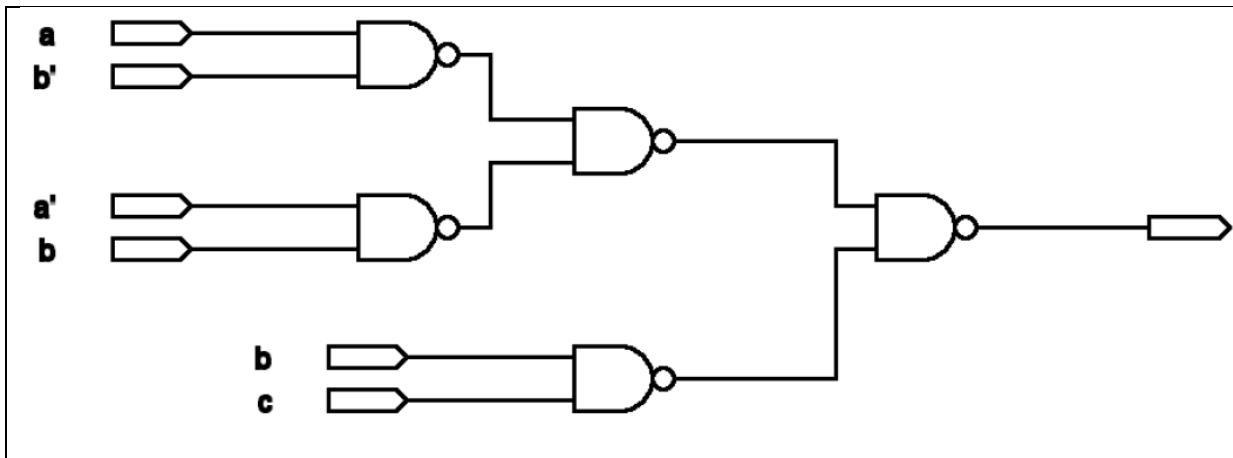


Name:

1. For the circuit below:



Which one of these is equivalent to the logic diagram above?

- (a) $f = ab + \bar{a}\bar{b} + bc$
- (b) $f = (a \oplus b)(\bar{b}\bar{c})$
- (c) $f = a \oplus b \oplus c$
- (d) $f = 0$
- (e) None of the above

2. Draw the minimum cost AND-OR implementation for F

$$F(A, B, C, D) = \sum(1, 3, 6, 7, 11, 14, 15)$$

$$d(A, B, C, D) = \sum(5, 9, 11)$$

3. Give the Product-of-Sum (POS) of the following function

$$F = ab + \bar{a}b\bar{c} + \bar{a}c$$

4. Draw the minimum NAND-NAND implementation for F

$$F(A, B, C, D) = \sum(1, 5, 8, 13, 14, 15) \quad d(A, B, C, D) = \sum(3, 10, 12)$$

5. Draw the minimum NOR-NOR implementation for the F
 $F(A, B, C, D) = \sum(1, 5, 8, 13, 14, 15)$ $d(A, B, C, D) = \sum(3, 10, 12)$

6. Design a 4-bit **signed** number decoder using 8-segment display

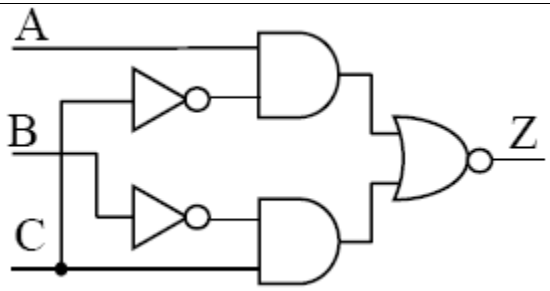
	8-segment display
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7. Minimize F

$$F(X, Y, Z) = \sum(2, 6, 7) \quad d(X, Y, Z) = \sum(1, 3, 4)$$

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8. For the combinational circuit logic circuit shown below:

(a) Obtain the logic equation directly from the schematic	
(b) Obtain the truth table	(c) Obtain the SOP formula