# 作业批改链接

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# Homework 2

Due 14:20, Tuesday @ Week 4

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

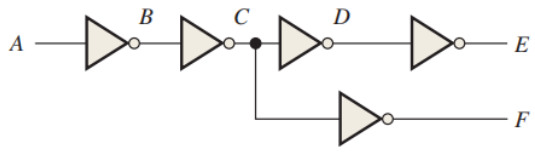
Chapter 3, Problems

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*.

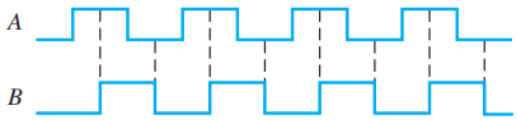


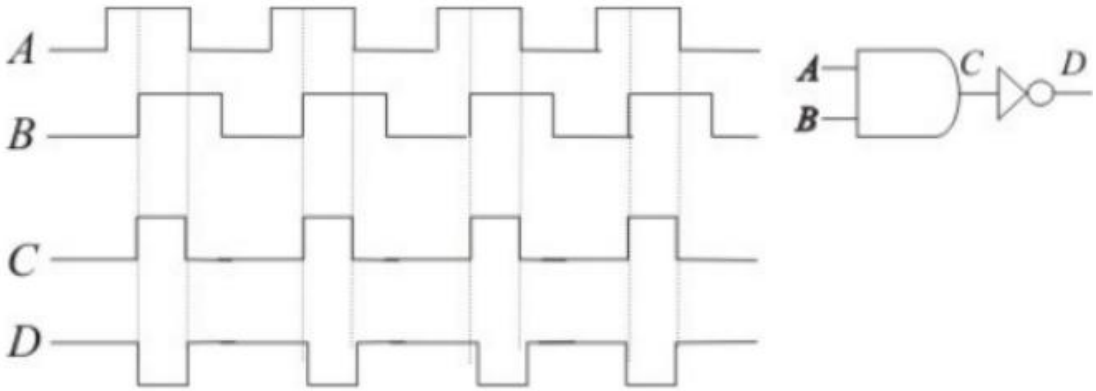

B=1 ,C=0, D=1, E=0, F=1

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.

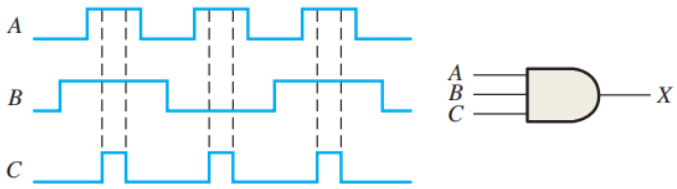


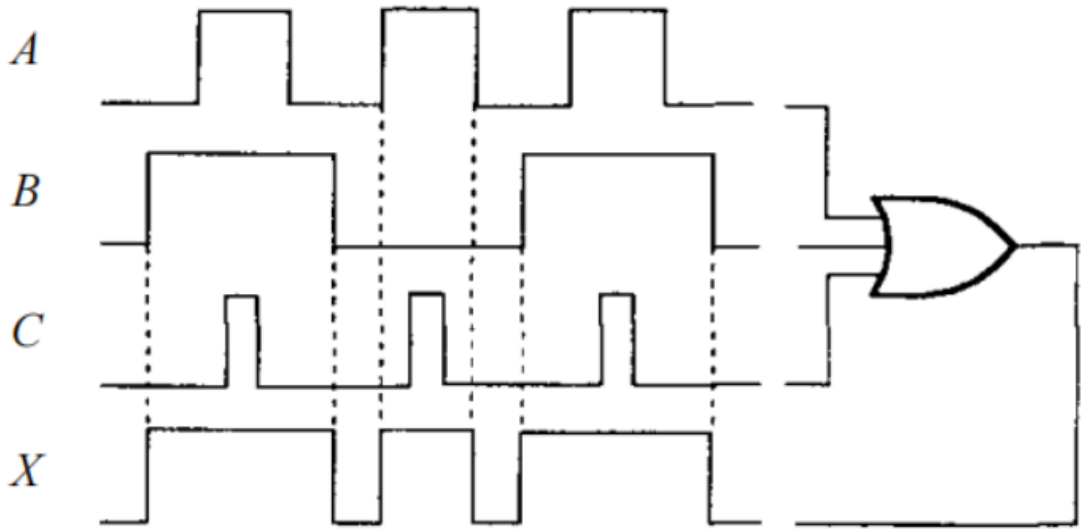




## T12

**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.





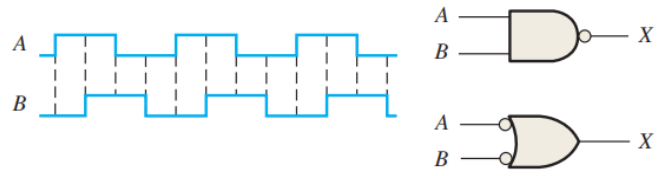

## T16 followed by an inverter

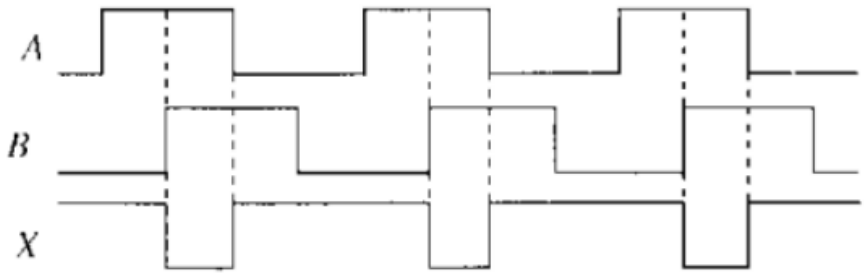
**16.** Show the truth table for a system of a 3-input OR gate followed by an inverter.

| 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 |

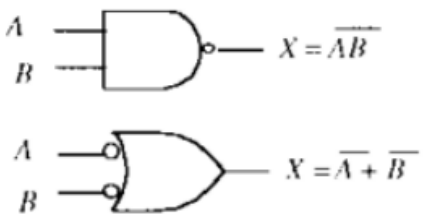
# T20 truth table

**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.



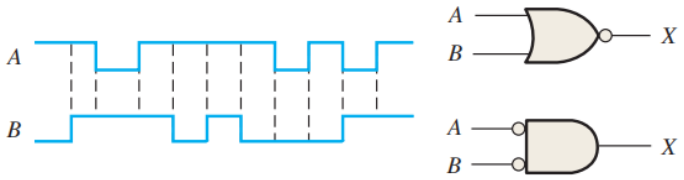



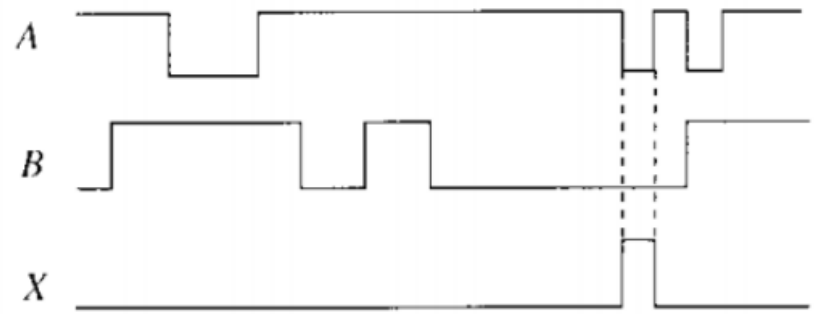

| $A$ | $B$ | $\overline{A}$ | $\overline{B}$ | $\overline{AB}$ | $\overline{A}+\overline{B}$ |
|---|---|---|---|---|---|
| 0 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 0 | 0 |



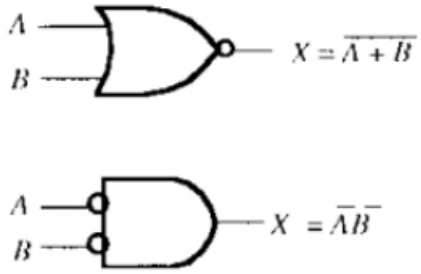
## T24 truth table

**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.



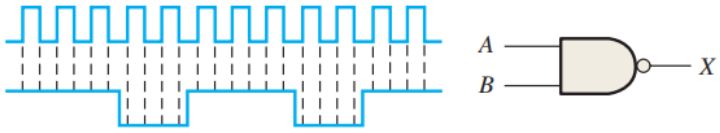

| $A$ | $B$ | $\overline{A}$ | $\overline{B}$ | $\overline{A+B}$ | $\overline{A}\,\overline{B}$ |
|---|---|---|---|---|---|
| 0 | 0 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 | 0 |
| 1 | 0 | 0 | 1 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 | 0 |

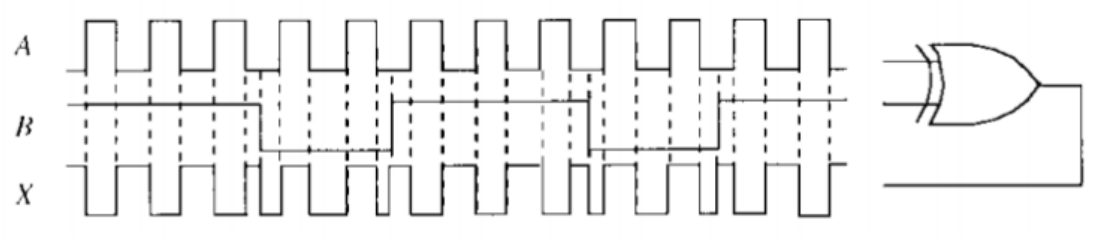



## T26

**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.

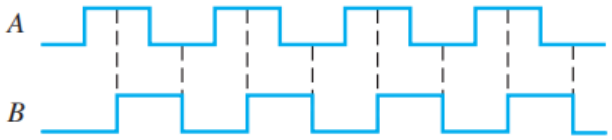
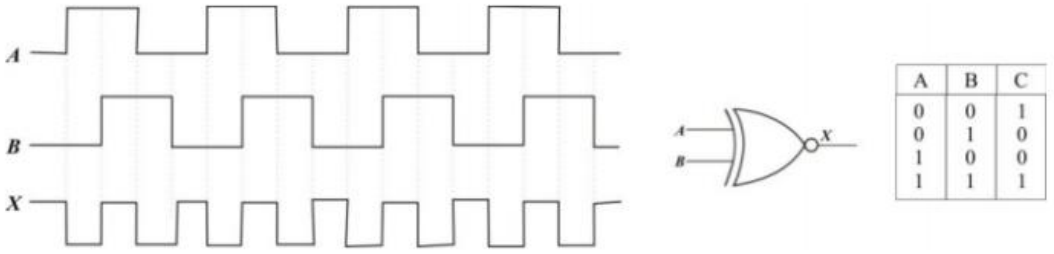



**FIGURE 3–79**




| A | B | C |
|---|---|---|
| 0 | 0 | 1 |
| 0 | 1 | 0 |
| 1 | 0 | 0 |
| 1 | 1 | 1 |