

Name: Yash Raj

Roll no: 25K-0878.

Number System: (A)

Decimal: 156, 1024, 255

Binary:

$$\begin{array}{r} \text{a) } 2 \overline{) 156} \\ 2 \overline{) 78} - 0 \\ 2 \overline{) 39} - 0 \\ 2 \overline{) 19} - 1 \\ 2 \overline{) 9} - 1 \\ 2 \overline{) 4} - 1 \\ 2 \overline{) 2} - 0 \\ 1 - 0 \end{array}$$

$(10011100)_{10}$

$$\begin{array}{r} \text{b) } 2 \overline{) 1024} \\ 2 \overline{) 512} - 0 \\ 2 \overline{) 256} - 0 \\ 2 \overline{) 128} - 0 \\ 2 \overline{) 64} - 0 \\ 2 \overline{) 32} - 0 \\ 2 \overline{) 16} - 0 \\ 2 \overline{) 8} - 0 \\ 2 \overline{) 4} - 0 \\ 2 \overline{) 2} - 0 \\ 1 - 0 \end{array}$$

$$\begin{array}{r} \text{c) } 2 \overline{) 255} \\ 2 \overline{) 127} - 1 \\ 2 \overline{) 63} - 1 \\ 2 \overline{) 31} - 1 \\ 2 \overline{) 15} - 1 \\ 2 \overline{) 7} - 1 \\ 2 \overline{) 3} - 1 \\ 1 - 1 \end{array}$$

$(100000000000)_{10}$ $(11111111)_{10}$

to Octal :

a) 156

$$8 \overline{) 156}$$

$$8 \overline{) 19 - 4}$$

$$2 - 3$$

$$(234)_8$$

b) 1024

$$8 \overline{) 1024}$$

$$8 \overline{) 128 - 0}$$

$$8 \overline{) 16 - 0}$$

$$2 - 0$$

$$(2000)_8$$

c) 255

$$8 \overline{) 255}$$

$$8 \overline{) 31 - 7}$$

$$3 - 7$$

$$(377)_8$$

To Hexadecimal

a) 16 | 156

$$9 - 12$$

$$(9C)_{16}$$

b) 16 | 1024

$$16 \overline{) 64 - 0}$$

$$4 - 0$$

$$(400)_{16}$$

c) 16 | 255

$$15 - 15$$

$$(FF)_{16}$$

(B)

Decimal to Octal

$$8 \overline{) 124}$$

$$8 \overline{) 15 - 4}$$

$$1 - 7$$

$$(174)_8$$

Hexadecimal to Octal

A78E

Hexa to decimal

$$10 \times 16^3 + 7 \times 16^2 + 8 \times 16 + 14$$

$$= (42894)_{10}$$

Dec \rightarrow Octal

$$8 \overline{) 42894}$$

$$8 \overline{) 5361 - 6}$$

$$8 \overline{) 670 - 1}$$

$$8 \overline{) 83 - 6}$$

$$8 \overline{) 10 - 3}$$

$$1 - 2$$

$$(123616)_8$$

~(C)~

a) $(784)_{10}$

Dec to Hexa

$$16 \overline{) 784}$$

$$16 \overline{) 49 - 10}$$

$$3 - 1$$

$$(310)_{16}$$

b) $(372)_8$

Oct \rightarrow Hexa

Oct \rightarrow Dec

$$3 \times 8^2 + 7 \times 8 + 2$$

$$(250)_{10}$$

Dec \rightarrow Hexa

$$\begin{array}{r|l} 16 & 250 \\ & 15 - 10 \end{array}$$

$$(FA)_{16}$$

—(1)—

a) $(235)_8$

Oct \rightarrow Binary

Oct \rightarrow Dec

$$2 \times 8^2 + 3 \times 8 + 5$$

$$(157)_{10}$$

$$\begin{array}{r|l} 2 & 157 \end{array}$$

$$\begin{array}{r|l} 2 & 78 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 39 - 0 \end{array}$$

$$\begin{array}{r|l} 2 & 19 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 9 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 4 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 2 - 0 \end{array}$$

$$1 - 0$$

$$(10011101)_2$$

b) $(976)_{10}$

Dec to Binary

$$\begin{array}{r|l} 2 & 976 \end{array}$$

$$\begin{array}{r|l} 2 & 488 - 0 \end{array}$$

$$\begin{array}{r|l} 2 & 244 - 0 \end{array}$$

$$\begin{array}{r|l} 2 & 122 - 0 \end{array}$$

$$\begin{array}{r|l} 2 & 61 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 30 - 0 \end{array}$$

$$\begin{array}{r|l} 2 & 15 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 7 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 3 - 1 \end{array}$$

$$\begin{array}{r|l} 2 & 1 - 0 \end{array}$$

$$(100010100)_2$$

c) $(C13E)_{16}$

Hexa to Binary

$C = 12 = 1100$ In binary

$1 = 0001$

$3 = 0011$

$E = 14 = 1110$

So,

$(1100\ 0001\ 0011\ 1110)_2$ A