***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