***EX***: Describe the T.T. for three input OR- gate :

 ABC Z

 000 0 A

 B Z  001 1

 C  010 1

 011 1

 100 1

 101 1

 110 1

 111 1

***EX***: Describe the T.T for the following logic circuit :

 A ABC Z

B  000 1

 Z  001 0

 C  010 1

 011 0

 100 1

 101 0

 110 1

 111 1

***H.w.***: Describe the T.T for the following :

A

A  B

B Z C Z

 c

 A A

 B B  Z

C Z

 D

**The basic rules and identities of Boolean algebra :**

 **1- Identities :**

 a- x.0=0 b- x+0=x c- x.1=x d- x+1=1

 e- x.x=x f- x+x=x g- x.x =0 h- x+x=1

 i- x=x

 **2-Commutative laws :**

 a- x.y=y.x

 b- x+y=y+x

 **3-Associative laws :**

 a- (x+y)+z = x+(y+z) = x+y+z

 b- (x.y).z = x.(y.z) = x.y.z

 **4-Distributive laws :**

 a- x.(y+z) = (x.y)+(x.z)

 b- x+(y.z) = (x+y).(x+Z)

 **5-Absorption laws :**

 a- x+x.y = x

 b- x+x.y = x+y

 c- x.(x+y) = x

 **6-De Morgan´s theorem :**

 a- x.y = x+y

 b- x+y = x.y

 All of these Boolean theorems useful in simplifying a logic expression that is in reducing the no. of terms in the expression .

***EX***: Prove that A.B = A+B

Sol: A.B = A+B = A+B

***EX***: Simplify the following :

 Z=A(A+B)

Sol: Z = AA+AB = A+AB = A