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Assignment: 2

Section: 05

CSE 260

1(a) $x'yz' + x'yz + xyz + x'yz'$

$= xyz + x'yz + (x'yz')$

$= x'yz' + x'yz + xyz$

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

$= x'y + xyz$

$= y(x' + xz)$

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

$= x'y + yz$

Ans: $x'y + yz$

(b) $(x'+y')(x+y)$

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

$= x'x + x'y + xy' + y'y$

$= x'y + xy'$

Ans: $x'y + xy'$

ⓒ $(a'+b)'(a+b')'$.

$= ((a')' \cdot b')(a' \cdot (b)')$

$= (ab') \cdot (a'b)$

$= (ab') \cdot (ab')'$

$= 0$.

Ans: 0

2ⓐ $x'y' + xy'$.

$= (x'+y') \cdot (x+y')$.

$= (x+y) \cdot (x'+y)$.

Ans: $(x+y) \cdot (x'+y)$.

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

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

$= xy'z + xy + x'z$

Ans: $xy'z + xy + x'z$.

3@ $F(A, B, c) = A'B + A'Bc' + A'c$.

Figure:
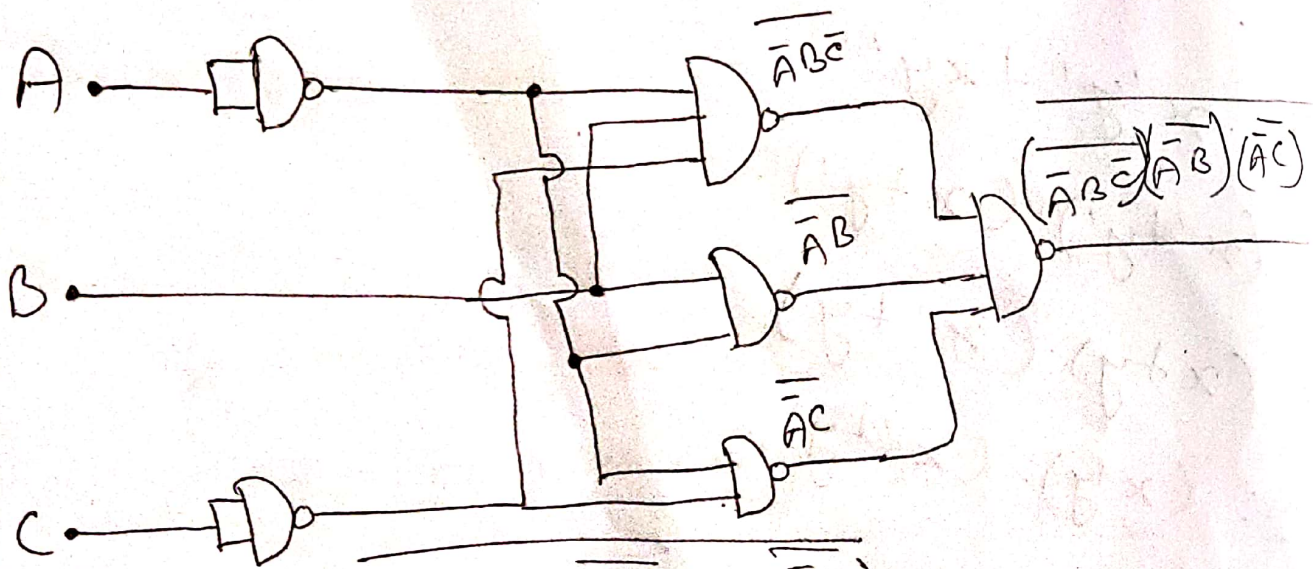
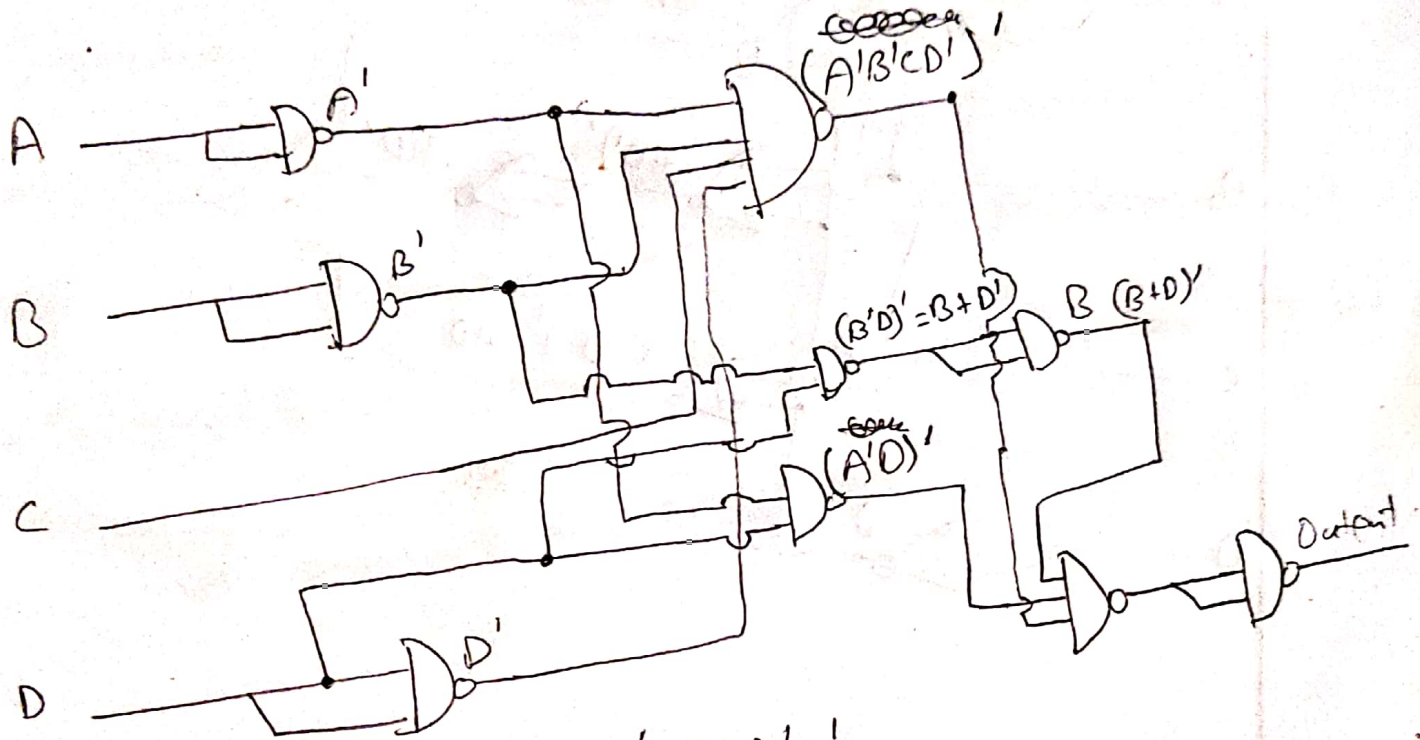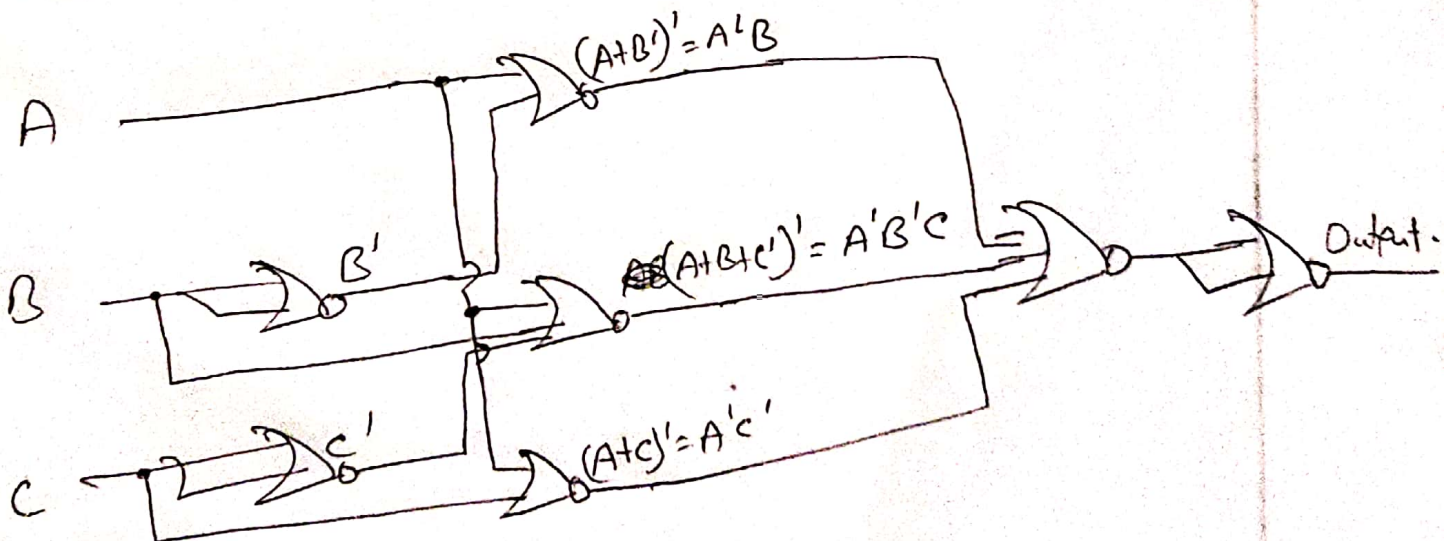Output: $(\overline{\bar{A}B\bar{c}})(\overline{\bar{A}B})(\overline{\bar{A}c})$

$= (\overline{\overline{\bar{A}B\bar{c}}}) + (\overline{\overline{\bar{A}B}}) + (\overline{\overline{\bar{A}c}})$

$= A'Bc' + A'B + A'c$.

(b) $F(A, B, CD) = (A'B'CD' + A'D + (B+D'))'$

Figure:

$(A'B'CD')'$

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

$(A'D)'$

Output

4(a) $F(A, B, C) = A'B + A'BC + A'C'$

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

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

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

Output

4b) $F(A, B, C, D) = (A B'c'D' + AD + (B+D'))'$

A $\longrightarrow$ A' $(A'+B+C+D)' = AB'c'D'$

B $\longrightarrow$ $(B+D')'$ $\longrightarrow$ B+D' $\longrightarrow$ Output

C $\longrightarrow$ $(A'+D')' = AD$

D $\longrightarrow$ D'