No.

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1. Write dual of the following Bolean Expression:

a.) $(x + y') \longrightarrow xy'$

b.) $xy + xy' + x'y \longrightarrow (x+y)(x+y')(x'+y)$

c.) $a + a'b + b' \longrightarrow a(a'+b)b'$

d.) $(x+y'+z)(x+y) \longrightarrow xy'z + xy$

2. Find the complement of the following functions applying De Morgan's theorem:

a.) $F(x,y,z) = x'y z' + x'y'z$

$F'(x,y,z) = (x'yz')'(x'y'z)'$

$= (x+y'+z)(x+y+z')$

b.) $F(x,y,z) = x(y'z + yz)$

$= x + (y'z)'(yz)'$

$= x' + (y+z')(y'z')$

3. Find the complements of the expressions

i.) $X + YZ + XZ \longrightarrow f(x,y,z) = X + YZ + XZ$

$f'(x,y,z) = \{x(Y+z)(x+z)\}'$

$= x'(y'+z')(x'+z')$

ii.) $AB(C'D + B'C) \longrightarrow f(A,B,C,D) = AB(C'D + B'C)$

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

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

4. In the bolean Algebra, verify using truth table that $(x+y)' = x'y'$ for each x, y in $\{0, 1\}$.

X	Y	$(x+y)'$	$x'y'$
0	0	1	1
0	1	0	0
1	0	0	0
1	1	0	0

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5. Give algebraic Proof of absorption law of boolean algebra:

Absorption law states that:

(i) $X + XY = X \longrightarrow X(y+1) = X$

$X = X$

(ii) $X(X+Y) = X \longrightarrow X + (0.y) = X$

$X + 0 = X$

$X = X$

6. Convert the following expression to canonical SOP from:

(a) $X + X'Y + X'Z'$

$\rightarrow X = X(Y+Y')(Z+Z')$

$= XYZ + XY'Z + XYZ' + XY'Z'$

$\rightarrow X'Y = X'YZ + X'YZ'$

$\rightarrow X'Z' = X'YZ' + X'Y'Z'$

$X'Y'Z'$

$\Rightarrow XYZ + XYZ' + XY'Z + XY'Z' + X'YZ + X'YZ' + \cancel{X'Y'Z'} +$

atau $m7 + m6 + m5 + m4 + m3 + m2$ ~~m0~~ $+ m0$

(b) $YZ + X'Y$

$\rightarrow \cancel{X} \overset{YZ}{=} XYZ + X'YZ$

$X'Y = X'YZ + X'YZ'$

$\Rightarrow XYZ + X'YZ + X'YZ'$

atau $m7 + m3 + m2$

(c) $AB'(B'+C') \longrightarrow AB' + AB'C'$

$\rightarrow AB' = AB'C + AB'C'$

$AB'C' = AB'C'$

$\Rightarrow AB'C + AB'C'$

atau $m5 + m4$