Sirindhorn International Institute of Technology

Thammasat University at Rangsit

School of Information, Computer and Communication Technology

ECS 371: Problem Set 4

Semester/Year: **1/2009**
Course Title: Digital Circuits
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Course Web Site: http://www.siit.tu.ac.th/prapun/ecs371/

Due date: July 16, 2009 (Thursday)

Please submit your homework to the instructor 3 minutes BEFORE your class starts.

Instructions

1. The questions are assigned from the following textbook:

    Thomas L. Floyd, *Digital Fundamentals*, 10th Edition, Pearson Education International (2009).

2. Only ONE of the problems will be graded. Of course, you do not know which problems will be selected; so you should work on all of them.
3. Late submission will not be accepted.
4. **Write down all the steps** that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.

Chapter 5

- Please submit your solutions for the following questions: 4(b,c,e), 20a, 22a, 56

4. Write the output expression for each circuit as it appears in Figure 5–56 and then change each circuit to an equivalent AND-OR configuration.
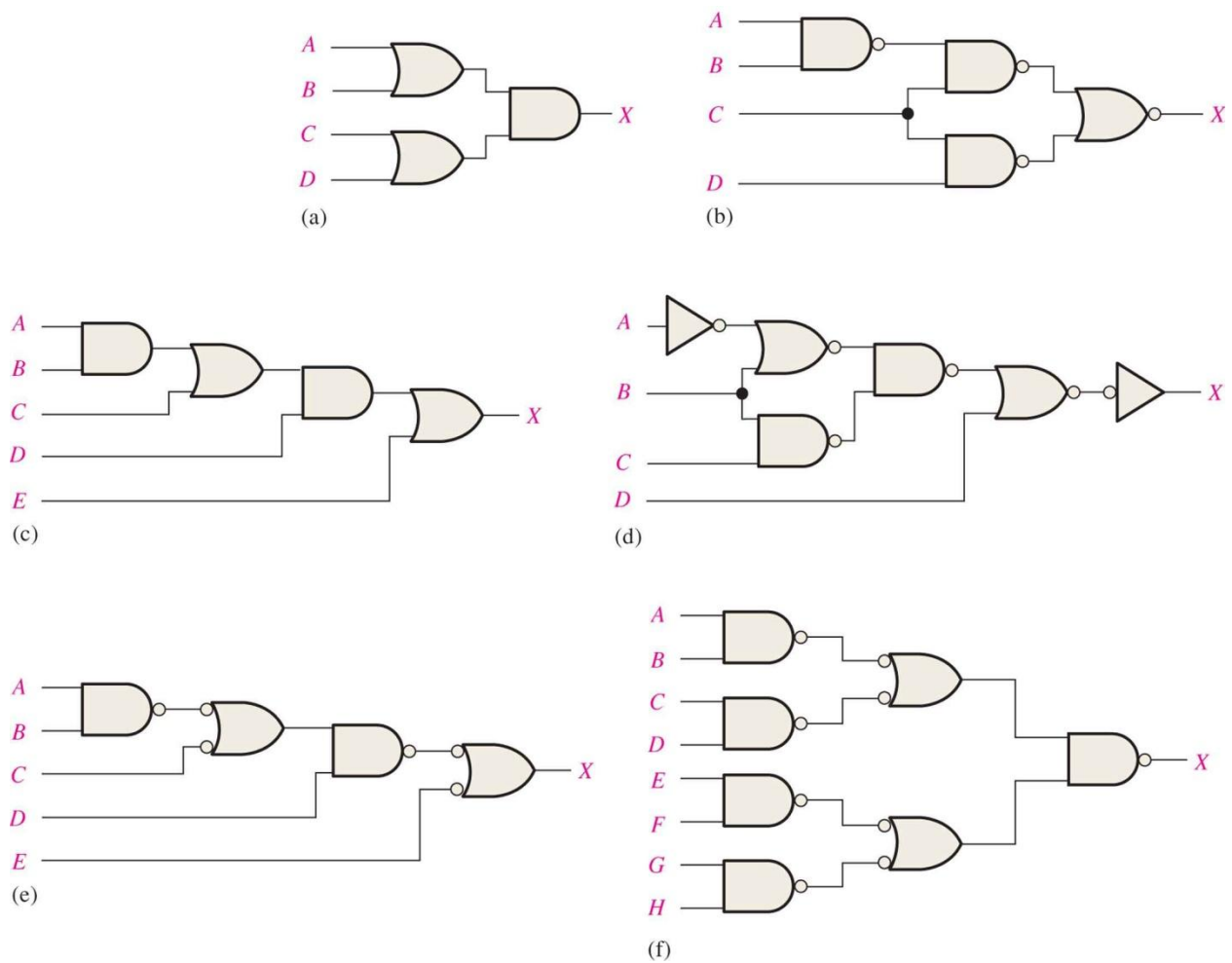
(a)

(b)

(c)

(d)

(e)

(f)

FIGURE 5–56

20. Implement the logic circuits in Figure 5–54 using only NAND gates.
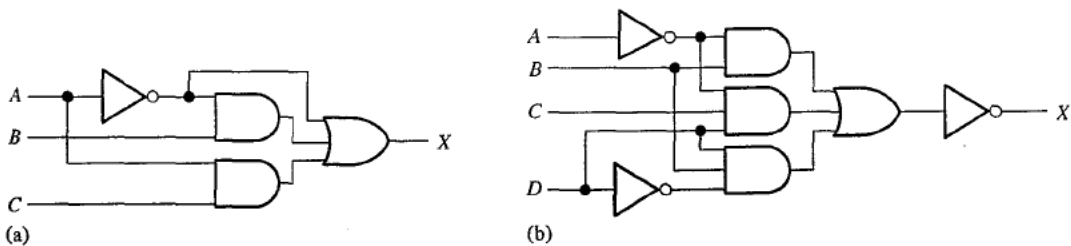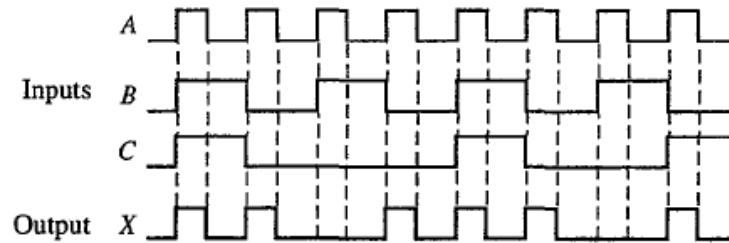

(a)

(b)

FIGURE 5–54

22. Repeat Problem 20 using only NOR gates.

30. For the input waveforms in Figure 5–61, what logic circuit will generate the output waveform shown?

FIGURE 5–61

56. Design a logic circuit to produce a HIGH output only if the input, represented by a 4-bit binary number, is greater than twelve or less than three. First develop the truth table and then draw the logic diagram.