Step 2:- Decimal to any base

$(\quad)_{10} \rightarrow (\quad)_y$ divide by base till quotient in range

i) $(19)_{10} \rightarrow (10011)_2$

↘ Range (0, 1)

2 | 19	
2 | 9	1 ↑
2 | 4	1
2 | 2	0
	(1) 0

10011

In range

2) $(27.625)_{10} = (11011.101)_2$

2 | 27	
2 | 13	1 ↑
2 | 6	1
2 | 3	0
	1

1 1 0 1 1

↓ ↓ ↓ ↓

16 + 8 + 2 + 1

$.625 \times 2 = 1.250$

$.25 \times 2 = 0.50$

$.5 \times 2 = 1.0$

$.0 \times 2 = 0$

3) $(2497)_{10} = (34442)_5$

5 | 2497	
5 | 499	- 2
5 | 99	- 4
5 | 19	- 4
	(3) - 4

34442

In range

Questions

1) $(1247.78)_{10} = (\quad)_{16}$

2) $(1011.27)_{10} = (\quad)_{8}$

3) $(243.75)_{10} = (\quad)_{3}$

Conversion from any base to any base

Q

$(4312)_5 = (\quad)_7$

Step 1

$(\quad)_5 \rightarrow (\quad)_{10}$

Step 2

$(\quad)_{10} \rightarrow (\quad)_7$

$(43.12)_5 \rightarrow (23.28)_{10}$

$4\times5^1 + 3\times5^0 + 1\times5^{-1} + 2\times5^{-2}$

$20 + 3 + \frac{1}{5} + \frac{2}{25}$

$20 + 3 + .2 + .08$

$= (23.28)_{10}$

$(23.28)_{10} \longrightarrow (32.165)_7$

$7 \mid 23$ — $3 - 2$ ↑ — 32

$.28 \times 7 = 1.96$

$.96 \times 7 = 6.72$

$.72 \times 7 = 5.04$

$(43.12)_5 \rightarrow (32.165)_7$

If base reduces value will reduce if base increase value will increase.

2) $(786.57)_9 = (\quad)_6$

$(\quad)_{10}$

$(786.57)_9 \rightarrow (\quad)_{10}$

$7\times9^2 + 8\times9^1 + 6\times9^0 + 5\times9^{-1} + 7\times9^{-2}$

$567 + 72 + 6 + \frac{5}{9} + \frac{7}{81}$

$645 + .55 + .086$

$= (645.636)_{10}$

$(645.636)_{10} \rightarrow (2553.345)_6$

$6 \mid 645$

$6 \mid 107 \rightarrow 3$

$6 \mid 17 \rightarrow 5$

$2 \rightarrow 5$

$.636 \times 6 \rightarrow 3.816$

$.816 \times 6 \rightarrow 4.896$

$.896 \times 6 \rightarrow 5.376$

$(\quad)_4 \rightarrow (\quad)_{16}$

$(\quad)_8 \rightarrow (\quad)_4$

All are bases of 2 so we can convert them to base 2 and ~~Conv~~ easy method

Octal to hexadecimal Conversion.

$(\quad)_{2^x} \longrightarrow (\quad)_{2^y}$ Two power we can use $(\quad)_2$ as

$(\quad)_2$

For Ex:- Octal $\rightarrow 2^3 \rightarrow 8 \rightarrow (0,1,2,3,4,5,6,7)$

Hexadecimal $\rightarrow 2^4 \rightarrow 16 \rightarrow (0,1,2,3,4,5,6,7,8,9$
$A,B,C,D,E,F)$

We can base 2 and its easy to use to

Convert into base 2.

Base - 4, (0,1,2,3,4)

$00 \rightarrow 0$
$01 \rightarrow 1$
$10 \rightarrow 2$
$11 \rightarrow 3$

$2^{(2)} \rightarrow 4$ bits are two.

$2^{(3)} \rightarrow 3$ bits
$= 8$

$000 \rightarrow 0$
$001 \rightarrow 1$
$010 \rightarrow 2$
$011 \rightarrow 3$
$100 \rightarrow 4$
$101 \rightarrow 5$
$110 \rightarrow 6$
$111 \rightarrow 7$