



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &

Accredited by NBA (B.E - CSE, EEE, ECE, Mech&B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



Minimization of Boolean expressions :-

1)  $A + AB = A$

$$\begin{aligned} A + AB &= A \cdot 1 + AB \\ &= A(1 + B) \\ &= A \cdot 1 = A \end{aligned}$$

$$\begin{aligned} A + A &= A \cdot 1 \\ &= A \cdot (1 + 1) \\ &= A \cdot 2 \\ &= A \cdot 1 \end{aligned}$$

$\therefore 1 + 1 = 1$

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

$$\begin{aligned} A + \bar{A}B &= A + AB + \bar{A}B \\ &= A + B(A + \bar{A}) \\ &= A + B \end{aligned}$$

$$A + \bar{A} = 1$$

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

$$\begin{aligned} (A+B)(A+C) &= A \cdot A + A \cdot C + A \cdot B + B \cdot C \\ &= \underbrace{A + A \cdot B} + AC + BC \\ &= A + AC + BC \\ &= A(1+C) + BC \\ &= A + BC \end{aligned}$$

$$A + AB = A$$

$$1 + C = 1$$



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &

Accredited by NBA (B.E - CSE, EEE, ECE, Mech&B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



$$4) A \cdot (A+B) = A$$

$$A \cdot (A+B) = A \cdot A + AB$$

$$= A + AB$$

$$= A$$

$$5) A \cdot (\bar{A}+B) = AB$$

$$A \cdot (\bar{A}+B) = A\bar{A} + A \cdot B$$

$$= AB$$

$$6) AB + \bar{A}C + BC = AB + \bar{A}C$$

$$= AB + \bar{A}C + BC \cdot 1$$

$$= AB + \bar{A}C + BC(A + \bar{A})$$

$$= AB + \bar{A}C + ABC + \bar{A}BC$$

$$= AB(1+C) + \bar{A}C(1+B)$$

$$= AB + \bar{A}C$$

$$7) Y = \bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}\bar{C} + AB\bar{C}$$

$$= \bar{B}\bar{C}(A + \bar{A}) + B\bar{C}(A + \bar{A})$$

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

$$= (\bar{B}+B)\bar{C} = \bar{C}$$



# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai

Accredited by NAAC-UGC with 'A++' Grade (Cycle III) &

Accredited by NBA (B.E - CSE, EEE, ECE, Mech&B.Tech.IT)

COIMBATORE-641 035, TAMIL NADU



$$8) \bar{A}\bar{B}\bar{C}D + \bar{A}BCD = ABD$$

$$= \bar{A}BD(\bar{C} + C) + ABD$$

$$= \bar{A}BD + ABD$$

$$= BD(\bar{A} + A)$$

$$= BD$$

$$9) AC + C(A + \bar{A}B)$$

$$= AC + AC + \bar{A}BC$$

$$= AC + \bar{A}BC$$

$$= C(A + \bar{A}B)$$

$$= C(A + B)$$

$$10) ABC + A\bar{B}C + AB\bar{C} = A(C + B)$$

$$= AC(B + \bar{B}) + AB\bar{C}$$

$$= AC \cdot 1 + AB\bar{C}$$

$$= A(C + B\bar{C})$$

$$= A(C + B)$$