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Course code: CSE-213

c.title: Digital Logic Design

Batch: 08 (evening)

Ans: to the Q: NO: 1

ⓐ $A + A'B = ?$

Absorption 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 always equal to 1.

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

$= B'$ Ans.

ⓒ (A+B) (A+C) = ?

Use distrubution low,

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

$= A(A+C)$

$= AA + AC$

$= A + AC$

$\Rightarrow B(A+C) = BA + BC = AB + BC$.

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

$\Rightarrow$ Apply $\{(A+A) = A\}$ & $\{(A+AC) = A\}$ in buling Algebra

$\Rightarrow (A+AC) + (AB+BC) = A + (AB+BC)$

So, $(A+B)(A+C)$ Simplify to

$A + (AB + BC)$.

(d) $(A+B+C+D)' \rightarrow ?$

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

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Ans: to the Q: NO: 2

(a) $(A'B + A'B) + (A'B' + AB)$ step 1, $A'B$ is common to terms 1 & 2 so

$$A'B(C'+C) = A'B \text{ as } C'+C = 1$$

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

Step-2 not that AC is common to terms to 2 & 3, so $A'B + AC(B'+B)$ nall that $B'+B = 1$

Answere then becoms $A'B + AC$.

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

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

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

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

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

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

x

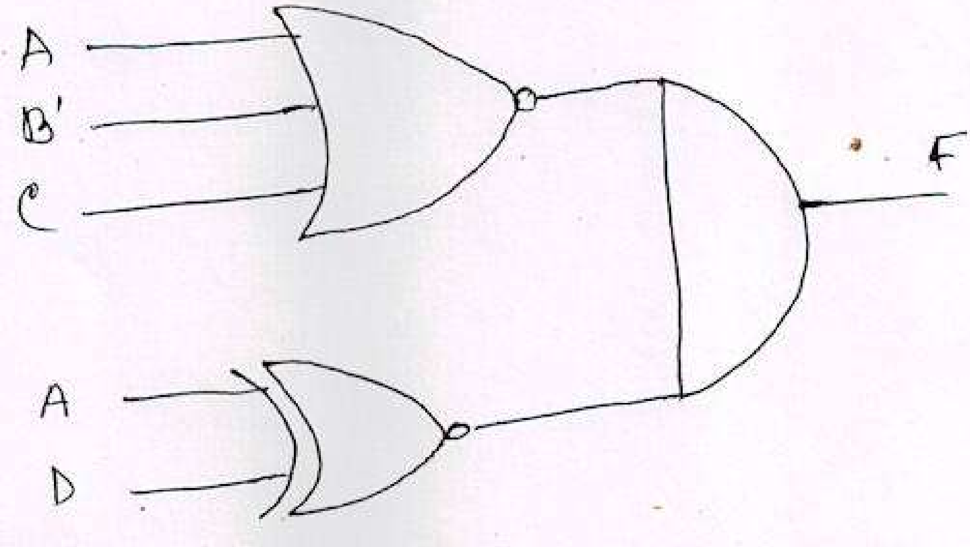
Ans: the Q. NO: 3

(a) $\left\{\overline{(x+y)+c}\right\} + \left\{\overline{(x+y)}\,c + xy\right\}$

$\Rightarrow$ The function for the given circuit.

(b) $F = (A + B' + C)'$ & NOR $(A + D)$

ans



Ans: to the Q. No. 4

Ans: Truth table for the function: $\{\overline{x+Y+C}\} + \{\overline{x+Y} + C + xY\}$ from (2a).

| x | Y | C | $\bar{x}$ | $\bar{Y}$ | $\bar{C}$ | $\overline{x+Y}$ | $\overline{x+Y+C}$ | $(\overline{x+Y})C$ | $xY$ | $(\overline{x+Y})C+xY$ | $\{(\overline{x+Y+C})\} + \{(\overline{x+Y})C + xY\}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 |