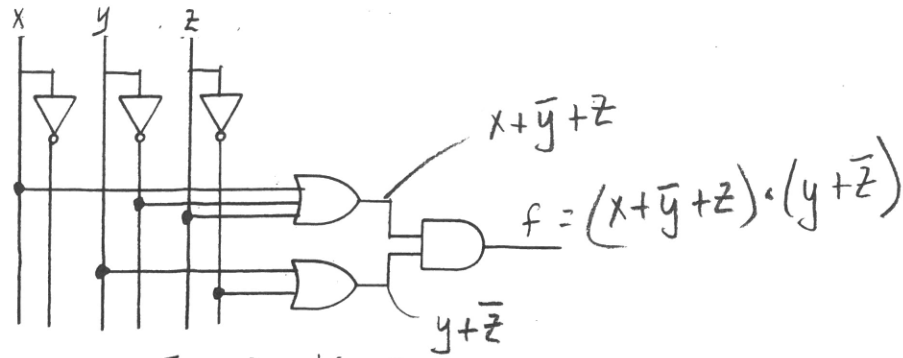


Quiz 3



For Question 3.

Quiz 3 (2/13/20)

% Correct
95

1. What are the devices called that implement basic logic functions?
A) Chutes B) Ladders C) Gates D) Ramps
2. For function $g(x,y,z)$, minterm m_5 is $x \cdot \bar{y} \cdot z$. What is Maxterm M_5 ?
A) $\bar{x} \cdot y \cdot \bar{z}$ B) $x + \bar{y} + z$ C) $x + z$ D) $\bar{x} + y + \bar{z}$ E) None of A-D
3. Which is a valid expression for function f as displayed?
A) $x \cdot \bar{y} \cdot z + y \cdot \bar{z}$ B) $(x + \bar{y} + z) \cdot (y + \bar{z})$ C) $\bar{x} \cdot y \cdot \bar{z} + \bar{y} \cdot z$
D) $(\bar{x} + y + \bar{z}) \cdot (\bar{y} + z)$ E) None of A-D
4. How many transistors does an NMOS 4-input NAND gate require?
A) 4 B) 5 C) 8 D) 10 E) None of A-D

55%

89%

31%

2. $M_5 = \overline{m_5} = \overline{(x \cdot \bar{y} \cdot z)} = \bar{x} + \bar{\bar{y}} + \bar{z} = \bar{x} + y + \bar{z}$
 DeMorgan

3. See markings on diagram above.

4. NMOS NAND requires only 1 transistor per input.
 4 inputs $\Rightarrow$ 4 transistors.

(NMOS AND requires $4+1=5$)

(CMOS NAND requires $4 \cdot 2 = 8$)

LCMOS AND requires $(4+1) \cdot 2 = 10$)