Solutions to Problem Set # 7

2. See Figure 7-2.

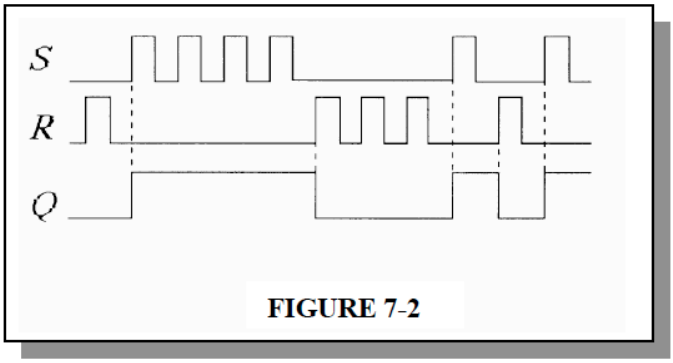


FIGURE 7-2

4. See Figure 7-4.

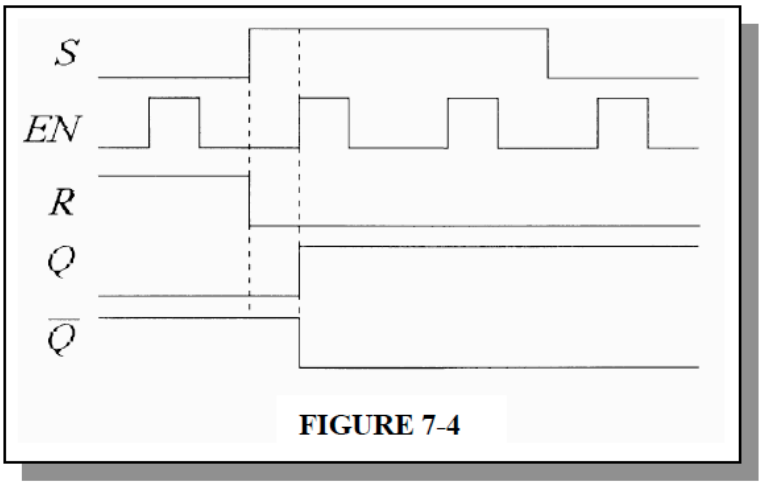


FIGURE 7-4

6. See Figure 7-6.

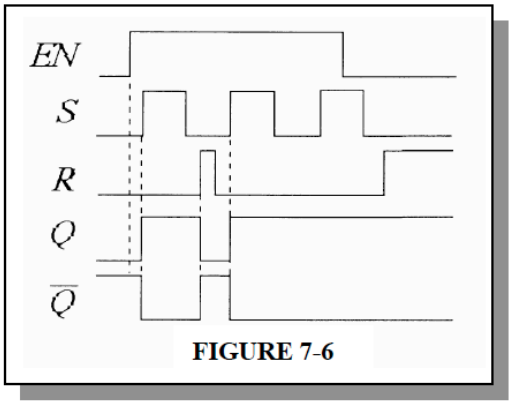
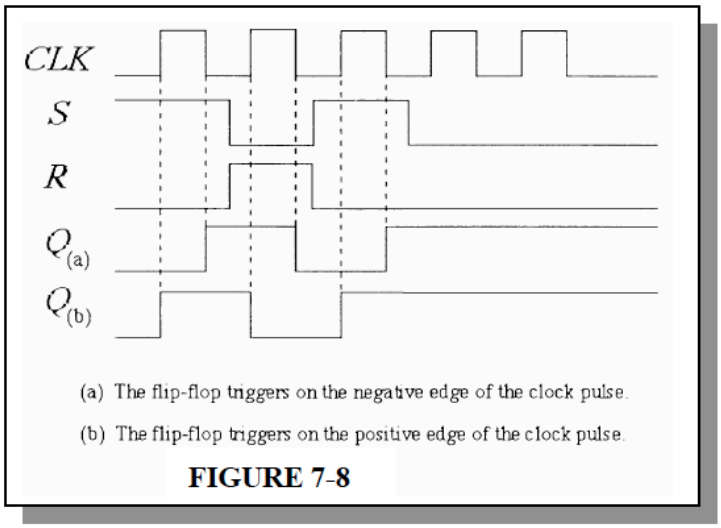


FIGURE 7-6

8. See Figure 7-8.



(a) The flip-flop triggers on the negative edge of the clock pulse.

(b) The flip-flop triggers on the positive edge of the clock pulse.

FIGURE 7-8

10. See Figure 7-10.

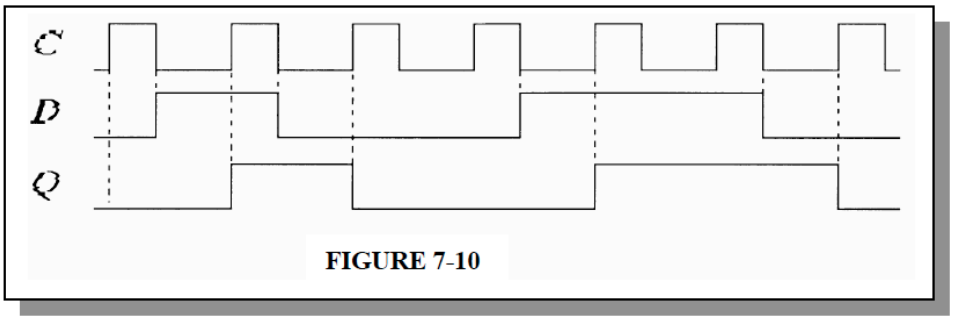


FIGURE 7-10

12. See Figure 7-12.

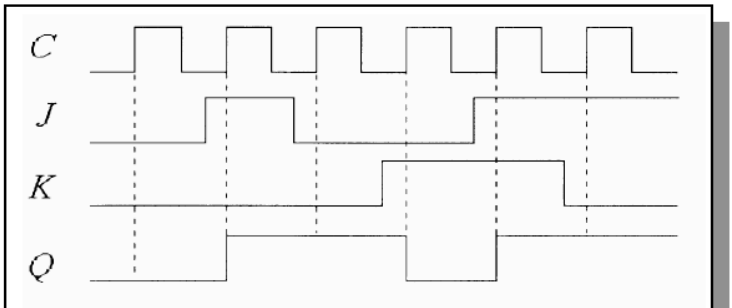


FIGURE 7-12

14. See Figure 7-14.

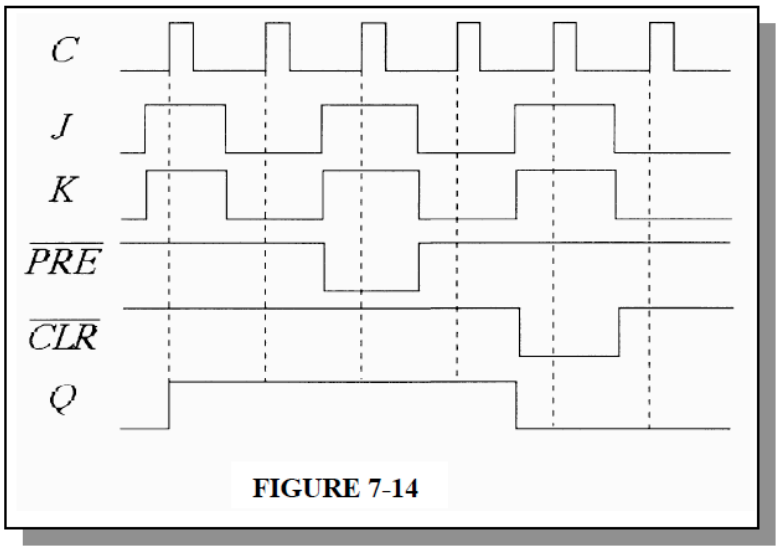


FIGURE 7-14

22. See Figure 7-18.

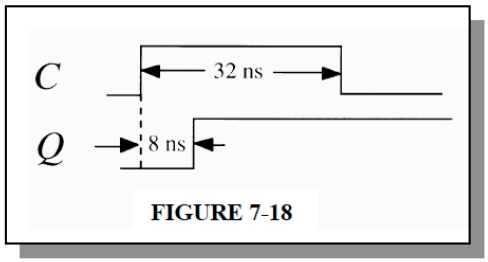


FIGURE 7-18

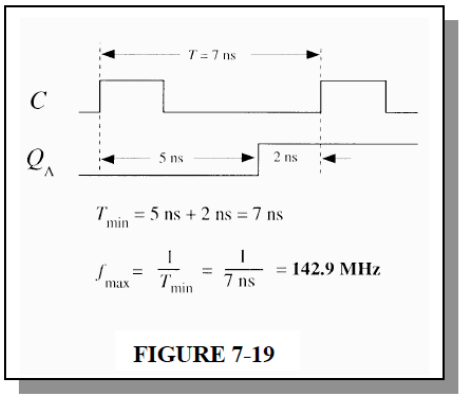


FIGURE 7-19

24. See Figure 7-19.

28. $$R_X = \frac{t_W}{RC_{EXT}} - 0.7 = \frac{5000\text{ ns}}{0.32 \times 10{,}000\text{ pF}} - 0.7 = \mathbf{1.56\ k\Omega}$$

30. $$f = \frac{1}{0.7(R_1 + 2R_2)C_2} = \frac{1}{0.7(1000\,\Omega + 2200\,\Omega)(0.01\,\mu\text{F})} = \mathbf{44.6\ kHz}$$