Name – Md. Rakib Hasan.

ID – 2216080021

Course – Digital Logic Design.

Code – CSE - 213

Answer to the Qustion No – 1

ⓐ $A + A'B = ?$

Inbosorption law
$$A + A'B = A$$

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

ⓑ $A'B' + AB = ?$

use distributive law
$$A'B' + AB = (A' + A)B'$$

Now $(A' + A)$ is alays equal to 1.

So, $A'B' + AB = (1)\ B'$
$$= B' \text{ Ans}$$

ⓒ $\cdot(A+B)(A+C) = ?$

use distribution law
$$(A+B)(a+c) = A(A+C) + B(A+C)$$
$$= A(A+C)$$
$$= AA + AC$$
$$= A + A \cdot C$$
$$= B(A+C) = BA + BC = AB + BC$$

P.t.O

So, $(A+B)(A+C) = (A+AC) + (AB + BC)$

Apply $\{(A+A) = A\}$ a $\{(A + A^{*}C) = A)$ in Bolin Algebra.

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

So $(A+B)(A \cdot A + C)$ simplify to

$$A + (AB + BC).$$

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

Apply De morgan therom,

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

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

(e) $(ABCD)' = ?$

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

Answer to the question -2

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

$= A'BC + AB'C + A'B'C' + AB'C + ABC$ | $(AB'C = AB'C + AB'C)$

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

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

$= BC + B'C' + AB'$

Hence, option (D) $AB' + BC + B'C'$ is the correct choice

(a) Ans: $(A'B + A'B) + (A'B' + AB)$ step 1, $A'B$ is common

$= \cancel{A'B + AB}$ to terms 1 And 2 so

$A'B(C' + C) = A'B$ as $C' + C = 1$

We know have, $A'B + AB'C + ABC$

step-2 not that AC is common to terms to 2 and 3, so

$A'B + AC(B' + B)$ recall that $B' + B = 1$

Answer then becomes $A'B + AC$.

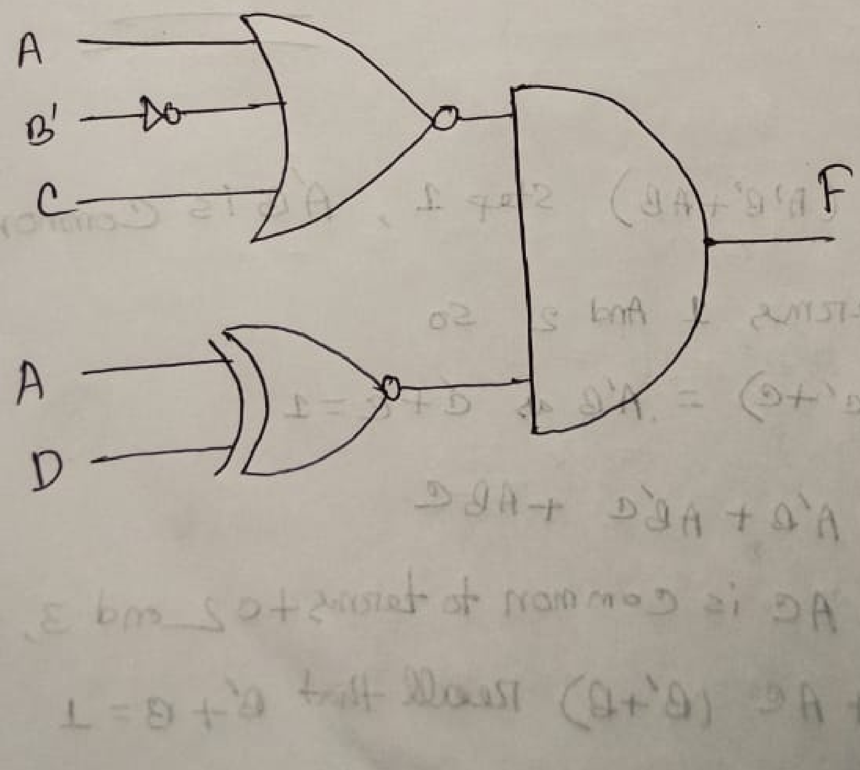
Answer to the Questio no - 3

(a) $\left\{\overline{\overline{(x+y)}+C}\right\} + \left\{\overline{(x+y)}C + xy\right\}$ Ans.

$\Rightarrow$ The function for the given circuit.

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

Ans:



Answer to the Question - No - 4

Ans: Truth Table for the function: $\{\overline{(\overline{x+y})+c}\} + \{(\overline{x+y})c + xy\}$
(from - 3 ⓐ)

X	Y	C	$\bar{X}$	$\bar{Y}$	$\bar{C}$	$\overline{X+Y}$	$\overline{\overline{X+Y}+C}$	$(\overline{X+Y})C$	XY	$(\overline{X+Y})C+XY$	$\{\overline{(\overline{X+Y})+C}\}+\{(\overline{X+Y})C+XY\}$
0	0	0	1	1	1	1	1	0	0	0	1
0	0	1	1	1	0	1	1	1	0	1	1
0	1	0	1	0	1	1	1	0	0	0	1
0	1	1	1	0	0	1	1	1	0	1	1
1	0	0	0	1	1	1	1	0	0	0	1
1	0	1	0	1	0	1	1	1	0	1	1
1	1	0	0	0	1	0	1	0	1	1	1
1	1	1	0	0	0	0	0	0	1	1	1