Boolean Relation	Dual
$A+0=A$	$A\cdot 1=A$
$A+1=1$	$A\cdot 0=0$
$A+A=A$	$A\cdot A=A$
$A+\bar{A}=1$	$A\cdot \bar{A}=0$
$A+AB=A$	$A\cdot(A+B)=A$
$A+\bar{A}B=A+B$	$A\cdot(\bar{A}+B)=AB$
$(A+B)(A+C)=A+BC$	$AB+AC=A(B+C)$
$AB+\bar{A}C+BC=AB+\bar{A}C$	$(A+B)(\bar{A}+C)(B+C)=(A+B)(\bar{A}+C)$

BOOLEAN EXPRESSION.

MINIMIZATION.

Rule 1:

$0+0=0$
$0+1=1$

$0+A=A$
(or)
$A+0=A$

Rule 2:

$1+0=1$
$1+1=1$

$1+A=1$
(or)
$A+1=1$

Rule 3:

$0+0=0$
$1+1=1$

$A+A=A.$

Rule 4:

$0+1=1$
$1+0=1$

$A+\bar{A}=1$
(or)
$\bar{A}+A=1$

Rule 5:

$0 \cdot 0 = 0$
$0 \cdot 1 = 0$

$0 \cdot A = 0$
(or)
$A \cdot 0 = 0$

Rule 6:

$1 \cdot 0 = 0$
$1 \cdot 1 = 1$

$1 \cdot A = A$
(or)
$A \cdot 1 = A$

Rule 7:

$0 \cdot 0 = 0$
$1 \cdot 1 = 1$

$A \cdot A = A$

Rule 8:

$0 \cdot 1 = 0$
$1 \cdot 0 = 0$

$A \cdot \bar{A} = 0$
(or)
$\bar{A} \cdot A = 0$

Rule 9:

$\bar{\bar{0}} = 0$
$\bar{\bar{1}} = 1$

$\bar{\bar{A}} = A$

Rule: 10:

$A + AB = A$

Proof:

$L.H.S = A + AB$
$= A(1+B)$
$= A$
$R.H.S$

[Rule 2: $1+B=1$]

Rule: 11

$A+\bar{A}B = A+B$

$L.H.S = A+\bar{A}B$ [Rule 10: $A+AB=A$]

$= A+AB+\bar{A}B = A+(A+\bar{A})B$ [Rule 4: $A+\bar{A}=1$]

$\therefore A+B = R.H.S$

Rule: 12

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

$L.H.S = (A+B)(A+C)$

$= AA+AC+AB+BC$ [Rule 7: $A.A=A$]

$= A+AC+AB+BC$

$= A(1+C)+AB+BC$ [Rule 2: $1+C=1$]

$= A+AB+BC$

$= A(1+B)+BC$ [Rule 2: $1+B=1$]

$= A+BC = R.H.S$

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