

Conversion of Binary into decimal number: -

This process is easy and has been illustrated. The column weights for each 1 appearing in the number are noted and are added to all other column weights containing a 1.

For example - to convert  $10111_2$  to decimal.

$$10111_2 = 1 \times 2^4 + 0 \times 2^3 + 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$$

$$= 16 + 0 + 4 + 2 + 1$$

$$= 23_{10}$$

Conversion of Decimal number into Binary number:

For this, number is successively divided by 2 and its remainders recorded. The final binary result is obtained by assuming all the numbers of remainders, with the last remainder being the most significant bit (MSB).

For example - to convert  $43_{10}$  to binary

2	43	Remainder(R)
2	21	- 1
2	10	- 1
2	5	- 0
2	2	- 1
2	1	- 0
	0	- 1

Reading the remainders from the bottom to top,  $43_{10} = 101011_2$

Q:- Convert  $200_{10}$  into binary

Soln:-

	200	R
2	100	0
2	50	0
2	25	0
2	12	0
2	6	1
2	3	0
2	1	1
	0	1

Reading the remainders from bottom to the top, the result is -

$$200_{10} = 11001000_2$$

Q:- Convert  $11001_2$  into decimal.

Soln:-

$$11001_2 = 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 0 \times 2^1 + 1 \times 2^0$$

$$= 16 + 8 + 0 + 0 + 1$$

$$= 25_{10}$$