November 9th Binary

November 9, 2021 7:37 PM

① Write the logic equation for the diagrams below:

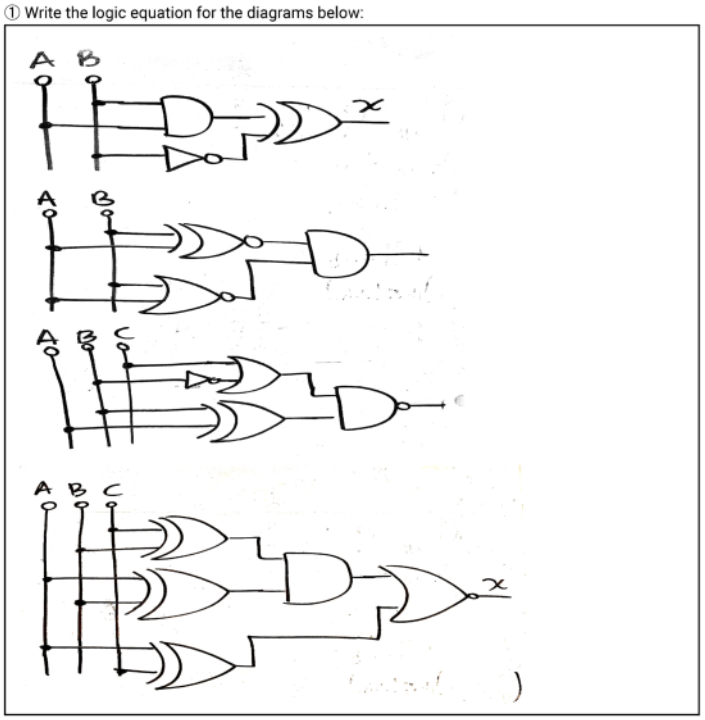


Diagram 1:

$A\bar{B} \oplus \bar{B} = x$

diagram 2:

$\overline{(A \oplus B)(\bar{A}+B)}$

No3:

$\overline{(C+\bar{B})(A \oplus B)} = x$

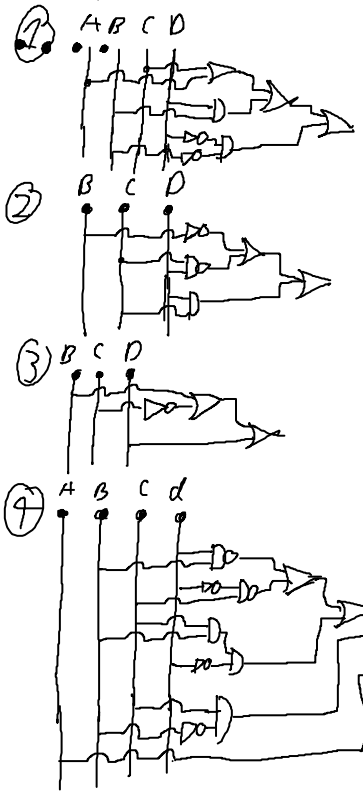
No4:

$((C \oplus B)(A \oplus B)) \mp (A \oplus C)$

② Draw the diagram for the logic equations below:

1. Out1 = A + C + BD + (**not**B **not**D)
2. Out2 = **not**B + (**not**C **not**D) + CD
3. Out3 = B + **not**C + D
4. Out4 = (**not**B **not**D) + (C **not**D) + (BC**not**D) + (**not**B C) + A

Q.2:



③ Simplify the K-map Tables below and write the logical equations:

Table 1

ab/c	00	01	11	10
0		1		
1		1	1	

$\bar{A}B + BC$

Table 2

ab/c	00	01	11	10
0	1	1		1
1	1		1	1

$\bar{A}B + A\bar{B} + C$

Table 3

ab/c	00	01	11	10
0	1			1
1	1			1

$\bar{B}$

Table 4

ab/c	00	01	11	10

Table 4

ab/c	00	01	11	10
0	1	1	1	1
1			1	

C + ABC

Table 1

ab/cd	00	01	11	10
00	1			1
01				
11				
10	1			1

DB

④ The apartment below needs a notification system that sends an SMS to the owner when:

a. Any of the two windows is open when the main door is locked,
b. The baranda's door is open when the main door is locked,
c. The TV screen is ON when the washing machine and the dish washing machine are ON.

Add 2 more rules and find the equation for the notification system.

2 Other Rules:
Both lights in bedroom are on, and blinds are on
Toilet is flushing but sink is not on

Equation for part a:
(Window1+Window2)(mainIsLocked)

Part b:
(berandaIsOpen*mainIsLocked)

Part c:
(tvIsOn*washingIsOn*dishwasherIsOn)

Part d:
(light1*light2)*blindsAreOpen

Part e:
isFlushing*$\overline{\text{bathroomSinkIsOn}}$

a+b+c+d+e