

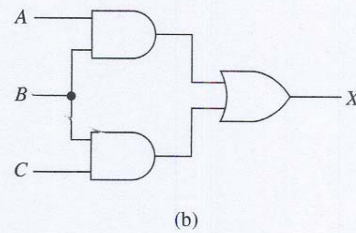
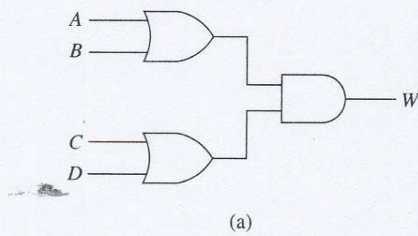
HW #3
ECT 213
Spring 2008

Name: _____

Due Tuesday JAN 31, 2008 (start of class).

Section 5-1

5-1. Write the Boolean equation for each of the logic circuits shown in Figure P5-1.



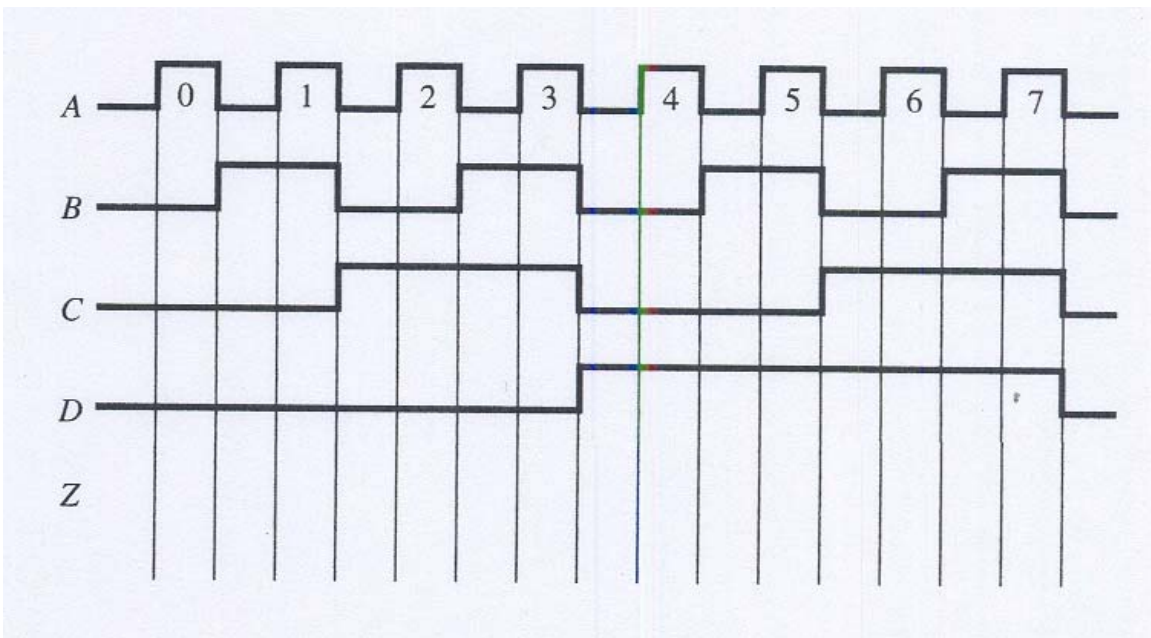
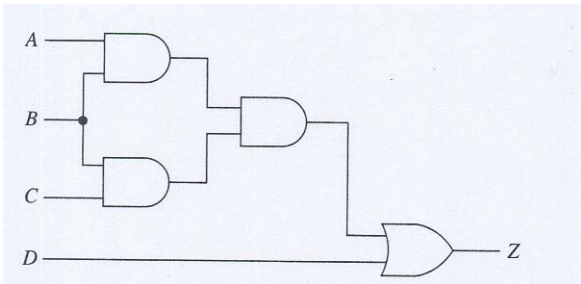
Section 5-2

5-2. Draw the logic circuit that would be used to implement the following Boolean equations.

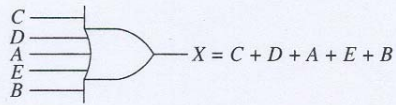
(c) $P = (AC + BC)(A + C)$

(d) $Q = (A + B)BCD$

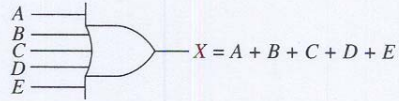
5-4. Write the Boolean equation and then complete the timing diagram at W, X, Y, and Z for the logic circuits shown in Figure P5-4.



5-5. State the Boolean law that makes each of the equivalent circuits shown in Figure P5-5 valid.

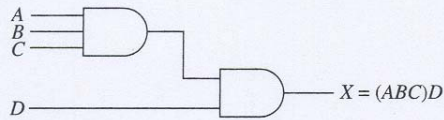


Original circuit

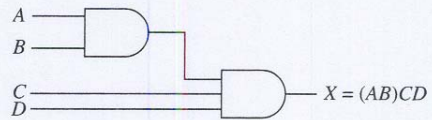


Equivalent circuit

(a)

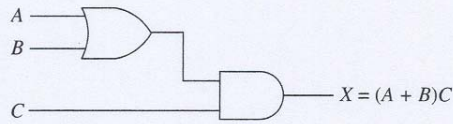


Original circuit

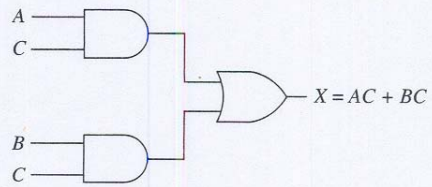


Equivalent circuit

(b)



Original circuit

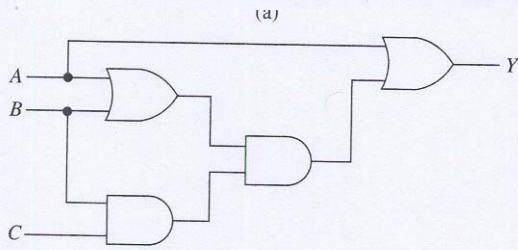


Equivalent circuit

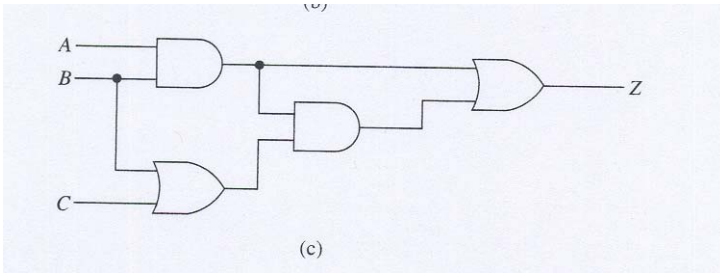
(c)

Section 5-3

5-7. Write the Boolean equation for the circuits of Figure P5-7. Simplify the equations, and draw the simplified logic circuit.



(c)



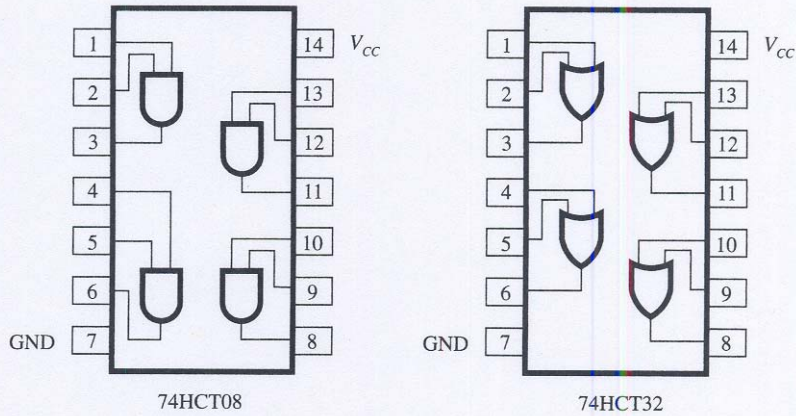
5-9. Draw the logic circuit for the following equations. Simplify the equations, and draw the simplified logic circuit.

(b) $W = (BCD + C)CD$

(e) $Z = ABC + CD + CDE$

5-11. The pin layouts for a 74HCT08 CMOS AND gate and a 74HCT32 CMOS OR gate are given in Figure P5-11. Make the external connections to the chips to implement the following logic equation. (Simplify the logic equation first.)

$$X = (A + B)(D + C) + ABD$$



5-17 Apply De Morgan's Theorem and Boolean algebra rules to reduce them to equations having inversion bars over single variables only. Draw the Simplified Circuit.

$$(d) Z = \overline{AB + (\bar{A} + C)}$$

$$(d) Z = \overline{(C + D)\overline{ACD}(\overline{AC + D})}$$

5-18. Write the Boolean equation for the circuits of Figure P5-18. Use De Morgan's theorem and Boolean algebra rules to simplify the equation. Draw the simplified circuit.

