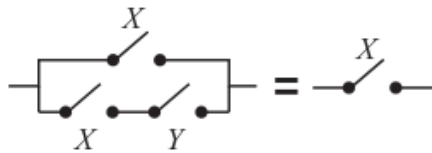


2.1 See FLD p. 693 for solution.

2.2 (a) In both cases, if $X = 0$, the transmission is 0, and if $X = 1$, the transmission is 1.



2.3 Answer is in FLD p. 693

2.4 (a) $F = [(A \cdot 1) + (A \cdot 1)] + E + BCD = A + E + BCD$

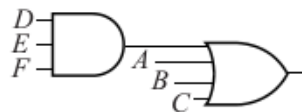
2.5 (a) $(A + B)(C + B)(D' + B)(ACD' + E)$
 $= (AC + B)(D' + B)(ACD' + E)$ By Th. 8D
 $= (ACD' + B)(ACD' + E)$ By Th. 8D
 $= ACD' + BE$ By Th. 8D

2.6 (a) $AB + C'D' = (AB + C')(AB + D')$
 $= (A + C')(B + C')(A + D')(B + D')$

2.6 (c) $A'BC + EF + DEF' = A'BC + E(F + DF')$
 $= A'BC + E(F + D) = (A'BC + E)(A'BC + F + D)$
 $= (A' + E)(B + E)(C + E)(A' + F + D)$
 $(B + F + D)(C + F + D)$

2.6 (e) $ACD' + C'D' + A'C = D'(AC + C') + A'C$
 $= D'(A + C') + A'C$ By Th. 11D
 $= (D' + A'C)(A + C' + A'C)$
 $= (D' + A')(D' + C)(A + C' + A')$ By Th. 11D
 $= (A' + D')(C + D')$

2.7 (a) $\frac{(A + B + C + D)(A + B + C + E)(A + B + C + F)}{A + B + C + DEF}$
 Apply second distributive law (Th. 8D) twice

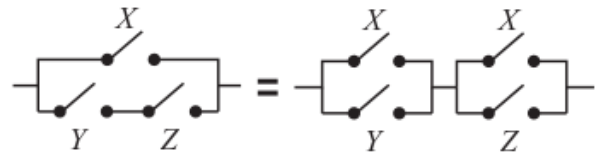


2.8 (a) $[(AB)' + C'D]' = AB(C'D)' = AB(C + D)$
 $= ABC + ABD'$

2.8 (c) $((A + B')C)'(A + B)(C + A)'$
 $= (A'B + C')(A + B)C'A' = (A'B + C')A'BC'$
 $= A'BC'$

2.9 (a) $F = [(A + B)' + (A + (A + B)')] (A + (A + B))'$
 $= (A + (A + B))'$
 By Th. 10D with $X = (A + (A + B))' = A'(A + B) = A'B$

2.2 (b) In both cases, if $X = 0$, the transmission is YZ , and if $X = 1$, the transmission is 1.



2.4 (b) $Y = (AB' + (AB + B))B + A = (AB' + B)B + A$
 $= (A + B)B + A = AB + B + A = A + B$

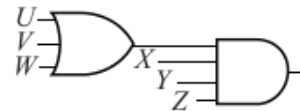
2.5 (b) $(A' + B + C')(A' + C' + D)(B' + D')$
 $= (A' + C' + BD)(B' + D')$
 {By Th. 8D with $X = A' + C'$ }
 $= A'B' + B'C' + B'BD + A'D' + C'D' + BDD'$
 $= A'B' + A'D' + C'B' + C'D'$

2.6 (b) $WX + WY'X + ZYX = X(W + WY' + ZY)$
 $= X(W + ZY)$ {By Th. 10}
 $= X(W + Z)(W + Y)$

2.6 (d) $XYZ + W'Z + XQ'Z = Z(XY + W' + XQ')$
 $= Z[W' + X(Y + Q')]$
 $= Z(W' + X)(W' + Y + Q')$ By Th. 8D

2.6 (f) $A + BC + DE$
 $= (A + BC + D)(A + BC + E)$
 $= (A + B + D)(A + C + D)(A + B + E)(A + C + E)$

2.7 (b) $WXYZ + VXYZ + UXYZ = XYZ(W + V + U)$
 By first distributive law (Th. 8)



2.8 (b) $[A + B(C' + D)]' = A'(B(C' + D))'$
 $= A'(B' + (C' + D))' = A'(B' + CD)$
 $= A'B' + A'CD'$

2.9 (b) $G = \{[(R + S + T)'PT(R + S)]'T\}'$
 $= (R + S + T)'PT(R + S) + T'$
 $= T' + (R'S'T)P(R'S)T = T' + PR'S'TT = T'$