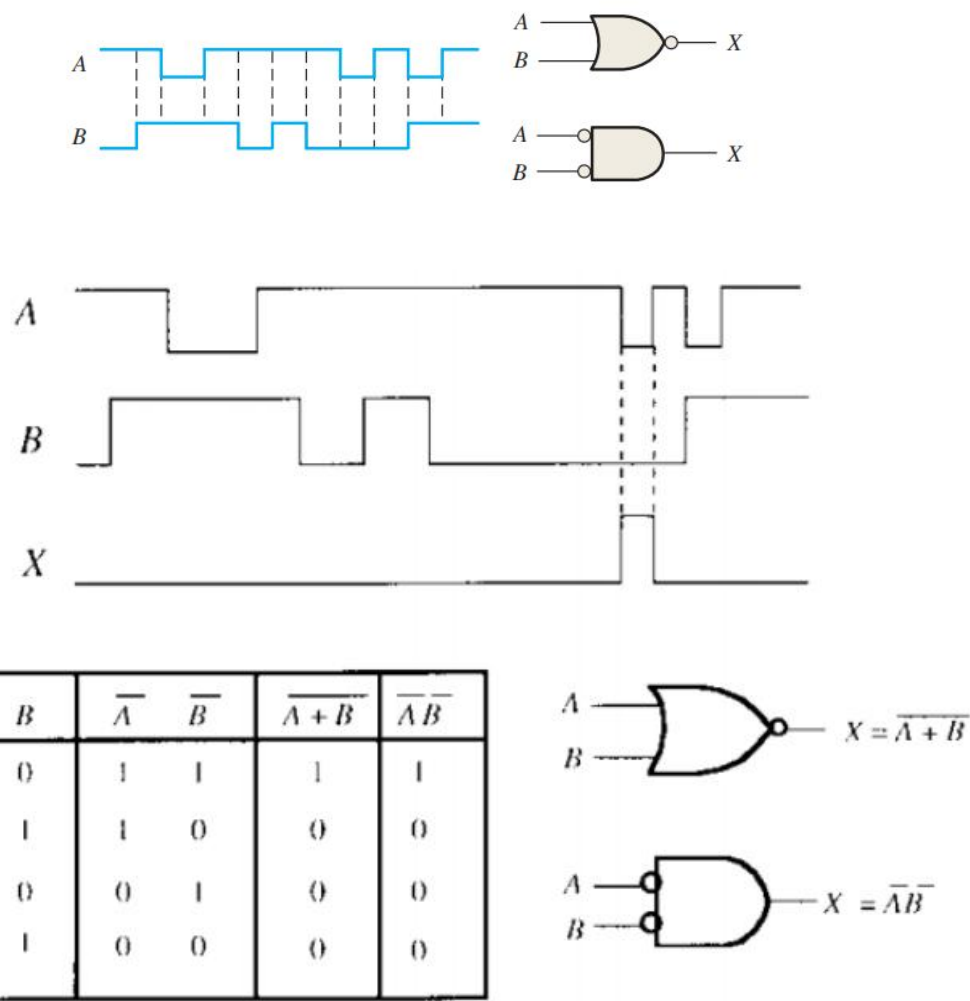| A	B	$\overline{A}$	$\overline{B}$	$\overline{AB}$	$\overline{A} + \overline{B}$
0	0	1	1	1	1
0	1	1	0	1	1
1	0	0	1	1	1
1	1	0	0	0	0

$X = \overline{AB}$

$X = \overline{A} + \overline{B}$
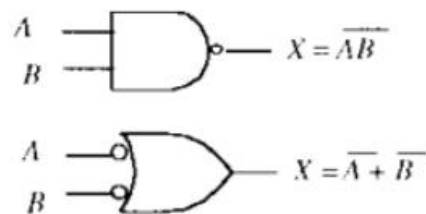
T24 truth table

24. The NAND and the negative-OR symbols represent equivalent operations, but they are functionally different. For the NOR symbol, look for at least one HIGH on the inputs to give a LOW on the output. For the negative-AND, look for two LOWs on the inputs to give a HIGH output. Using these two functional points of view, show that both gates in Figure 3–88 will produce the same output for the given inputs.

A	B	$\overline{A}$	$\overline{B}$	$\overline{A + B}$	$\overline{A}\,\overline{B}$
0	0	1	1	1	1
0	1	1	0	0	0
1	0	0	1	0	0
1	1	0	0	0	0

$X = \overline{A + B}$

$X = \overline{A}\,\overline{B}$

T26

26. Repeat Problem 17 for an exclusive-OR gate.

17. For the set of input waveforms in Figure 3–83, determine the output for the gate shown and draw the timing diagram.
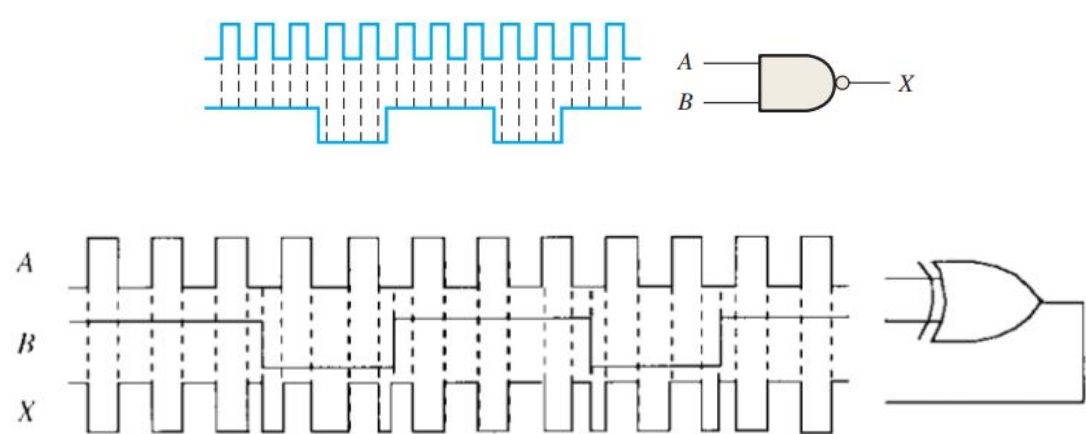
T28

28. Determine the output of an exclusive-NOR gate for the inputs shown in Figure 3–79 and draw a timing diagram.

FIGURE 3–79

A	B	C
0	0	1
0	1	0
1	0	0
1	1	1