Practice Quiz 5

Closed Book and Notes – No Calculators Allowed

The following K-map applies to the questions on this quiz:

	X′	X		
Z′	1	0	d	d
Z	0	0	1	1
	Y′	Y	Y′	

$F = X + Y'Z'$

$F' = X'Y + X'Z$

$\Rightarrow F = (X+Y')\cdot(X+Z')$

1. The **cost** of a **minimal sum of products** realization of this function (assuming **both true and complemented variables** are available) would be:

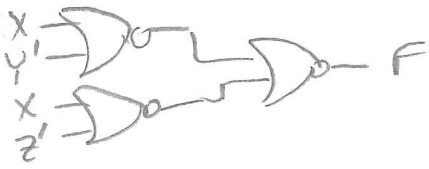
   (A) 5 (B) 6 (C) 7 (D) 8 (E) 9

   4 inputs + 2 gates

2. The **cost** of a **minimal product of sums** realization of this function (assuming **both true and complemented variables** are available) would be:

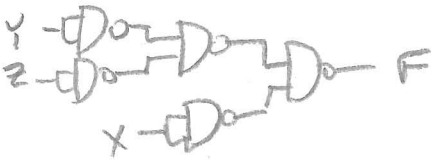
   (A) 5 (B) 6 (C) 7 (D) 8 (E) 9

   6 inputs + 3 gates



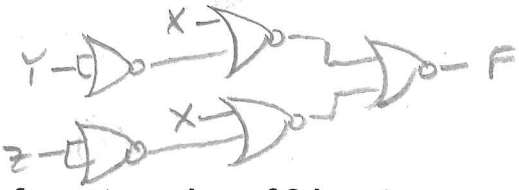
3. Assuming the availability of **only true** input variables, the **fewest number of 2-input NAND gates** that are needed to realize this function is:

   (A) 5 (B) 6 (C) 7 (D) 8 (E) 9



4. Assuming the availability of **only true** input variables, the **fewest number of 2-input NOR gates** that are needed to realize this function is:

   (A) 5 (B) 6 (C) 7 (D) 8 (E) 9



5. Assuming the availability of **only true** input variables, the **fewest number of 2-input open-drain NAND gates** that are needed to realize this function is:

   (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

   plus 2 pull-up resistors