
Victoria University of Bangladesh
Name: Md. Ziaul Hoque "Sohel"
Student ID: 2221220031
Course Title: Digital Logic Design
Course Code: CSE-213
Batch: 22nd (evening)
Semester: Summer-2023

Ans to the Que No: 1

(a) $A + A'B = ?$

In absorption law,

$$A + A'B = A$$

So, $A + A'B$ is equal to A , Ans.

(b) $A'B' + AB = ?$

Use distributive law

$$A'B' + AB = (A' + A)B'$$

Now $(A' + A)$ is always equal to 1

$$\begin{aligned} \text{So, } A'B' + AB &= (1)B' \\ &= B' \end{aligned}$$

Ans.

(c) $(A+B)(A+C) = ?$

Use distribution law.

$$\begin{aligned} (A+B)(A+C) &= A(A+C) + B(A+C) \\ &= A(A+C) \\ &= AA + AC \\ &= A + A \cdot C \end{aligned}$$

$$B(A+C) = BA + BC = AB + BC$$

So, Equano is, —

$$(A+B)(A+C) = (A+AC) + (AB+B^*C)$$

#apply $\{(A+A)=A\}$ and $(A+A^*C)=A$ in Boolean Algebra.

$$(A+AC) + (AB+BC) = A + (AB+B^*C)$$

So, $(A+B)(A+C)$ simplify to:

$$A + (AB+BC)$$

d $(A+B+C+D)' = ?$

Apply De Morgan's theorem.

$$(A+B+C+D)' = A' B' C' D'$$

So, $(A+B+C+D)'$ is equal to $A' B' C' D'$

e $(ABCD)' = ?$

Hence, $(ABCD)' = A' + B' + C' + D'$

P.T.O.

Ans to Ttu Que NO 2

(a) Given Expression:

$$(A'B + A'B) + (A'B + AB)$$

Apply the identity law $A + A' = 1$:

$$(A'B + 1) + (A'B' + AB)$$

Apply the domination law of $A + 1 = 1$:

$$1 + (A'B' + AB)$$

Apply Identity law $A + 0 = A$:

$$A'B' + AB$$

So, the simplified Expression is

$$A'B' + AB.$$

Ans.

(b) Given Expression :-

$$A'B'C + A'BC' + AB'C + ABC$$

$$A'B'(C + C') + AB'C + ABC$$

$$A'B'(1) + AB'C + ABC \text{ (simplify } C + C' \text{ to } 1)$$

$$A'B' + AB'C + ABC \text{ [} 1(A'B' * 1) = A'B' \text{] :-}$$

$$B'(A' + AC) + ABC$$

$$B'A' + B'AC + ABC$$

$$A'(B' + B'C) + ABC$$

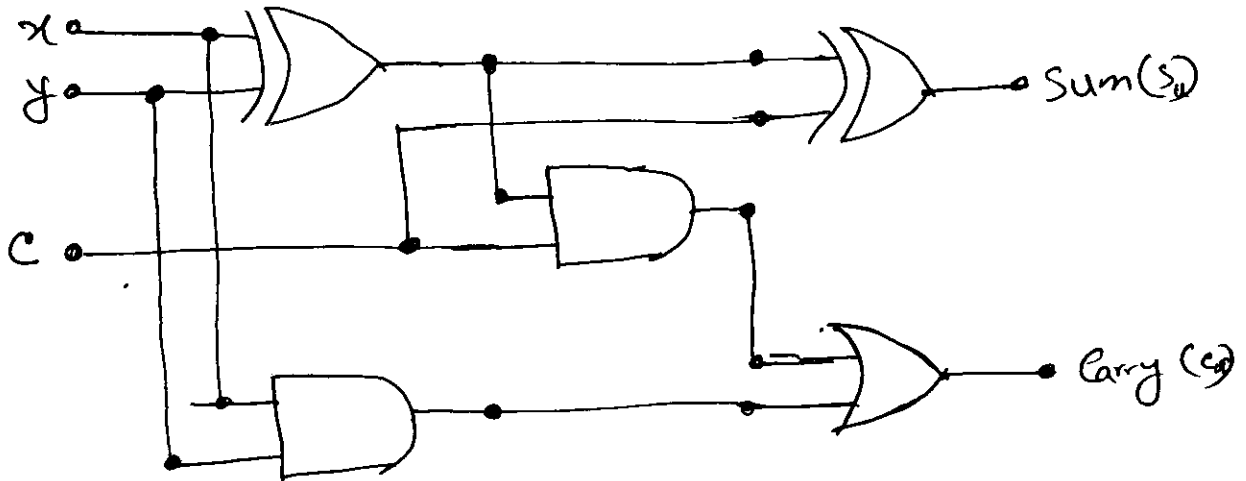
$$A'(B') + ABC \text{ [since } B' + B'C = B' \text{]}$$

$A'B' + ABC$ is the Boolean Expression.

Q

Ans to the Que NO: 3. (A)

Given,



Here,

$$C_a = x'y'c + xy'c + xy'c' + xyc$$

manipulating c , we can see that,

$$C_a = c(x \oplus y) + xy$$

And,

$$S_u = x'y'c + x'y'c' + xy'c' + xyc$$

manipulating S_u we can see that,

$$S_u = c \oplus (x \oplus y) \quad \underline{\underline{Ans}}$$

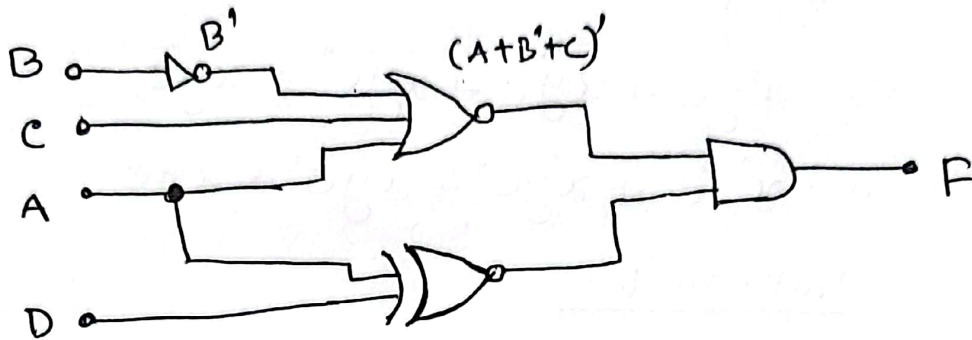
P.T.O

Ans to the Que No 3(B)

(B)

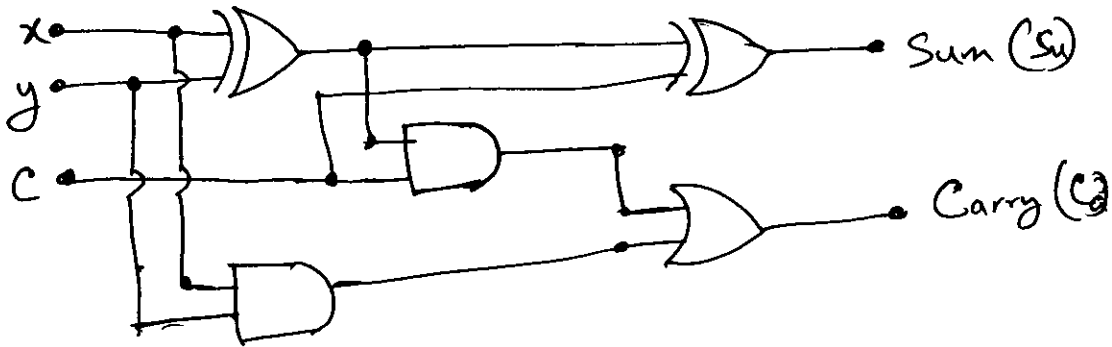
Here given function:

$$F = (A + B' + C)' \text{ XNOR } (A + D)$$



P.T.O

Ans to the Que NO 4



$$Ca = x'y'c + xy'c + xyc' + xyc$$

$$Su = x'y'c' + x'y'c + xyc' + xyc$$

Truth table.

Input			output	
x	y	c	Ca	Su
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1

-End-