

octal to decimal conversion of numbers

$$4706_8 = ?_{10}$$

8 denotes base 8 (total 8 symbols to represent any number)

10 denotes decimal number system

- As previous notes
- Write column value of each number

- Again multiply the column values with corresponding column digit

- $512 \quad 64 \quad 8 \quad 1$
- $\times 4 \quad \times 7 \quad \times 0 \quad \times 6$

- $2048 \quad 448 \quad 0 \quad 6$
- Sum up the product
- $2048 + 448 + 0 + 6 = 2502$

- Hence

- $4706_8 = 2502_{10}$

- Similarly
- We can convert hexadecimal to decimal or any number system to decimal number system.
- Ex
- $1AC_{16} = ?_{10}$

Base 16 to base 10(decimal)conversion

- $1 \times 16^2 + A \times 16^1 + C \times 16^0$
- $= 1 \times 256 + A \times 16 + C \times 1$
- $= 256 + 10 \times 16 + 12 \times 1$ (A=10, C=12 in hexa to decimal)
- $= 256 + 160 + 12$
- $= 428_{10}$

Hence

$$1AC_{16} = 428_{10}$$

Base 7 to base 10 conversion

- Similarly
- $4052_7 = ?_{10}$
- $4052_7 = 4 \times 7^3 + 0 \times 7^2 + 5 \times 7^1 + 2 \times 7^0$
- $= 4 \times 343 + 0 + 5 \times 7 + 2 \times 1$
- $= 1372 + 35 + 2$
- $= 1409_{10}$

BASE 1 TO Base 10 conversion

- $1AC_{13}=?_{10}$
- $1X13^2+AX13^1+CX13^0$
- $1X169+AX13+CX1$
- $=169+10X13+12X1$ (A=10,C=12)
- $=169+130+12$
- $=311_{10}$

BASE 6 TO BASE 10 CONVERSION

- $4052_6 = ?_{10}$
- $4 \times 6^3 + 0 \times 6^2 + 5 \times 6^1 + 2 \times 6^0$
- $4 \times 216 + 0 \times 36 + 5 \times 6 + 2 \times 1$
- $864 + 0 + 30 + 2$
- $= 896_{10}$