***EX***: write the Boolean exp. For the following circuit

A

B

C Z

Sol: Z = (A+B).C

***EX***: write the Boolean exp. For the following logic cct.

A

Z

B

Sol : Z = AB+AB = A + B

***EX***: write Boolean exp. For the following logic cct. :

A

B

Z

C

Sol: Z = (AB+AB).C =(A + B).C

**NOTE :** The priorities of logic operation are :

( )

AND

OR

***EX***: Construct the logic circuit for the following Boolean exp. :

Z = A.B+B

Sol:

We need 2-input AND gate A

B  2-input OR gate

2-inverters

Z

***EX***: Construct the logic cct. , and write the T.T. for the following logic eq.

Z = AC+ABC

ABC Z

Sol: 000 0

A  001 0

C  Z 010 0

011 0

B 100 0

101 1

110 0

111 1

***Ex*:** simplify the following :

A= x y z + x y z + x y z + x y z =x z (y+y) + x z (y+y) = x z +x z = z (x+x) = z

***Ex:*** simplify the following :

Z= AB + A(B+C) + B(B+C)

= AB + AB + AC + BB + BC

= AB + AC + B + BC

= AB + AC + B

= B + AC

***Ex:*** Simplify the following :

Z = ABC + ABC + ABC

= ABC + AC(B+B)

= ABC + AC

=C (AB+A)

=C (A+B)

=CA+CB

***Ex***: Simplify the following using Boolean Algebra

F= A{ BC(A+B+C+D)}

= ABC(A+B+C+D)

=ABCA +ABCB +ABCC +ABCD

=ABC+ABC+ABC+ABCD

=ABC+ABCD

=ABC(1+D)

= ABC

***EX***: Simplify:

F = AC + ABC + ACD + CD

= A(C+BC) + C(AD+D)

= A(C+B)+C(A+D)

= AC + AB + CA +CD

= A(C+C) + AB + CD

= A + AB +CD

= A(1+B) + CD

= A + CD