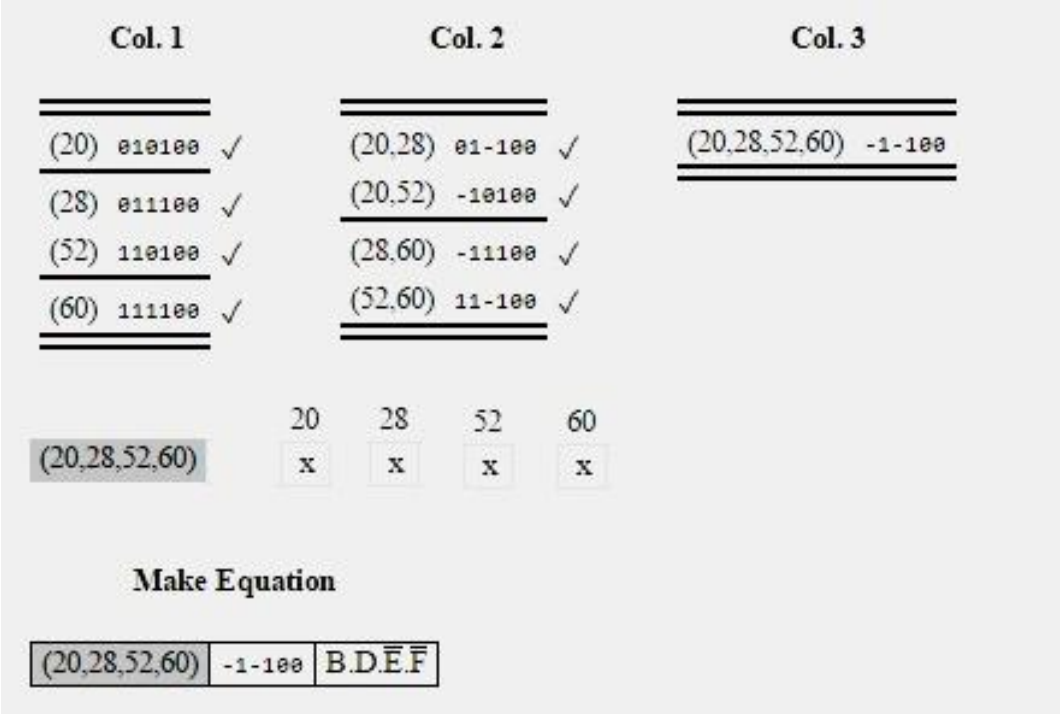
Tabulation Method:



Col. 1	Col. 2	Col. 3
(20) 010100 ✓	(20,28) 01-100 ✓	(20,28,52,60) -1-100
(28) 011100 ✓	(20,52) -10100 ✓	
(52) 110100 ✓	(28,60) -11100 ✓	
(60) 111100 ✓	(52,60) 11-100 ✓	

	20	28	52	60
(20,28,52,60)	x	x	x	x

Make Equation

(20,28,52,60)	-1-100	B.D.$\bar{E}$.$\bar{F}$

Boolean algebra (Any one solution)

Solution.

A.B + A'.C + B.C.1 (A .1 =A)

= A.B + A'.C + B.C.(A + A') (A + A' =1)

= A.B + A'.C + B.C.A + B.C.A' (Distributlve law)

= A.B + A'.C + A.B.C + A'.B.C (Associatlve law)

= A.B + A.B.C + A'.C + A'.B.C (Commutatlve law)

= A.B. (1 + C) + A'.C (1 + B) (Distributlve law)

=A.B.l +A'.C. 1 (1 +B= 1. 1 +C= 1)

= A.B + A'.C (A.1= A)

Answere to the Question-NO;4

(a) $F = AB + BC + A'C$

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

$= ABC + ABC' + ABC + A'BC + A'CB + A'CB'$

$= ABC + ABC' + A'BC + A'B'C$

$= AB(C+C') + A'C(B+B')$

$= AB + A'C$

(Ans.)

$$
\begin{aligned}
F &= AB + Bc + A'c \\
&= AB + A'c + Bc \\
&= AB + A'c + Bc \cdot 1 \\
&= AB + A'c + Bc \cdot (A + A') \\
&= AB + A'c + ABc + A'Bc \\
&= AB + ABc + A'c + A'Bc \\
&= AB(1 + c) + A'c(1 + B) \\
&= AB(c + 1) + A'c(B + 1) \\
&= AB \cdot 1 + A'c \cdot 1 \\
&= AB + A'c
\end{aligned}
$$

(Ans.)

Ans. to the Q. no - 1

(a)

The range of an 8 bit 2's complement number system is from $-2^{(8-1)} = -128$ to $2^{(8-1)} - 1 = 127$ in decimal number system.

(b)

$+(73)_{10} = +(01001001)_2$

$-(35)_{10} = -(00100011)_2$.

$\therefore +(73)_{10} = (01001001)_{1's}$

$-(35)_{10} = (11011100)_{1's}$

And, $+(73)_{10} = (01001001)_{2's}$

$-(35)_{10} = (11011101)_{2's}$

Sign - Magnitude number system :

$+(73)_{10} = (01001001)_{sign-mag}$

$-(35)_{10} = (10100011)_{sign-mag}$.

c) Subtract -35 from 73

2's complement,

$-35 = 11011101$

$+35 = 00100011$

$73 - (-35)$

$= 73 + 35$

$= 108$

Now,

$73 = 01001001$

$35 = 00100011$

$(108) = 01101100$

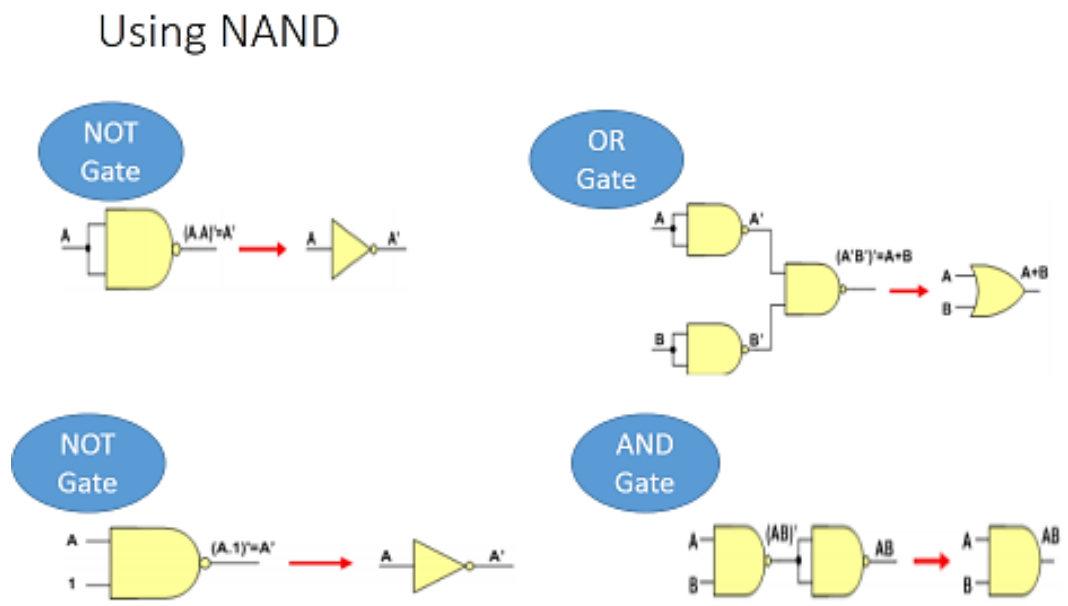
d) $73 = 01001001$

$35 = 00100011$

01101100

It is not an overflow because the same sign bits gives the same sign bit.

Construct Gates



Kmap Solution